LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 28

2020

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

VOLUME 28

2020

A. Title: (cont'd) Report – Appendix F Lab Results to Draft Final 6th Annual Remedial Action Operations Report (September 2018-August 2019), LHAAP-35A (58), Shops Area, Longhorn Army Ammunition Plant, Karnack, Texas, December 2020
Author(s): Department of the Army
Recipient: U.S. Environmental Protection Agency and Texas Commission on Environmental Quality
Date: December 9, 2020
Bate Stamp: 00997222 – 00999070

Fusion Report - 01072020
Tuesday, January 07, 2020 04:29 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2020/01/08 09:19 - Wednesday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	01072020	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3)		
Comment:			

Report Results

01/08/20

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/01/07 16:29

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	9.80	14.12	4.32	49.51	05:23
2	TC Clean	6.17	9.77	3.60	50.05	04:04
3	TC Clean	2.20	6.08	3.87	50.03	03:48
4	TC Clean	1.58	5.33	3.75	49.99	03:55

Sample Type: Clean — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/01/07 16:51

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.55	4.24	3.70	49.65	05:24
2	TC Clean	4.63	8.36	3.73	50.12	04:04
3	TC Clean	2.38	5.95	3.57	49.99	03:50
4	TC Clean	1.72	5.48	3.76	49.98	03:52

Sample Type: Clean From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/01/07 17:13

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.77	4.34	3.57	49.40	05:20
2	TC Clean	4.41	8.11	3.70	49.97	04:01
3	TC Clean	2.09	5.83	3.74	50.05	03:46
4	TC Clean	1.53	5.40	3.87	50.06	03:54

Sample Type: Blank (Creating v1339) From Schedule Version 3

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2020/01/07 17:35

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.54	4.37	3.82	49.48	05:22
2	TC Clean	4.22	7.99	3.77	50.07	04:00
3	TC Clean	1.95	5.93	3.97	50.10	03:47
4	TC Clean	1.53	5.36	3.83	50.00	03:46
5	Reagent Blank	8.26	12.03	3.77	50.00	05:05
6	Acid Blank	1.53	5.40	3.87	49.43	05:25

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	17	TOC	RB	0.2812 ppm	0.0000 ppm	0.0000%	2020/01/07 18:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2812	2.8122	11.51	15.43	3.92	50.11	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC) (v1339)	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.4755 ppm (PASS)	0.0000 ppm	0%	2020/01/07 18:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.4755	254.7546	171.28	175.15	3.88	50.11	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/01/07 18:38

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	10.02	13.85	3.83	50.13	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)	0 ppmC

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	TOC	MB1	0.0364 ppm	0.0000 ppm	0.0000%	2020/01/07 18:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0364	0.3639	9.96	13.62	3.66	50.11	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC) (v1339)	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)

Sample Type: Check Standard --> LCS From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	26.5008 ppm (PASS)	0.0000 ppm	0%	2020/01/07 19:07

Pos	Base Analysis	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

	Type									
C	TOC	25.0 ppm	1	26.5008	265.0080	177.76	181.38	3.62	50.12	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)	25 ppmC

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.3054 ppm	0.0000 ppm	0.0000%	2020/01/07 19:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3054	3.0542	11.66	15.42	3.75	50.09	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC) (v1339)	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K1911998-003.02 50x	5.7991 ppm	0.0310 ppm	0.5300%	2020/01/07 19:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.8210	58.2099	46.54	50.08	3.55	50.12	10:28
2	TOC	5.7772	57.7718	46.26	50.11	3.85	50.09	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC) (v1339)	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1912140-002.01 100x	6.3994 ppm	0.1219 ppm	1.9000%	2020/01/07 20:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.3132	63.1317	49.65	53.44	3.79	50.11	10:27
2	TOC	6.4856	64.8556	50.74	54.40	3.66	50.10	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC) (v1339)	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	K1912140-003.01 100x	7.3382 ppm	0.0069 ppm	0.0900%	2020/01/07 20:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.3431	73.4309	56.16	59.80	3.64	50.10	10:27
2	TOC	7.3333	73.3329	56.10	59.74	3.64	50.12	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC)	CAS_salt_010711	CAS_salt_010711

(v1339) (v4) (v31)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	6	TOC	K1912140-004.01 100x	7.1897 ppm	0.0385 ppm	0.5400%	2020/01/07 21:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.2169	72.1688	55.36	58.94	3.58	50.10	10:25
2	TOC	7.1625	71.6248	55.02	58.83	3.81	50.10	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC) (v1339)	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	7	TOC	K1912160-001.01	2.6516 ppm	0.0800 ppm	3.0200%	2020/01/07 21:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7081	27.0814	26.85	30.57	3.71	50.07	10:28
2	TOC	2.5951	25.9506	26.14	29.79	3.65	50.08	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC) (v1339)	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	8	TOC	K1912160-001.01 ms	29.8729 ppm	0.0000 ppm	0.0000%	2020/01/07 21:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.8729	298.7288	198.61	202.22	3.61	50.07	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC) (v1339)	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	9	TOC	RB	0.0171 ppm	0.0000 ppm	0.0000%	2020/01/07 22:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0171	0.1710	9.84	13.40	3.56	50.05	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC) (v1339)	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.4505 ppm	0.0000 ppm	0%	2020/01/07 22:26

							(PASS)				

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.4505	254.5047	171.12	174.92	3.80	50.04	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)	50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/01/07 22:40

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.95	12.76	3.81	50.03	10:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)	0 ppmC

Sample Type: Sample

From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	10	TOC	K2000034-001.01	2.1253 ppm	0.0106 ppm	0.5000%	2020/01/07 22:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1328	21.3276	23.22	27.08	3.86	50.02	10:27
2	TOC	2.1177	21.1774	23.12	26.74	3.62	50.03	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC) (v1339)	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K2000035-001.01	0.2149 ppm	0.0433 ppm	20.1400%	2020/01/07 23:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2455	2.4548	11.28	15.01	3.73	50.01	10:27
2	TOC	0.1843	1.8427	10.90	14.59	3.69	50.03	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC) (v1339)	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)

	Pos	Analysis	Sample ID	Result (ppmC)	Std. Dev.	RSD	Start Time

		Type			(ppmC)		
◆	12	TOC	K2000035-002.01	0.4270 ppm	0.0749 ppm	17.5500%	2020/01/07 23:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3741	3.7406	12.10	15.92	3.83	50.01	10:26
2	TOC	0.4800	4.8002	12.77	16.42	3.66	50.02	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC) (v1339)	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	13	TOC	T1901631-001.02 doc	3.5419 ppm	0.0282 ppm	0.8000%	2020/01/08 00:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.5220	35.2202	32.00	35.79	3.79	50.01	10:27
2	TOC	3.5619	35.6187	32.25	35.98	3.72	49.99	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC) (v1339)	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	14	TOC	T1901631-001.02 ms doc	31.4682 ppm	0.0000 ppm	0.0000%	2020/01/08 00:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	31.4682	314.6821	208.70	212.26	3.56	49.99	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC) (v1339)	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	15	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/01/08 01:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.10	12.95	3.86	49.98	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC) (v1339)	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	16	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2020/01/08 01:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.93	11.77	3.84	50.00	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC)	CAS_salt_010711	CAS_salt_010711

(v1339) (v4) (v31)

Sample Type: Check Standard --> LCS From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	26.2833 ppm (PASS)	0.0000 ppm	0%	2020/01/08 01:31

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	26.2833	262.8333	176.38	180.12	3.73	50.05	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)	25 ppmC

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	18	TOC	K2000090-001.01	0.9467 ppm	0.0728 ppm	7.6900%	2020/01/08 01:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9981	9.9815	16.04	19.80	3.76	49.97	10:25
2	TOC	0.8952	8.9518	15.39	19.17	3.78	49.97	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.7309 (IC) (v1339)	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.3307 ppm (PASS)	0.0000 ppm	0%	2020/01/08 02:14

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.3307	253.3075	170.36	174.01	3.64	50.01	10:36

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 3

			Concentration			Min / Max				

	Pos	BAT	(ppm)	Dil	Sample ID	(% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/01/08 02:28

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.21	11.96	3.75	50.00	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v31)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1338	2.8760	1.7130	0.0000	0.0000	0.0000	2020/01/07 11:53	Fusion1 (Fusion1)
v1339	2.7543	1.5310	0.0000	0.0000	0.0000	2020/01/07 18:08	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v31	Calibration curve formula:	TOC: y = 6.323x + 10.200
Ver Creation:	2020/01/07 14:30	r^2 value:	TOC: r^2 = 0.99991
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	9.5850	0.0000		2020/01/07 13:02
0.500 ppm	12.6160	0.5000		2020/01/07 13:17
1.0 ppm	15.6440	1.0000		2020/01/07 13:31
5.0 ppm	43.7700	5.0000		2020/01/07 13:45
10 ppm	73.2770	10.0000		2020/01/07 14:00
25 ppm	169.4210	25.0000		2020/01/07 14:14
50 ppm	325.6260	50.0000		2020/01/07 14:28

Methods

Name: CAS_salt_010711 (TOC)

Version: v4 Operator: Fusion1 (Fusion1)
Ver Creation: 2019/02/21 17:57
Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date

1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2020/01/08 02:44

ALS Environmental

StarLIMS Run: 665574, 665575

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-82C 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 1/7/2020

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-82C 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-83J

21 % H3PO4: 11-GEN-05-83I

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: BCP	Date Analyzed: 1/7/2020
Reviewed By: [signature]	Date Reviewed: 01/08/20

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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January 10, 2020

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19121155**

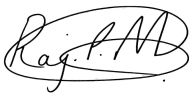
Laboratory Results for: **LHAAP-58**

Dear Marcia,

ALS Environmental received 9 sample(s) on Dec 20, 2019 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,



Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS19121155

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19121155-01	35AWW10-121919	Groundwater		19-Dec-2019 08:35	20-Dec-2019 10:03	☐
HS19121155-02	35AWW10-121919_a	Groundwater		19-Dec-2019 08:35	20-Dec-2019 10:03	☐
HS19121155-03	35AWW20-121919	Groundwater		19-Dec-2019 09:40	20-Dec-2019 10:03	☐
HS19121155-04	35AWW06-121919	Groundwater		19-Dec-2019 10:35	20-Dec-2019 10:03	☐
HS19121155-05	LHSMW07-121919	Groundwater		19-Dec-2019 11:30	20-Dec-2019 10:03	☐
HS19121155-06	35AWW16-121919	Groundwater		19-Dec-2019 12:25	20-Dec-2019 10:03	☐
HS19121155-07	35AWW24-121919	Groundwater		19-Dec-2019 13:10	20-Dec-2019 10:03	☐
HS19121155-08	35AWW14-121919	Groundwater		19-Dec-2019 13:20	20-Dec-2019 10:03	☐
HS19121155-09	Trip Blank	Water		19-Dec-2019 00:00	20-Dec-2019 10:03	☐

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: LHAAP-58
Work Order: HS19121155

Work Order Comments

• Revised to include VFA results as LOQ/LOD/MDL.

Work Order Comments

• The analysis for TOC was subcontracted to ALS Kelso, WA. Final report attached.

• The analysis for DHC/DHB were subcontracted to Microbial Insights in Knoxville TN. Final report attached.

• The analysis for VFA was subcontracted to ALS Rochester, NY. Final report attached.

• The analysis for MEE plus CO2 was subcontracted to ALS Simi Valley, CA. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R353734

Sample ID: CCV

• Carbon Disulfide exceeded %D limits for CCV. Samples are ND for this compound.

Sample ID: CCV-END

• The internal standard amount was 2 times our normal added amount due to auto addition from the autosampler, causing low compound recoveries

Sample ID: VLCSW-200102

• 1,2,3_Trichlorobenzene exceeded QC limits for LCS. CCV is OK.

Sample ID: HS19121257-01MSD

• MSD is for an unrelated sample

WetChemistry by Method SW9056

Batch ID: R353393

Sample ID: LHSMW07-121919 (HS19121155-05)

• The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Nitrogen, Nitrate (As N))

Batch ID: R353865,R353906

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW10-121919
Collection Date: 19-Dec-2019 08:35

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-01
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	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:34
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 13:34
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	02-Jan-2020 13:34
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:34
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	02-Jan-2020 13:34
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 13:34
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	02-Jan-2020 13:34
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW10-121919
Collection Date: 19-Dec-2019 08:35

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 13:34
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 13:34
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:34
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:34
Surr: 1,2-Dichloroethane-d4	*92.9*			**0**	*81-118*	*%REC*	*1*	*02-Jan-2020 13:34*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*02-Jan-2020 13:34*
Surr: Dibromofluoromethane	*94.3*			**0**	*80-119*	*%REC*	*1*	*02-Jan-2020 13:34*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*02-Jan-2020 13:34*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**4.46**		**0.200**	**0.500**	**0.500**	**mg/L**	1	05-Jan-2020 00:28
Nitrogen, Nitrate (As N)	**0.115**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	20-Dec-2019 14:28
Sulfate	**46.1**		**0.200**	**0.500**	**0.500**	**mg/L**	1	20-Dec-2019 14:28
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	08-Jan-2020 10:00
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Jan-2020 18:34

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US

Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.

ANALYTICAL REPORT

Project: LHAAP-58

WorkOrder:HS19121155

Sample ID: 35AWW10-121919

Lab ID:HS19121155-01

Collection Date: 19-Dec-2019 08:35

Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	31-Dec-2019 10:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW10-121919_a
Collection Date: 19-Dec-2019 08:35

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-02
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	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:58
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 13:58
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	02-Jan-2020 13:58
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:58
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	02-Jan-2020 13:58
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 13:58
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	02-Jan-2020 13:58
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW10-121919_a
Collection Date: 19-Dec-2019 08:35

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 13:58
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 13:58
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:58
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:58
Surr: 1,2-Dichloroethane-d4	*91.3*			**0**	*81-118*	*%REC*	*1*	*02-Jan-2020 13:58*
Surr: 4-Bromofluorobenzene	*89.5*			**0**	*85-114*	*%REC*	*1*	*02-Jan-2020 13:58*
Surr: Dibromofluoromethane	*94.2*			**0**	*80-119*	*%REC*	*1*	*02-Jan-2020 13:58*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*02-Jan-2020 13:58*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**5.43**		**0.200**	**0.500**	**0.500**	**mg/L**	1	05-Jan-2020 01:17
Nitrogen, Nitrate (As N)	**0.115**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	20-Dec-2019 15:18
Sulfate	**46.5**		**0.200**	**0.500**	**0.500**	**mg/L**	1	20-Dec-2019 15:18
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	08-Jan-2020 10:00
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Jan-2020 18:34

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW10-121919_a
Collection Date: 19-Dec-2019 08:35

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	31-Dec-2019 10:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW20-121919
Collection Date: 19-Dec-2019 09:40

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-03
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	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
1,1,1-Trichloroethane	5.0	U	2.0	5.0	10	UG/L	10	02-Jan-2020 16:46
1,1,2,2-Tetrachloroethane	5.0	U	5.0	5.0	10	UG/L	10	02-Jan-2020 16:46
1,1,2-Trichloroethane	**75**		**3.0**	**5.0**	**10**	**UG/L**	10	02-Jan-2020 16:46
1,1-Dichloroethane	**640**		**2.0**	**5.0**	**10**	**UG/L**	10	02-Jan-2020 16:46
1,1-Dichloroethene	**970**		**2.0**	**5.0**	**10**	**UG/L**	10	02-Jan-2020 16:46
1,1-Dichloropropene	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
1,2,3-Trichlorobenzene	5.0	U	4.0	5.0	10	UG/L	10	02-Jan-2020 16:46
1,2,3-Trichloropropane	5.0	U	5.0	5.0	10	UG/L	10	02-Jan-2020 16:46
1,2,4-Trichlorobenzene	5.0	U	5.0	5.0	10	UG/L	10	02-Jan-2020 16:46
1,2,4-Trimethylbenzene	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
1,2-Dibromo-3-chloropropane	5.0	U	2.0	5.0	10	UG/L	10	02-Jan-2020 16:46
1,2-Dibromoethane	5.0	U	2.0	5.0	10	UG/L	10	02-Jan-2020 16:46
1,2-Dichlorobenzene	**17**		**5.0**	**5.0**	**10**	**UG/L**	10	02-Jan-2020 16:46
1,2-Dichloroethane	**19**		**2.0**	**5.0**	**10**	**UG/L**	10	02-Jan-2020 16:46
1,2-Dichloropropane	5.0	U	5.0	5.0	10	UG/L	10	02-Jan-2020 16:46
1,3,5-Trimethylbenzene	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
1,3-Dichlorobenzene	5.0	U	4.0	5.0	10	UG/L	10	02-Jan-2020 16:46
1,3-Dichloropropane	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
1,4-Dichlorobenzene	5.0	U	4.0	5.0	10	UG/L	10	02-Jan-2020 16:46
2,2-Dichloropropane	5.0	U	2.0	5.0	10	UG/L	10	02-Jan-2020 16:46
2-Butanone	10	U	5.0	10	20	UG/L	10	02-Jan-2020 16:46
2-Chlorotoluene	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
2-Hexanone	10	U	10	10	20	UG/L	10	02-Jan-2020 16:46
4-Chlorotoluene	5.0	U	4.0	5.0	10	UG/L	10	02-Jan-2020 16:46
4-Isopropyltoluene	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
4-Methyl-2-pentanone	10	U	7.0	10	20	UG/L	10	02-Jan-2020 16:46
Acetone	10	U	4.0	10	20	UG/L	10	02-Jan-2020 16:46
Benzene	**9.0**	J	**2.0**	**5.0**	**10**	**UG/L**	10	02-Jan-2020 16:46
Bromobenzene	5.0	U	4.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Bromochloromethane	5.0	U	2.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Bromodichloromethane	5.0	U	2.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Bromoform	5.0	U	4.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Bromomethane	5.0	U	4.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Carbon disulfide	10	U	6.0	10	20	UG/L	10	02-Jan-2020 16:46
Carbon tetrachloride	5.0	U	5.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Chlorobenzene	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Chloroethane	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Chloroform	5.0	U	2.0	5.0	10	UG/L	10	02-Jan-2020 16:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW20-121919
Collection Date: 19-Dec-2019 09:40

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	5.0	U	2.0	5.0	10	UG/L	10	02-Jan-2020 16:46
cis-1,2-Dichloroethene	**70**		**2.0**	**5.0**	**10**	**UG/L**	10	02-Jan-2020 16:46
cis-1,3-Dichloropropene	5.0	U	1.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Dibromochloromethane	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Dibromomethane	5.0	U	2.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Dichlorodifluoromethane	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Ethylbenzene	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Hexachlorobutadiene	5.0	U	10	5.0	10	UG/L	10	02-Jan-2020 16:46
Isopropylbenzene	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
m,p-Xylene	10	U	5.0	10	20	UG/L	10	02-Jan-2020 16:46
Methylene chloride	10	U	4.0	10	20	UG/L	10	02-Jan-2020 16:46
n-Butylbenzene	5.0	U	4.0	5.0	10	UG/L	10	02-Jan-2020 16:46
n-Propylbenzene	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Naphthalene	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
o-Xylene	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
sec-Butylbenzene	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Styrene	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
tert-Butylbenzene	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Tetrachloroethene	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Toluene	5.0	U	2.0	5.0	10	UG/L	10	02-Jan-2020 16:46
trans-1,2-Dichloroethene	**9.1**	J	**2.0**	**5.0**	**10**	**UG/L**	10	02-Jan-2020 16:46
trans-1,3-Dichloropropene	5.0	U	2.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Trichloroethene	**99**		**2.0**	**5.0**	**10**	**UG/L**	10	02-Jan-2020 16:46
Trichlorofluoromethane	5.0	U	3.0	5.0	10	UG/L	10	02-Jan-2020 16:46
Vinyl chloride	**2,800**		**20**	**50**	**100**	**UG/L**	100	02-Jan-2020 17:59
Surr: 1,2-Dichloroethane-d4	*99.7*			**0**	*81-118*	*%REC*	*100*	*02-Jan-2020 17:59*
Surr: 1,2-Dichloroethane-d4	*98.2*			**0**	*81-118*	*%REC*	*10*	*02-Jan-2020 16:46*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*10*	*02-Jan-2020 16:46*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*100*	*02-Jan-2020 17:59*
Surr: Dibromofluoromethane	*98.5*			**0**	*80-119*	*%REC*	*100*	*02-Jan-2020 17:59*
Surr: Dibromofluoromethane	*97.5*			**0**	*80-119*	*%REC*	*10*	*02-Jan-2020 16:46*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*10*	*02-Jan-2020 16:46*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*100*	*02-Jan-2020 17:59*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**821**		**4.00**	**10.0**	**10.0**	**mg/L**	20	05-Jan-2020 01:34
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	20-Dec-2019 15:34
Sulfate	**1,170**		**4.00**	**10.0**	**10.0**	**mg/L**	20	20-Dec-2019 15:51
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	31-Dec-2019 10:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW20-121919
Collection Date: 19-Dec-2019 09:40

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	08-Jan-2020 10:00
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Jan-2020 18:34
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	31-Dec-2019 10:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06-121919
Collection Date: 19-Dec-2019 10:35

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-04
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	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 18:23
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 18:23
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	02-Jan-2020 18:23
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 18:23
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	02-Jan-2020 18:23
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 18:23
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	02-Jan-2020 18:23
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06-121919
Collection Date: 19-Dec-2019 10:35

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 18:23
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 18:23
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 18:23
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:23
Surr: 1,2-Dichloroethane-d4	*98.4*			**0**	*81-118*	*%REC*	*1*	*02-Jan-2020 18:23*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*02-Jan-2020 18:23*
Surr: Dibromofluoromethane	*97.6*			**0**	*80-119*	*%REC*	*1*	*02-Jan-2020 18:23*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*02-Jan-2020 18:23*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**935**		**4.00**	**10.0**	**10.0**	**mg/L**	20	05-Jan-2020 01:51
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	20-Dec-2019 16:07
Sulfate	**0.845**		**0.200**	**0.500**	**0.500**	**mg/L**	1	20-Dec-2019 16:07
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	31-Dec-2019 10:33
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	08-Jan-2020 10:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06-121919
Collection Date: 19-Dec-2019 10:35

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Jan-2020 18:34
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	31-Dec-2019 10:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW07-121919
Collection Date: 19-Dec-2019 11:30

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-05
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	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:47
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 18:47
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
1,1-Dichloroethane	**13**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 18:47
1,1-Dichloroethene	**46**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 18:47
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 18:47
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 18:47
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 18:47
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:47
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:47
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 18:47
1,2-Dichloroethane	**0.64**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 18:47
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 18:47
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 18:47
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 18:47
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:47
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 18:47
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	02-Jan-2020 18:47
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 18:47
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	02-Jan-2020 18:47
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 18:47
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	02-Jan-2020 18:47
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW07-121919
Collection Date: 19-Dec-2019 11:30

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:47
cis-1,2-Dichloroethene	**1.2**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 18:47
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 18:47
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 18:47
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 18:47
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:47
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:47
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Trichloroethene	**3.1**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 18:47
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 18:47
Vinyl chloride	**42**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 18:47
Surr: 1,2-Dichloroethane-d4	*98.6*			**0**	*81-118*	*%REC*	*1*	*02-Jan-2020 18:47*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*02-Jan-2020 18:47*
Surr: Dibromofluoromethane	*98.1*			**0**	*80-119*	*%REC*	*1*	*02-Jan-2020 18:47*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*02-Jan-2020 18:47*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**1,770**		**10.0**	**25.0**	**25.0**	**mg/L**	50	05-Jan-2020 02:07
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	20-Dec-2019 16:40
Sulfate	**2,560**		**10.0**	**25.0**	**25.0**	**mg/L**	50	06-Jan-2020 13:34
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	31-Dec-2019 10:33
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	08-Jan-2020 10:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW07-121919
Collection Date: 19-Dec-2019 11:30

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Jan-2020 18:34
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	31-Dec-2019 10:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW16-121919
Collection Date: 19-Dec-2019 12:25

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-06
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	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,1-Dichloroethane	**0.65**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 19:11
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:11
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 19:11
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	02-Jan-2020 19:11
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:11
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	02-Jan-2020 19:11
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 19:11
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	02-Jan-2020 19:11
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW16-121919
Collection Date: 19-Dec-2019 12:25

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 19:11
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 19:11
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:11
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:11
Surr: 1,2-Dichloroethane-d4	*99.7*			**0**	*81-118*	*%REC*	*1*	*02-Jan-2020 19:11*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*02-Jan-2020 19:11*
Surr: Dibromofluoromethane	*97.8*			**0**	*80-119*	*%REC*	*1*	*02-Jan-2020 19:11*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*02-Jan-2020 19:11*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW24-121919
Collection Date: 19-Dec-2019 13:10

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-07
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	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:35
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 19:35
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	02-Jan-2020 19:35
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:35
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	02-Jan-2020 19:35
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 19:35
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	02-Jan-2020 19:35
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW24-121919
Collection Date: 19-Dec-2019 13:10

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 19:35
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 19:35
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:35
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:35
Surr: 1,2-Dichloroethane-d4	*98.5*			**0**	*81-118*	*%REC*	*1*	*02-Jan-2020 19:35*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*02-Jan-2020 19:35*
Surr: Dibromofluoromethane	*98.0*			**0**	*80-119*	*%REC*	*1*	*02-Jan-2020 19:35*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*02-Jan-2020 19:35*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW14-121919
Collection Date: 19-Dec-2019 13:20

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-08
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	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 15:58
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 15:58
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
1,1-Dichloroethane	**9.1**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 15:58
1,1-Dichloroethene	**15**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 15:58
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 15:58
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 15:58
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 15:58
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 15:58
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 15:58
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 15:58
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 15:58
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 15:58
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 15:58
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 15:58
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 15:58
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 15:58
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	02-Jan-2020 15:58
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 15:58
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	02-Jan-2020 15:58
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 15:58
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	02-Jan-2020 15:58
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 15:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW14-121919
Collection Date: 19-Dec-2019 13:20

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 15:58
cis-1,2-Dichloroethene	**3.7**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 15:58
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 15:58
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 15:58
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 15:58
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 15:58
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 15:58
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Trichloroethene	**11**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 15:58
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 15:58
Vinyl chloride	**0.75**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 15:58
Surr: 1,2-Dichloroethane-d4	*84.9*			**0**	*81-118*	*%REC*	*1*	*02-Jan-2020 15:58*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*02-Jan-2020 15:58*
Surr: Dibromofluoromethane	*83.3*			**0**	*80-119*	*%REC*	*1*	*02-Jan-2020 15:58*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*02-Jan-2020 15:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 19-Dec-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-09
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	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:10
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 13:10
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	02-Jan-2020 13:10
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:10
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	02-Jan-2020 13:10
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 13:10
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	02-Jan-2020 13:10
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 19-Dec-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19121155
Lab ID:HS19121155-09
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 13:10
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 13:10
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 13:10
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 13:10
Surr: 1,2-Dichloroethane-d4	*93.1*			**0**	*81-118*	*%REC*	*1*	*02-Jan-2020 13:10*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*02-Jan-2020 13:10*
Surr: Dibromofluoromethane	*95.0*			**0**	*80-119*	*%REC*	*1*	*02-Jan-2020 13:10*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*02-Jan-2020 13:10*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19121155

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R353393 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS19121155-01	35AWW10-121919	19 Dec 2019 08:35			20 Dec 2019 14:28	1
HS19121155-02	35AWW10-121919_a	19 Dec 2019 08:35			20 Dec 2019 15:18	1
HS19121155-03	35AWW20-121919	19 Dec 2019 09:40			20 Dec 2019 15:51	20
HS19121155-03	35AWW20-121919	19 Dec 2019 09:40			20 Dec 2019 15:34	1
HS19121155-04	35AWW06-121919	19 Dec 2019 10:35			20 Dec 2019 16:07	1
HS19121155-05	LHSMW07-121919	19 Dec 2019 11:30			20 Dec 2019 16:40	5
Batch ID: R353574 (0)	**Test Name :** SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS				**Matrix:** Groundwater	
HS19121155-01	35AWW10-121919	19 Dec 2019 08:35			31 Dec 2019 10:18	1
HS19121155-02	35AWW10-121919_a	19 Dec 2019 08:35			31 Dec 2019 10:18	1
HS19121155-03	35AWW20-121919	19 Dec 2019 09:40			31 Dec 2019 10:18	1
HS19121155-04	35AWW06-121919	19 Dec 2019 10:35			31 Dec 2019 10:18	1
HS19121155-05	LHSMW07-121919	19 Dec 2019 11:30			31 Dec 2019 10:18	1
Batch ID: R353580 (0)	**Test Name :** SUBCONTRACT ANALYSIS - DHC/DHB				**Matrix:** Groundwater	
HS19121155-03	35AWW20-121919	19 Dec 2019 09:40			31 Dec 2019 10:33	1
HS19121155-04	35AWW06-121919	19 Dec 2019 10:35			31 Dec 2019 10:33	1
HS19121155-05	LHSMW07-121919	19 Dec 2019 11:30			31 Dec 2019 10:33	1
Batch ID: R353734 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS19121155-09	Trip Blank	19 Dec 2019 00:00			02 Jan 2020 13:10	1
Batch ID: R353734 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS19121155-01	35AWW10-121919	19 Dec 2019 08:35			02 Jan 2020 13:34	1
HS19121155-02	35AWW10-121919_a	19 Dec 2019 08:35			02 Jan 2020 13:58	1
HS19121155-03	35AWW20-121919	19 Dec 2019 09:40			02 Jan 2020 17:59	100
HS19121155-03	35AWW20-121919	19 Dec 2019 09:40			02 Jan 2020 16:46	10
HS19121155-04	35AWW06-121919	19 Dec 2019 10:35			02 Jan 2020 18:23	1
HS19121155-05	LHSMW07-121919	19 Dec 2019 11:30			02 Jan 2020 18:47	1
HS19121155-06	35AWW16-121919	19 Dec 2019 12:25			02 Jan 2020 19:11	1
HS19121155-07	35AWW24-121919	19 Dec 2019 13:10			02 Jan 2020 19:35	1
HS19121155-08	35AWW14-121919	19 Dec 2019 13:20			02 Jan 2020 15:58	1
Batch ID: R353817 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS19121155-01	35AWW10-121919	19 Dec 2019 08:35			03 Jan 2020 18:34	1
HS19121155-02	35AWW10-121919_a	19 Dec 2019 08:35			03 Jan 2020 18:34	1
HS19121155-03	35AWW20-121919	19 Dec 2019 09:40			03 Jan 2020 18:34	1
HS19121155-04	35AWW06-121919	19 Dec 2019 10:35			03 Jan 2020 18:34	1
HS19121155-05	LHSMW07-121919	19 Dec 2019 11:30			03 Jan 2020 18:34	1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19121155

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R353865 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS19121155-01	35AWW10-121919	19 Dec 2019 08:35			05 Jan 2020 00:28	1
HS19121155-02	35AWW10-121919_a	19 Dec 2019 08:35			05 Jan 2020 01:17	1
HS19121155-03	35AWW20-121919	19 Dec 2019 09:40			05 Jan 2020 01:34	20
HS19121155-04	35AWW06-121919	19 Dec 2019 10:35			05 Jan 2020 01:51	20
HS19121155-05	LHSMW07-121919	19 Dec 2019 11:30			05 Jan 2020 02:07	50
Batch ID: R353906 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS19121155-05	LHSMW07-121919	19 Dec 2019 11:30			06 Jan 2020 13:34	50
Batch ID: R354011 (0)	**Test Name :** SUBCONTRACT ANALYSIS - RSK				**Matrix:** Groundwater	
HS19121155-01	35AWW10-121919	19 Dec 2019 08:35			08 Jan 2020 10:00	1
HS19121155-02	35AWW10-121919_a	19 Dec 2019 08:35			08 Jan 2020 10:00	1
HS19121155-03	35AWW20-121919	19 Dec 2019 09:40			08 Jan 2020 10:00	1
HS19121155-04	35AWW06-121919	19 Dec 2019 10:35			08 Jan 2020 10:00	1
HS19121155-05	LHSMW07-121919	19 Dec 2019 11:30			08 Jan 2020 10:00	1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19121155

QC BATCH REPORT

Batch ID: R353734 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-200102** Units: **UG/L** Analysis Date: **02-Jan-2020 12:46**
Client ID: Run ID: **VOA6_353734** SeqNo: **5421202** 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	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19121155

QC BATCH REPORT

Batch ID: R353734 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-200102** Units: **UG/L** Analysis Date: **02-Jan-2020 12:46**
Client ID: Run ID: **VOA6_353734** SeqNo: **5421202** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	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	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	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	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*46.95*	*1.0*	*50*	*0*	*93.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.6*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*47.85*	*1.0*	*50*	*0*	*95.7*	*80 - 119*				
Surr: Toluene-d8	*51.33*	*1.0*	*50*	*0*	*103*	*89 - 112*				

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19121155

QC BATCH REPORT

Batch ID: R353734 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-200102** Units: **UG/L** Analysis Date: **02-Jan-2020 11:58**
Client ID: Run ID: **VOA6_353734** SeqNo: **5421201** 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	20.51	1.0	20	0	103	78 - 124				
1,1,1-Trichloroethane	20.78	1.0	20	0	104	74 - 131				
1,1,2,2-Tetrachloroethane	21.78	1.0	20	0	109	71 - 121				
1,1,2-Trichloroethane	21.13	1.0	20	0	106	80 - 119				
1,1-Dichloroethane	23.41	1.0	20	0	117	77 - 125				
1,1-Dichloroethene	18.5	1.0	20	0	92.5	71 - 131				
1,1-Dichloropropene	21.22	1.0	20	0	106	78 - 125				
1,2,3-Trichlorobenzene	26.79	1.0	20	0	134	69 - 129				S
1,2,3-Trichloropropane	22.17	1.0	20	0	111	73 - 122				
1,2,4-Trichlorobenzene	23.14	1.0	20	0	116	69 - 130				
1,2,4-Trimethylbenzene	22.04	1.0	20	0	110	76 - 124				
1,2-Dibromo-3-chloropropane	20.77	1.0	20	0	104	62 - 128				
1,2-Dibromoethane	20.49	1.0	20	0	102	77 - 121				
1,2-Dichlorobenzene	20.59	1.0	20	0	103	80 - 119				
1,2-Dichloroethane	20.41	1.0	20	0	102	73 - 128				
1,2-Dichloropropane	21.89	1.0	20	0	109	78 - 122				
1,3,5-Trimethylbenzene	22.48	1.0	20	0	112	75 - 124				
1,3-Dichlorobenzene	20.89	1.0	20	0	104	80 - 119				
1,3-Dichloropropane	21.56	1.0	20	0	108	80 - 119				
1,4-Dichlorobenzene	20.56	1.0	20	0	103	79 - 118				
2,2-Dichloropropane	21.09	1.0	20	0	105	60 - 139				
2-Butanone	45.04	2.0	40	0	113	56 - 143				
2-Chlorotoluene	23.4	1.0	20	0	117	79 - 122				
2-Hexanone	41.42	2.0	40	0	104	57 - 139				
4-Chlorotoluene	22.1	1.0	20	0	111	78 - 122				
4-Isopropyltoluene	21.78	1.0	20	0	109	77 - 127				
4-Methyl-2-pentanone	41.53	2.0	40	0	104	67 - 130				
Acetone	45.36	2.0	40	0	113	39 - 160				
Benzene	22.85	1.0	20	0	114	79 - 120				
Bromobenzene	21.04	1.0	20	0	105	80 - 120				
Bromochloromethane	21.54	1.0	20	0	108	78 - 123				
Bromodichloromethane	20.7	1.0	20	0	104	79 - 125				
Bromoform	19.48	1.0	20	0	97.4	66 - 130				
Bromomethane	15.08	1.0	20	0	75.4	53 - 141				

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19121155

QC BATCH REPORT

Batch ID: R353734 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-200102** Units: **UG/L** Analysis Date: **02-Jan-2020 11:58**
Client ID: Run ID: **VOA6_353734** SeqNo: **5421201** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	47.72	2.0	40	0	119	64 - 133				
Carbon tetrachloride	19.13	1.0	20	0	95.6	72 - 136				
Chlorobenzene	20.34	1.0	20	0	102	82 - 118				
Chloroethane	19.4	1.0	20	0	97.0	60 - 138				
Chloroform	20.49	1.0	20	0	102	79 - 124				
Chloromethane	19.08	1.0	20	0	95.4	50 - 139				
cis-1,2-Dichloroethene	22.6	1.0	20	0	113	78 - 123				
cis-1,3-Dichloropropene	22.01	1.0	20	0	110	75 - 124				
Dibromochloromethane	20.37	1.0	20	0	102	74 - 126				
Dibromomethane	20.47	1.0	20	0	102	79 - 123				
Dichlorodifluoromethane	21.42	1.0	20	0	107	32 - 152				
Ethylbenzene	21.13	1.0	20	0	106	79 - 121				
Hexachlorobutadiene	20.81	1.0	20	0	104	66 - 134				
Isopropylbenzene	20.72	1.0	20	0	104	72 - 131				
m,p-Xylene	42.02	2.0	40	0	105	80 - 121				
Methylene chloride	22.02	2.0	20	0	110	74 - 124				
Naphthalene	21.46	1.0	20	0	107	61 - 128				
n-Butylbenzene	21.66	1.0	20	0	108	75 - 128				
n-Propylbenzene	22.54	1.0	20	0	113	76 - 126				
o-Xylene	20.89	1.0	20	0	104	78 - 122				
sec-Butylbenzene	21.89	1.0	20	0	109	77 - 126				
Styrene	21.01	1.0	20	0	105	78 - 123				
tert-Butylbenzene	21.97	1.0	20	0	110	78 - 124				
Tetrachloroethene	19.33	1.0	20	0	96.6	74 - 129				
Toluene	21.62	1.0	20	0	108	80 - 121				
trans-1,2-Dichloroethene	22.47	1.0	20	0	112	75 - 124				
trans-1,3-Dichloropropene	21.64	1.0	20	0	108	73 - 127				
Trichloroethene	20.57	1.0	20	0	103	79 - 123				
Trichlorofluoromethane	18.39	1.0	20	0	91.9	65 - 141				
Vinyl chloride	21.77	1.0	20	0	109	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.11*	*1.0*	*50*	*0*	*104*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.92*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*51.17*	*1.0*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*49.02*	*1.0*	*50*	*0*	*98.0*	*89 - 112*				

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19121155

QC BATCH REPORT

Batch ID: R353734 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS19121257-01MS** Units: **UG/L** Analysis Date: **02-Jan-2020 17:11**
Client ID: Run ID: **VOA6_353734** SeqNo: **5422710** 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	19.85	1.0	20	0	99.2	78 - 124				
1,1,1-Trichloroethane	19.9	1.0	20	0	99.5	74 - 131				
1,1,2,2-Tetrachloroethane	21.6	1.0	20	0	108	71 - 121				
1,1,2-Trichloroethane	20.5	1.0	20	0	102	80 - 119				
1,1-Dichloroethane	21.56	1.0	20	0	108	77 - 125				
1,1-Dichloroethene	18.21	1.0	20	0	91.1	71 - 131				
1,1-Dichloropropene	21	1.0	20	0	105	78 - 125				
1,2,3-Trichlorobenzene	25.55	1.0	20	0	128	69 - 129				
1,2,3-Trichloropropane	21.96	1.0	20	0	110	73 - 122				
1,2,4-Trichlorobenzene	22.84	1.0	20	0	114	69 - 130				
1,2,4-Trimethylbenzene	22.78	1.0	20	0	114	76 - 124				
1,2-Dibromo-3-chloropropane	20.7	1.0	20	0	103	62 - 128				
1,2-Dibromoethane	19.57	1.0	20	0	97.9	77 - 121				
1,2-Dichlorobenzene	20.61	1.0	20	0	103	80 - 119				
1,2-Dichloroethane	19.09	1.0	20	0	95.5	73 - 128				
1,2-Dichloropropane	20.85	1.0	20	0	104	78 - 122				
1,3,5-Trimethylbenzene	23.37	1.0	20	0	117	75 - 124				
1,3-Dichlorobenzene	21.65	1.0	20	0	108	80 - 119				
1,3-Dichloropropane	20.68	1.0	20	0	103	80 - 119				
1,4-Dichlorobenzene	20.88	1.0	20	0	104	79 - 118				
2,2-Dichloropropane	20.13	1.0	20	0	101	60 - 139				
2-Butanone	37.73	2.0	40	0	94.3	56 - 143				
2-Chlorotoluene	24.36	1.0	20	0	122	79 - 122				
2-Hexanone	39.14	2.0	40	0	97.9	57 - 139				
4-Chlorotoluene	22.94	1.0	20	0	115	78 - 122				
4-Isopropyltoluene	23.16	1.0	20	0	116	77 - 127				
4-Methyl-2-pentanone	41.97	2.0	40	0	105	67 - 130				
Acetone	27.69	2.0	40	0	69.2	39 - 160				
Benzene	21.47	1.0	20	0	107	79 - 120				
Bromobenzene	21.32	1.0	20	0	107	80 - 120				
Bromochloromethane	18.92	1.0	20	0	94.6	78 - 123				
Bromodichloromethane	19.15	1.0	20	0	95.7	79 - 125				
Bromoform	18.43	1.0	20	0	92.2	66 - 130				
Bromomethane	12.02	1.0	20	0	60.1	53 - 141				

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19121155

QC BATCH REPORT

Batch ID: R353734 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19121257-01MS** Units: **UG/L** Analysis Date: **02-Jan-2020 17:11**
Client ID: Run ID: **VOA6_353734** SeqNo: **5422710** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	46.13	2.0	40	0	115	64 - 133				
Carbon tetrachloride	19.34	1.0	20	0	96.7	72 - 136				
Chlorobenzene	19.95	1.0	20	0	99.8	82 - 118				
Chloroethane	18.38	1.0	20	0	91.9	60 - 138				
Chloroform	18.87	1.0	20	0	94.4	79 - 124				
Chloromethane	18.66	1.0	20	0	93.3	50 - 139				
cis-1,2-Dichloroethene	21.05	1.0	20	0	105	78 - 123				
cis-1,3-Dichloropropene	20.5	1.0	20	0	102	75 - 124				
Dibromochloromethane	19.65	1.0	20	0	98.3	74 - 126				
Dibromomethane	18.61	1.0	20	0	93.0	79 - 123				
Dichlorodifluoromethane	22.57	1.0	20	0	113	32 - 152				
Ethylbenzene	21.03	1.0	20	0	105	79 - 121				
Hexachlorobutadiene	20.68	1.0	20	0	103	66 - 134				
Isopropylbenzene	21.08	1.0	20	0	105	72 - 131				
m,p-Xylene	41.88	2.0	40	0	105	80 - 121				
Methylene chloride	19.86	2.0	20	0	99.3	74 - 124				
Naphthalene	21.13	1.0	20	0	106	61 - 128				
n-Butylbenzene	23.26	1.0	20	0	116	75 - 128				
n-Propylbenzene	23.99	1.0	20	0	120	76 - 126				
o-Xylene	20.42	1.0	20	0	102	78 - 122				
sec-Butylbenzene	23.75	1.0	20	0	119	77 - 126				
Styrene	20.08	1.0	20	0	100	78 - 123				
tert-Butylbenzene	23.59	1.0	20	0	118	78 - 124				
Tetrachloroethene	19.67	1.0	20	0	98.3	74 - 129				
Toluene	21.49	1.0	20	0	107	80 - 121				
trans-1,2-Dichloroethene	21.24	1.0	20	0	106	75 - 124				
trans-1,3-Dichloropropene	19.8	1.0	20	0	99.0	73 - 127				
Trichloroethene	19.76	1.0	20	0	98.8	79 - 123				
Trichlorofluoromethane	18.46	1.0	20	0	92.3	65 - 141				
Vinyl chloride	22.06	1.0	20	0	110	58 - 137				
Surr: 1,2-Dichloroethane-d4	*48.37*	*1.0*	*50*	*0*	*96.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.75*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*48.75*	*1.0*	*50*	*0*	*97.5*	*80 - 119*				
Surr: Toluene-d8	*51.66*	*1.0*	*50*	*0*	*103*	*89 - 112*				

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19121155

QC BATCH REPORT

Batch ID: R353734 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19121257-01MSD** Units: **UG/L** Analysis Date: **02-Jan-2020 17:35**
Client ID: Run ID: **VOA6_353734** SeqNo: **5422711** 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	19.53	1.0	20	0	97.6	78 - 124	19.85	1.63	20	
1,1,1-Trichloroethane	19.2	1.0	20	0	96.0	74 - 131	19.9	3.56	20	
1,1,2,2-Tetrachloroethane	21.21	1.0	20	0	106	71 - 121	21.6	1.84	20	
1,1,2-Trichloroethane	19.88	1.0	20	0	99.4	80 - 119	20.5	3.07	20	
1,1-Dichloroethane	20.78	1.0	20	0	104	77 - 125	21.56	3.7	20	
1,1-Dichloroethene	17.3	1.0	20	0	86.5	71 - 131	18.21	5.16	20	
1,1-Dichloropropene	20.04	1.0	20	0	100	78 - 125	21	4.71	20	
1,2,3-Trichlorobenzene	21.42	1.0	20	0	107	69 - 129	25.55	17.6	20	
1,2,3-Trichloropropane	21.47	1.0	20	0	107	73 - 122	21.96	2.28	20	
1,2,4-Trichlorobenzene	19.08	1.0	20	0	95.4	69 - 130	22.84	17.9	20	
1,2,4-Trimethylbenzene	22.19	1.0	20	0	111	76 - 124	22.78	2.6	20	
1,2-Dibromo-3-chloropropane	18.93	1.0	20	0	94.7	62 - 128	20.7	8.91	20	
1,2-Dibromoethane	19.19	1.0	20	0	95.9	77 - 121	19.57	1.97	20	
1,2-Dichlorobenzene	20.22	1.0	20	0	101	80 - 119	20.61	1.9	20	
1,2-Dichloroethane	18.77	1.0	20	0	93.9	73 - 128	19.09	1.7	20	
1,2-Dichloropropane	20.04	1.0	20	0	100	78 - 122	20.85	3.97	20	
1,3,5-Trimethylbenzene	22.87	1.0	20	0	114	75 - 124	23.37	2.15	20	
1,3-Dichlorobenzene	20.86	1.0	20	0	104	80 - 119	21.65	3.72	20	
1,3-Dichloropropane	20.38	1.0	20	0	102	80 - 119	20.68	1.45	20	
1,4-Dichlorobenzene	20.39	1.0	20	0	102	79 - 118	20.88	2.38	20	
2,2-Dichloropropane	19.29	1.0	20	0	96.4	60 - 139	20.13	4.3	20	
2-Butanone	36.76	2.0	40	0	91.9	56 - 143	37.73	2.62	20	
2-Chlorotoluene	23.67	1.0	20	0	118	79 - 122	24.36	2.91	20	
2-Hexanone	38.23	2.0	40	0	95.6	57 - 139	39.14	2.35	20	
4-Chlorotoluene	22.46	1.0	20	0	112	78 - 122	22.94	2.14	20	
4-Isopropyltoluene	22.35	1.0	20	0	112	77 - 127	23.16	3.57	20	
4-Methyl-2-pentanone	41.18	2.0	40	0	103	67 - 130	41.97	1.91	20	
Acetone	26.05	2.0	40	0	65.1	39 - 160	27.69	6.1	20	
Benzene	20.61	1.0	20	0	103	79 - 120	21.47	4.1	20	
Bromobenzene	21.11	1.0	20	0	106	80 - 120	21.32	1	20	
Bromochloromethane	18.44	1.0	20	0	92.2	78 - 123	18.92	2.55	20	
Bromodichloromethane	18.93	1.0	20	0	94.7	79 - 125	19.15	1.13	20	
Bromoform	17.97	1.0	20	0	89.8	66 - 130	18.43	2.55	20	
Bromomethane	11.7	1.0	20	0	58.5	53 - 141	12.02	2.7	20	

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19121155

QC BATCH REPORT

Batch ID: R353734 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19121257-01MSD** Units: **UG/L** Analysis Date: **02-Jan-2020 17:35**
Client ID: Run ID: **VOA6_353734** SeqNo: **5422711** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	43.46	2.0	40	0	109	64 - 133	46.13	5.95	20	
Carbon tetrachloride	18.58	1.0	20	0	92.9	72 - 136	19.34	3.99	20	
Chlorobenzene	19.29	1.0	20	0	96.5	82 - 118	19.95	3.36	20	
Chloroethane	17.86	1.0	20	0	89.3	60 - 138	18.38	2.85	20	
Chloroform	18.41	1.0	20	0	92.1	79 - 124	18.87	2.48	20	
Chloromethane	17.73	1.0	20	0	88.7	50 - 139	18.66	5.11	20	
cis-1,2-Dichloroethene	19.97	1.0	20	0	99.8	78 - 123	21.05	5.27	20	
cis-1,3-Dichloropropene	19.78	1.0	20	0	98.9	75 - 124	20.5	3.54	20	
Dibromochloromethane	19.1	1.0	20	0	95.5	74 - 126	19.65	2.88	20	
Dibromomethane	18.25	1.0	20	0	91.3	79 - 123	18.61	1.92	20	
Dichlorodifluoromethane	20.89	1.0	20	0	104	32 - 152	22.57	7.74	20	
Ethylbenzene	20.52	1.0	20	0	103	79 - 121	21.03	2.44	20	
Hexachlorobutadiene	16.58	1.0	20	0	82.9	66 - 134	20.68	22	20	R
Isopropylbenzene	20.46	1.0	20	0	102	72 - 131	21.08	2.98	20	
m,p-Xylene	40.86	2.0	40	0	102	80 - 121	41.88	2.47	20	
Methylene chloride	19.05	2.0	20	0	95.3	74 - 124	19.86	4.16	20	
Naphthalene	19.35	1.0	20	0	96.7	61 - 128	21.13	8.82	20	
n-Butylbenzene	22.5	1.0	20	0	113	75 - 128	23.26	3.3	20	
n-Propylbenzene	23.25	1.0	20	0	116	76 - 126	23.99	3.13	20	
o-Xylene	20.08	1.0	20	0	100	78 - 122	20.42	1.68	20	
sec-Butylbenzene	23.08	1.0	20	0	115	77 - 126	23.75	2.85	20	
Styrene	19.82	1.0	20	0	99.1	78 - 123	20.08	1.32	20	
tert-Butylbenzene	22.73	1.0	20	0	114	78 - 124	23.59	3.7	20	
Tetrachloroethene	18.97	1.0	20	0	94.8	74 - 129	19.67	3.61	20	
Toluene	20.73	1.0	20	0	104	80 - 121	21.49	3.58	20	
trans-1,2-Dichloroethene	20.05	1.0	20	0	100	75 - 124	21.24	5.77	20	
trans-1,3-Dichloropropene	19.47	1.0	20	0	97.3	73 - 127	19.8	1.68	20	
Trichloroethene	19.21	1.0	20	0	96.0	79 - 123	19.76	2.83	20	
Trichlorofluoromethane	17.43	1.0	20	0	87.2	65 - 141	18.46	5.69	20	
Vinyl chloride	20.19	1.0	20	0	101	58 - 137	22.06	8.85	20	
Surr: 1,2-Dichloroethane-d4	*48.06*	*1.0*	*50*	*0*	*96.1*	*81 - 118*	*48.37*	*0.655*	*20*	
Surr: 4-Bromofluorobenzene	*50.59*	*1.0*	*50*	*0*	*101*	*85 - 114*	*50.75*	*0.332*	*20*	
Surr: Dibromofluoromethane	*48.53*	*1.0*	*50*	*0*	*97.1*	*80 - 119*	*48.75*	*0.459*	*20*	
Surr: Toluene-d8	*51.47*	*1.0*	*50*	*0*	*103*	*89 - 112*	*51.66*	*0.38*	*20*	

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19121155

QC BATCH REPORT

Batch ID: R353734 (0)	Instrument: VOA6	Method: VOLATILES ORGANICS BY METHOD 8260C

The following samples were analyzed in this batch:

HS19121155-01	HS19121155-02	HS19121155-03	HS19121155-04
HS19121155-05	HS19121155-06	HS19121155-07	HS19121155-08
HS19121155-09			

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19121155

QC BATCH REPORT

Batch ID: R353393 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **WBLKW1-122019** Units: **mg/L** Analysis Date: **20-Dec-2019 11:25**
Client ID: Run ID: **ICS-Integrion_353393** SeqNo: **5412385** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW1-122019** Units: **mg/L** Analysis Date: **20-Dec-2019 11:42**
Client ID: Run ID: **ICS-Integrion_353393** SeqNo: **5412386** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	4.044	0.100	4	0	101	80 - 120				
Sulfate	19.27	0.500	20	0	96.3	80 - 120				

LCSD Sample ID: **WLCSDW1-122019** Units: **mg/L** Analysis Date: **20-Dec-2019 11:58**
Client ID: Run ID: **ICS-Integrion_353393** SeqNo: **5412387** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	3.987	0.100	4	0	99.7	80 - 120	4.044	1.42	20	
Sulfate	19.04	0.500	20	0	95.2	80 - 120	19.27	1.19	20	

MS Sample ID: **HS19121155-01MS** Units: **mg/L** Analysis Date: **20-Dec-2019 14:44**
Client ID: **35AWW10-121919** Run ID: **ICS-Integrion_353393** SeqNo: **5412391** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	2.087	0.100	2	0.1151	98.6	80 - 120				
Sulfate	54.38	0.500	10	46.05	83.3	80 - 120				O

MSD Sample ID: **HS19121155-01MSD** Units: **mg/L** Analysis Date: **20-Dec-2019 15:01**
Client ID: **35AWW10-121919** Run ID: **ICS-Integrion_353393** SeqNo: **5412392** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	2.11	0.100	2	0.1151	99.8	80 - 120	2.087	1.14	20	
Sulfate	54.78	0.500	10	46.05	87.2	80 - 120	54.38	0.718	20	O

The following samples were analyzed in this batch: HS19121155-01 HS19121155-02 HS19121155-03 HS19121155-04 HS19121155-05

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19121155

QC BATCH REPORT

Batch ID: R353865 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **WBLKW3-010320** Units: **mg/L** Analysis Date: **04-Jan-2020 18:39**
Client ID: Run ID: **ICS-Integrion_353865** SeqNo: **5424754** 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

LCS Sample ID: **WLCSW3-010320** Units: **mg/L** Analysis Date: **04-Jan-2020 18:55**
Client ID: Run ID: **ICS-Integrion_353865** SeqNo: **5424755** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.76	0.500	20	0	98.8	80 - 120				

LCSD Sample ID: **WLCSDW3-010320** Units: **mg/L** Analysis Date: **04-Jan-2020 19:12**
Client ID: Run ID: **ICS-Integrion_353865** SeqNo: **5424756** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.54	0.500	20	0	97.7	80 - 120	19.76	1.08	20	

MS Sample ID: **HS19121121-01MS** Units: **mg/L** Analysis Date: **04-Jan-2020 19:45**
Client ID: Run ID: **ICS-Integrion_353865** SeqNo: **5424758** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	35.1	0.500	10	25.83	92.7	80 - 120				

MSD Sample ID: **HS19121121-01MSD** Units: **mg/L** Analysis Date: **04-Jan-2020 20:02**
Client ID: Run ID: **ICS-Integrion_353865** SeqNo: **5424759** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	35.26	0.500	10	25.83	94.3	80 - 120	35.1	0.475	20	

The following samples were analyzed in this batch: HS19121155-01 HS19121155-02 HS19121155-03 HS19121155-04 HS19121155-05

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS19121155

QC BATCH REPORT

Batch ID: R353906 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **WBLKW3-010320** Units: **mg/L** Analysis Date: **06-Jan-2020 11:22**
Client ID: Run ID: **ICS-Integrion_353906** SeqNo: **5425528** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW3-010320** Units: **mg/L** Analysis Date: **06-Jan-2020 11:38**
Client ID: Run ID: **ICS-Integrion_353906** SeqNo: **5425529** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	19.3	0.500	20	0	96.5	80 - 120				

LCSD Sample ID: **WLCSDW3-010320** Units: **mg/L** Analysis Date: **06-Jan-2020 11:55**
Client ID: Run ID: **ICS-Integrion_353906** SeqNo: **5425530** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	19.03	0.500	20	0	95.2	80 - 120	19.3	1.39	20	

MS Sample ID: **HS19121121-01MS** Units: **mg/L** Analysis Date: **06-Jan-2020 12:28**
Client ID: Run ID: **ICS-Integrion_353906** SeqNo: **5425532** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	36.04	0.500	10	27.17	88.7	80 - 120				

MSD Sample ID: **HS19121121-01MSD** Units: **mg/L** Analysis Date: **06-Jan-2020 12:45**
Client ID: Run ID: **ICS-Integrion_353906** SeqNo: **5425533** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	36.27	0.500	10	27.17	91.0	80 - 120	36.04	0.634	20	

The following samples were analyzed in this batch: HS19121155-05

Revision: 1

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: **HS19121155**

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

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Houston, US Date: 10-Jan-20

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 10-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS19121155

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19121155-01	35AWW10-121919	Login	12/20/2019 12:34:27 PM	JRM	MET049
HS19121155-01	35AWW10-121919	Login	12/20/2019 12:34:27 PM	JRM	WET338
HS19121155-01	35AWW10-121919	Login	12/20/2019 12:34:27 PM	JRM	VOA187
HS19121155-01	35AWW10-121919	Login	12/20/2019 12:34:27 PM	JRM	Sub
HS19121155-01	35AWW10-121919	Login	12/20/2019 12:34:27 PM	JRM	Sub

00997277

ALS Houston, US Date: 10-Jan-20

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19121155
Date/Time Received: **20-Dec-2019 10:03**
Received by: **JRM**

Checklist completed by: *Paresh M. Giga* eSignature 20-Dec-2019 Date
Reviewed by: *Corey Grandits* eSignature 20-Dec-2019 Date

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 ☐	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):	1.4°C / 1.4°C UC/C	IR25	
Cooler(s)/Kit(s):	54046		
Date/Time sample(s) sent to storage:	12/20/19 12:50		
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:

Bhate

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	MEE	TOC	Carbon Dioxide	Anions						Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35AWW10_121919	19 Dec 2019	0835	-	N		WG	11	X	X	X	X	X									
35AWW10_121919_a	19 Dec 2019	0835	-	FD		WG	11	X	X	X	X	X									
35AWW20_121919	19 Dec 2019	0940	-	N		WG	11	X	X	X	X	X									
35AWW06_121919	19 Dec 2019	1035		N		WG	11	X	X	X	X	X									
35HSmw07_121919	19 Dec 2019	1130		N		WG	11	X	X	X	X	X									
35AWW16_121919	19 Dec 2019	1225	-	N		WG	3	X													
35AWW24_121919	19 Dec 2019	1310	-	N		WG	3	X													
35AWW14_121919	19 Dec 2019	1320	-	N		WG	3	X													
TRIP BLANK	19 Dec 2019		-	TB		W	2	X													
			-																		
			-																		

Sample Analysis Requested (5) | Quality Assurance Samples (6)

COMMENTS: ____

HS19121155

Bhate Environmental Associates, Inc.
LHAAP-58

Custody Transfers Prior to Receipt By Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	12/19/19	1430	1. Jimmy	12/20/19	10:03
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

____ Fed Ex ____ Airbill Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

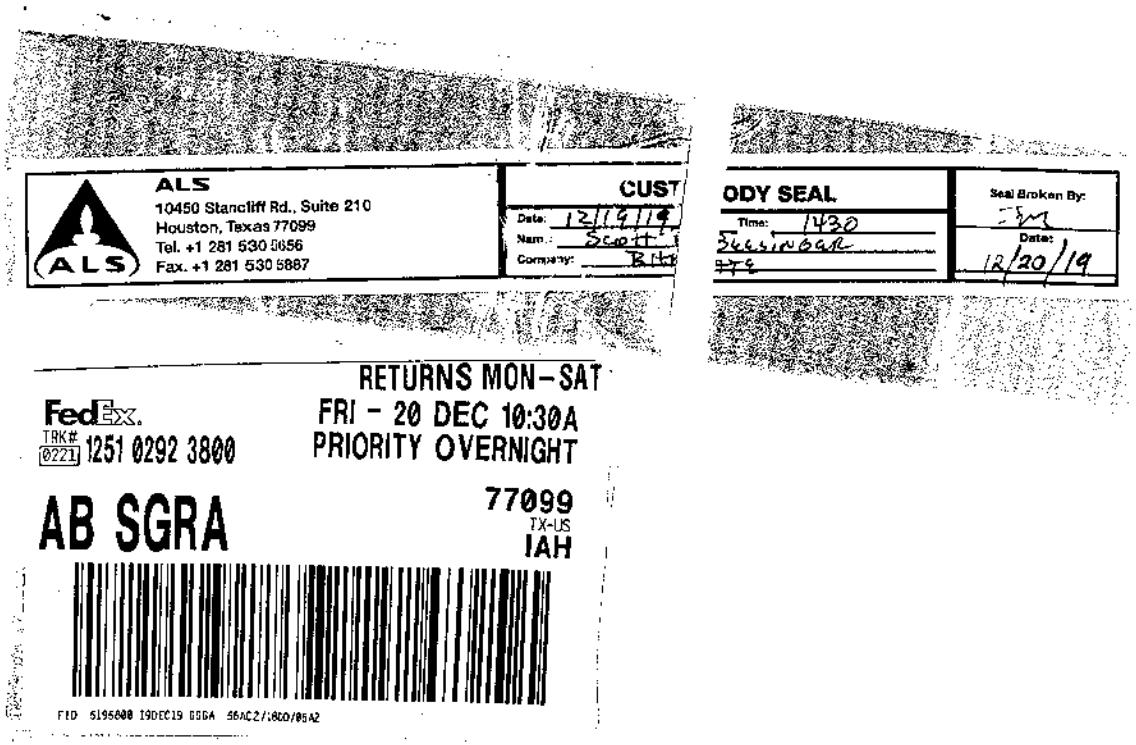
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10103901 in the Equipment Blank Lot Control

Cooler 54046
Temp 1.4
IR 1
CF 0.0



ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUST
Date: 12/19/19
Nam: Scott
Company: Blitz

ODY SEAL
Time: 1430
Seal Broken By:
Date: 12/20/19

RETURNS MON-SAT
FRI - 20 DEC 10:30A
PRIORITY OVERNIGHT

FedEx.
TRK# 0221 1251 0292 3800

AB SGRA

77099
TX-US
IAH

FID 5195808 19DEC19 08GA 56AC2/18D0/05A2

ALS Environmental
ALS Group USA, Corp
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Kelso, WA 98626
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www.alsglobal.com

January 03, 2020

Analytical Report for Service Request No: K1912042

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

RE: HS19121155

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory December 21, 2019
For your reference, these analyses have been assigned our service request number **K1912042.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636-1 068
www.alsglobal.com

ALS Environmental

Client: ALS Environmental - US
Project: HS19121155
Sample Matrix: Ground Water

Service Request: K1912042
Date Received: 12/21/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Five ground water samples were received for analysis at ALS Environmental on 12/21/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

Method SM 5310 C, 01/01/2020: The Relative Percent Difference (RPD) for the replicate analysis of Total Organic Carbon in sample LHSM07-121919 was outside the normal ALS control limits (14% RPD versus a control limit of 10%). The associated QA/QC results (e.g. control sample, method blank, calibration standards, etc.) indicate the analysis was in control. No further corrective action was appropriate.

Approved by Kelley Lovejoy Date 01/03/2020

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636-1 068
www.alsglobal.com

K1912042

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: **Texas** **COC ID:** **12927**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

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:	HS19121155
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS19121155-01**	**35AWW10-121919**	**Groundwater**	**19 Dec 2019 08:35**
	TOC Analysis for DOD Level IV/Excel EDD			31 Dec 2019
2.	**HS19121155-02**	**35AWW10-121919_a**	**Groundwater**	**19 Dec 2019 08:35**
	TOC Analysis for DOD Level IV/Excel EDD			31 Dec 2019
3.	**HS19121155-03**	**35AWW20-121919**	**Groundwater**	**19 Dec 2019 09:40**
	TOC Analysis for DOD Level IV/Excel EDD			31 Dec 2019
4.	**HS19121155-04**	**35AWW06-121919**	**Groundwater**	**19 Dec 2019 10:35**
	TOC Analysis for DOD Level IV/Excel EDD			31 Dec 2019
5.	**HS19121155-05**	**LHSMW07-121919**	**Groundwater**	**19 Dec 2019 11:30**
	TOC Analysis for DOD Level IV/Excel EDD			31 Dec 2019

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

QC Level: DOD IV (DoD Data Package)

Received By NKedersu 12/21/19 1205

KL9172412

Subcontract Chain of Custody

SAMPLING STATE: **Texas**

COC ID: **12927**

Relinquished By: _____ Date/Time: 12/20/19 1800.

Received By: Mederstein Date/Time: 12/21/19 1205

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

PC AJ

Cooler Receipt and Preservation Form K1912042

Client ALS Houston Service Request ~~K19~~ J1907473

Received: 12/21/19 Opened: 12/21/19 By: AP Unloaded: 12/21/19 By: AP

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 Front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.5	-0.4	0.3	0.4	01	323	12927	1251 0293 0753	

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

RUSH

Notes, Discrepancies, & Resolutions: _____

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636-1 068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K1912042
Project:	HS19121155	**Date Collected:**	12/19/19
Sample Matrix:	Ground Water	**Date Received:**	12/21/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
35AWW10-121919	K1912042-001	**4.44**	0.50	0.20	0.07	1	01/01/20 02:03	
35AWW10-121919_a	K1912042-002	**4.10**	0.50	0.20	0.07	1	01/01/20 02:32	
35AWW20-121919	K1912042-003	**13.1**	0.50	0.20	0.07	1	01/01/20 03:00	
35AWW06-121919	K1912042-004	**13.8**	0.50	0.20	0.07	1	01/01/20 03:28	
LHSM07-121919	K1912042-005	**3.48**	0.50	0.20	0.07	1	01/01/20 03:56	
Method Blank	K1912042-MB	ND U	0.50	0.20	0.07	1	12/31/19 21:04	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1912042
Project	HS19121155	**Date Collected:**	12/19/19
Sample Matrix:	Ground Water	**Date Received:**	12/21/19
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary
Carbon, Total Organic

Sample Name:	Lab Code:	LOQ	LOD	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
35AWW10-121919	K1912042-001DUP	0.50	0.20	0.07	4.44	4.41	4.42	<1	10	01/01/20
35AWW10-121919_a	K1912042-002DUP	0.50	0.20	0.07	4.10	4.01	4.05	2	10	01/01/20
35AWW20-121919	K1912042-003DUP1	0.50	0.20	0.07	13.1	13.9	13.5	6	10	12/28/19
35AWW20-121919	K1912042-003DUP2	0.50	0.20	0.07	13.1	13.4	13.2	3	10	01/01/20
35AWW06-121919	K1912042-004DUP	0.50	0.20	0.07	13.8	14.5	14.1	5	10	01/01/20
LHSM07-121919	K1912042-005DUP	0.50	0.20	0.07	3.48	3.01	3.24	14 *	10	01/01/20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K1912042
Project:	HS19121155	**Date Analyzed:**	12/31/19
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	665302

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K1912042-LCS	25.1	25.0	100	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K1912042
Project: HS19121155

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	665302	KQ1919248-01	12/31/19 20:35	25.0	24.0	96	90-110
CCV2	665302	KQ1919248-02	01/01/20 00:38	25.0	25.1	100	90-110
CCV3	665302	KQ1919248-03	01/01/20 05:48	25.0	24.0	96	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K1912042
Project: HS19121155

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	665302	KQ1919248-04	12/31/19 20:49	0.50	0.20	0.07	ND	U
CCB2	665302	KQ1919248-05	01/01/20 00:53	0.50	0.20	0.07	ND	U
CCB3	665302	KQ1919248-06	01/01/20 06:03	0.50	0.20	0.07	ND	U

Raw Data

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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Work Request # Original ( ) KP1911914, 11968, 11970, 12046, 12074 IV IV IV IV II KP1911762, 11807, 11895, 11934, 11980, 11981, 11995, 11998, 12042, 11880, 11885, 11909, 11910, 11960, 12004 II II I I II II IV IV IV II IV IV II I II

Tier:

Date Analyzed: 12/27/2019

Analyst: BCP

Analysis: TOC

Run # TOC: 664898, 664900, 664901, 664902

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS: KP1911995-1, 11995-1/2/3/4/5/6, 12042-1/2/3/4/5, 11934-2, 11980-1, 11981-1 sent for RA due to contaminated CCBs. KP1911807-4Md, 11868-4Md, 11914-4A, 11970-5A report a high %RSD. However, these samples are less than 5x the MRL

Final Approved by: QC Date: 12/31/19

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 664898 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1911762-003	Carbon, Total Organic	N/A		Water	4.08 mg/L	10 ml	408 mg/L	100	7	50			12/28/19 08:10	N	II
K1911762-004	Carbon, Total Organic	N/A		Water	5.35 mg/L	10 ml	535 mg/L	100	7	50			12/28/19 08:38	N	II
K1911762-005	Carbon, Total Organic	N/A		Water	5.51 mg/L	10 ml	551 mg/L	100	7	50			12/28/19 09:06	N	II
K1911807-004	Carbon, Total Organic	N/A		Water	0.66 mg/L	10 ml	0.66 mg/L	1	0.07	0.50			12/28/19 09:34	N	II
K1911895-001	Carbon, Total Organic	N/A		Drinking Water	0.45 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/28/19 07:42	N	I
K1911934-002	Carbon, Total Organic	N/A		Drinking Water	1.04 mg/L	10 ml	1.04 mg/L	1	0.07	0.50			12/28/19 05:19	N	I
K1911980-001	Carbon, Total Organic	N/A		Water	4.22 mg/L	10 ml	4.22 mg/L	1	0.07	0.50			12/28/19 05:47	N	II
K1911981-001	Carbon, Total Organic	N/A		Water	3.74 mg/L	10 ml	3.74 mg/L	1	0.07	0.50			12/28/19 06:15	N	II
K1911995-001	Carbon, Total Organic	N/A		Water	2.64 mg/L	10 ml	2.64 mg/L	1	0.07	0.50			12/27/19 22:43	N	IV
K1911998-001	Carbon, Total Organic	N/A		Ground Water	3.35 mg/L	10 ml	3.35 mg/L	1	0.07	0.50			12/27/19 23:40	N	IV
K1911998-002	Carbon, Total Organic	N/A		Ground Water	1.31 mg/L	10 ml	131 mg/L	100	7	50			12/28/19 00:08	N	IV
K1911998-003	Carbon, Total Organic	N/A		Ground Water	0.32 mg/L	10 ml	320 mg/L J	1000	70	500			12/28/19 00:37	N	IV
K1911998-004	Carbon, Total Organic	N/A		Ground Water	10.95 mg/L	10 ml	10.9 mg/L	1	0.07	0.50			12/28/19 01:05	N	IV
K1911998-005	Carbon, Total Organic	N/A		Ground Water	94.31 mg/L	10 ml	94.3 mg/L	1	0.07	0.50			12/28/19 02:02	N	IV
K1911998-006	Carbon, Total Organic	N/A		Ground Water	6.19 mg/L	10 ml	6.19 mg/L	1	0.07	0.50			12/28/19 02:30	N	IV
K1912042-001	Carbon, Total Organic	N/A		Ground Water	6.24 mg/L	10 ml	6.24 mg/L	1	0.07	0.50			12/28/19 02:59	N	IV
K1912042-002	Carbon, Total Organic	N/A		Ground Water	5.13 mg/L	10 ml	5.13 mg/L	1	0.07	0.50			12/28/19 03:27	N	IV
K1912042-003	Carbon, Total Organic	N/A		Ground Water	14.04 mg/L	10 ml	14.0 mg/L	1	0.07	0.50			12/28/19 03:55	N	IV
K1912042-004	Carbon, Total Organic	N/A		Ground Water	14.68 mg/L	10 ml	14.7 mg/L	1	0.07	0.50			12/28/19 04:23	N	IV
K1912042-005	Carbon, Total Organic	N/A		Ground Water	4.14 mg/L	10 ml	4.14 mg/L	1	0.07	0.50			12/28/19 04:51	N	IV
KQ1919209-01	Carbon, Total Organic	CCV		Water	24.92 mg/L	10 ml	24.9 mg/L	1					12/27/19 21:30	N	IV
KQ1919209-02	Carbon, Total Organic	CCV		Water	26.02 mg/L	10 ml	26.0 mg/L	1					12/28/19 01:33	N	IV
KQ1919209-03	Carbon, Total Organic	CCV		Water	24.62 mg/L	10 ml	24.6 mg/L	1					12/28/19 06:43	N	IV
KQ1919209-04	Carbon, Total Organic	CCV		Water	24.84 mg/L	10 ml	24.8 mg/L	1					12/28/19 11:12	N	IV
KQ1919209-05	Carbon, Total Organic	CCB		Water	0.58 mg/L	10 ml	0.58 mg/L	1	0.07	0.50			12/27/19 21:45	N	IV
KQ1919209-06	Carbon, Total Organic	CCB		Water	0.54 mg/L	10 ml	0.54 mg/L	1	0.07	0.50			12/28/19 01:47	N	IV
KQ1919209-07	Carbon, Total Organic	CCB		Water	0.16 mg/L	10 ml	0.16 mg/L J	1	0.07	0.50			12/28/19 06:58	N	IV
KQ1919209-08	Carbon, Total Organic	CCB		Water	0.15 mg/L	10 ml	0.15 mg/L J	1	0.07	0.50			12/28/19 11:27	N	IV
KQ1919209-09	Carbon, Total Organic	MB		Water	0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/27/19 21:59	N	IV
KQ1919209-10	Carbon, Total Organic	LCS		Water	26.17 mg/L	10 ml	26.2 mg/L	1	0.07	0.50	105		12/27/19 22:14	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 664898 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1919209-11	Carbon, Total Organic	MS	K1911995-001	Water	28.07 mg/L	10 ml	28.1 mg/L	1	0.07	0.50	102		12/27/19 23:11	N	IV
KQ1919209-12	Carbon, Total Organic	DUP	K1911807-004	Water	0.56 mg/L	10 ml	0.56 mg/L	1	0.07	0.50		16*	12/28/19 09:34	N	II
KQ1919209-13	Carbon, Total Organic	DUP	K1911762-003	Water	4.12 mg/L	10 ml	412 mg/L	100	7	50		<1	12/28/19 08:10	N	II
KQ1919209-14	Carbon, Total Organic	DUP	K1911895-001	Drinking Water	0.30 mg/L	10 ml	0.30 mg/L J	1	0.07	0.50		NC	12/28/19 07:42	N	I
KQ1919209-15	Carbon, Total Organic	DUP	K1911762-004	Water	5.35 mg/L	10 ml	535 mg/L	100	7	50		<1	12/28/19 08:38	N	II
KQ1919209-16	Carbon, Total Organic	DUP	K1911934-002	Drinking Water	0.87 mg/L	10 ml	0.87 mg/L	1	0.07	0.50		17*	12/28/19 05:19	N	I
KQ1919209-17	Carbon, Total Organic	DUP	K1911762-005	Water	5.43 mg/L	10 ml	543 mg/L	100	7	50		2	12/28/19 09:06	N	II
KQ1919209-18	Carbon, Total Organic	DUP	K1911980-001	Water	4.17 mg/L	10 ml	4.17 mg/L	1	0.07	0.50		1	12/28/19 05:47	N	II
KQ1919209-19	Carbon, Total Organic	DUP	K1911981-001	Water	3.66 mg/L	10 ml	3.66 mg/L	1	0.07	0.50		2	12/28/19 06:15	N	II
KQ1919209-20	Carbon, Total Organic	DUP	K1911995-001	Water	2.63 mg/L	10 ml	2.63 mg/L	1	0.07	0.50		<1	12/27/19 22:43	N	IV
KQ1919209-21	Carbon, Total Organic	DUP	K1911998-002	Ground Water	1.23 mg/L	10 ml	123 mg/L	100	7	50		6	12/28/19 00:08	N	IV
KQ1919209-22	Carbon, Total Organic	DUP	K1911998-001	Ground Water	3.35 mg/L	10 ml	3.35 mg/L	1	0.07	0.50		<1	12/27/19 23:40	N	IV
KQ1919209-23	Carbon, Total Organic	DUP	K1911998-003	Ground Water	0.30 mg/L	10 ml	300 mg/L J	1000	70	500		5	12/28/19 00:37	N	IV
KQ1919209-24	Carbon, Total Organic	DUP	K1911998-004	Ground Water	10.80 mg/L	10 ml	10.8 mg/L	1	0.07	0.50		1	12/28/19 01:05	N	IV
KQ1919209-25	Carbon, Total Organic	DUP	K1911998-005	Ground Water	94.83 mg/L	10 ml	94.8 mg/L	1	0.07	0.50		<1	12/28/19 02:02	N	IV
KQ1919209-26	Carbon, Total Organic	DUP	K1911998-006	Ground Water	3.61 mg/L	10 ml	3.61 mg/L	1	0.07	0.50		53*	12/28/19 02:30	N	IV
KQ1919209-27	Carbon, Total Organic	DUP	K1912042-002	Ground Water	4.85 mg/L	10 ml	4.84 mg/L	1	0.07	0.50		6	12/28/19 03:27	N	IV
KQ1919209-28	Carbon, Total Organic	DUP	K1912042-001	Ground Water	5.79 mg/L	10 ml	5.79 mg/L	1	0.07	0.50		7	12/28/19 02:59	N	IV
KQ1919209-29	Carbon, Total Organic	DUP	K1912042-003	Ground Water	13.92 mg/L	10 ml	13.9 mg/L	1	0.07	0.50		<1	12/28/19 03:55	N	IV
KQ1919209-30	Carbon, Total Organic	DUP	K1912042-004	Ground Water	14.90 mg/L	10 ml	14.9 mg/L	1	0.07	0.50		1	12/28/19 04:23	N	IV
KQ1919209-31	Carbon, Total Organic	DUP	K1912042-005	Ground Water	3.58 mg/L	10 ml	3.58 mg/L	1	0.07	0.50		14*	12/28/19 04:51	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 664900 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1911810-001	Carbon, Total Organic	N/A		Water	2.42 mg/L	10 ml	2.42 mg/L	1	0.07	0.50			12/28/19 10:02	N	II
K1911810-002	Carbon, Total Organic	N/A		Water	2.24 mg/L	10 ml	2.24 mg/L	1	0.07	0.50			12/28/19 10:30	N	II
K1911868-001	Carbon, Total Organic	N/A		Ground Water	0.72 mg/L	10 ml	0.72 mg/L	1	0.07	0.50			12/28/19 11:42	N	IV
K1911868-002	Carbon, Total Organic	N/A		Ground Water	0.75 mg/L	10 ml	0.75 mg/L	1	0.07	0.50			12/28/19 12:10	N	IV
K1911868-003	Carbon, Total Organic	N/A		Ground Water	7.88 mg/L	10 ml	7.88 mg/L	1	0.07	0.50			12/28/19 12:38	N	IV
K1911868-004	Carbon, Total Organic	N/A		Ground Water	0.14 mg/L	10 ml	0.14 mg/L J	1	0.07	0.50			12/28/19 13:06	N	IV
K1911909-001	Carbon, Total Organic	N/A		Water	-0.15 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/28/19 13:34	N	IV
K1911910-001	Carbon, Total Organic	N/A		Water	9.84 mg/L	10 ml	98.4 mg/L	10	0.7	5.0			12/28/19 14:02	N	II
K1911960-001	Carbon, Total Organic	N/A		Water	8.94 mg/L	10 ml	8.94 mg/L	1	0.07	0.50			12/28/19 14:59	N	I
K1911960-002	Carbon, Total Organic	N/A		Water	12.64 mg/L	10 ml	12.6 mg/L	1	0.07	0.50			12/28/19 15:27	N	I
K1911960-003	Carbon, Total Organic	N/A		Water	1.80 mg/L	10 ml	1.80 mg/L	1	0.07	0.50			12/28/19 15:55	N	I
K1911960-004	Carbon, Total Organic	N/A		Water	23.35 mg/L	10 ml	23.3 mg/L	1	0.07	0.50			12/28/19 17:22	N	I
K1911960-005	Carbon, Total Organic	N/A		Water	8.92 mg/L	10 ml	8.92 mg/L	1	0.07	0.50			12/28/19 17:50	N	I
K1911960-006	Carbon, Total Organic	N/A		Water	15.47 mg/L	10 ml	15.5 mg/L	1	0.07	0.50			12/28/19 18:18	N	I
K1911960-007	Carbon, Total Organic	N/A		Water	4.86 mg/L	10 ml	38.9 mg/L	8	0.6	4.0			12/28/19 18:46	N	I
K1911960-008	Carbon, Total Organic	N/A		Water	11.31 mg/L	10 ml	11.3 mg/L	1	0.07	0.50			12/28/19 19:14	N	I
K1911960-009	Carbon, Total Organic	N/A		Water	15.59 mg/L	10 ml	15.6 mg/L	1	0.07	0.50			12/28/19 19:42	N	I
K1912004-001	Carbon, Total Organic	N/A		Water	-0.26 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/28/19 14:31	N	II
KQ1919210-01	Carbon, Total Organic	CCV		Water	24.62 mg/L	10 ml	24.6 mg/L	1					12/28/19 06:43	N	II
KQ1919210-02	Carbon, Total Organic	CCV		Water	24.84 mg/L	10 ml	24.8 mg/L	1					12/28/19 11:12	N	II
KQ1919210-03	Carbon, Total Organic	CCV		Water	24.79 mg/L	10 ml	24.8 mg/L	1					12/28/19 16:23	N	II
KQ1919210-04	Carbon, Total Organic	CCV		Water	24.27 mg/L	10 ml	24.3 mg/L	1					12/28/19 21:07	N	II
KQ1919210-05	Carbon, Total Organic	CCB		Water	0.16 mg/L	10 ml	0.16 mg/L J	1	0.07	0.50			12/28/19 06:58	N	II
KQ1919210-06	Carbon, Total Organic	CCB		Water	0.15 mg/L	10 ml	0.15 mg/L J	1	0.07	0.50			12/28/19 11:27	N	II
KQ1919210-07	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/28/19 16:38	N	II
KQ1919210-08	Carbon, Total Organic	CCB		Water	-0.25 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/28/19 21:21	N	II
KQ1919210-09	Carbon, Total Organic	MB		Water	-0.32 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/28/19 07:12	N	II
KQ1919210-10	Carbon, Total Organic	LCS		Water	25.86 mg/L	10 ml	25.9 mg/L	1	0.07	0.50	103		12/28/19 07:27	N	II
KQ1919210-11	Carbon, Total Organic	MS	K1911810-001	Water	28.47 mg/L	10 ml	28.5 mg/L	1	0.07	0.50	104		12/28/19 10:58	N	II
KQ1919210-12	Carbon, Total Organic	DUP	K1911810-001	Water	2.38 mg/L	10 ml	2.38 mg/L	1	0.07	0.50		2	12/28/19 10:02	N	II
KQ1919210-13	Carbon, Total Organic	DUP	K1911810-002	Water	2.24 mg/L	10 ml	2.24 mg/L	1	0.07	0.50		<1	12/28/19 10:30	N	II
KQ1919210-14	Carbon, Total Organic	DUP	K1911868-001	Ground Water	0.70 mg/L	10 ml	0.70 mg/L	1	0.07	0.50		3	12/28/19 11:42	N	IV
KQ1919210-15	Carbon, Total Organic	DUP	K1911868-002	Ground Water	0.71 mg/L	10 ml	0.71 mg/L	1	0.07	0.50		5	12/28/19 12:10	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 664900 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1919210-16	Carbon, Total Organic	DUP	K1911868-003	Ground Water	7.92 mg/L	10 ml	7.92 mg/L	1	0.07	0.50		<1	12/28/19 12:38	N	IV
KQ1919210-17	Carbon, Total Organic	DUP	K1911868-004	Ground Water	0.09 mg/L	10 ml	0.09 mg/L J	1	0.07	0.50		47*	12/28/19 13:06	N	IV
KQ1919210-18	Carbon, Total Organic	DUP	K1911910-001	Water	9.71 mg/L	10 ml	97.1 mg/L	10	0.7	5.0		1	12/28/19 14:02	N	II
KQ1919210-19	Carbon, Total Organic	DUP	K1911909-001	Water	-0.20 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	12/28/19 13:34	N	IV
KQ1919210-20	Carbon, Total Organic	DUP	K1911960-001	Water	8.96 mg/L	10 ml	8.96 mg/L	1	0.07	0.50		<1	12/28/19 14:59	N	I
KQ1919210-21	Carbon, Total Organic	DUP	K1911960-002	Water	12.32 mg/L	10 ml	12.3 mg/L	1	0.07	0.50		3	12/28/19 15:27	N	I
KQ1919210-22	Carbon, Total Organic	DUP	K1911960-003	Water	1.67 mg/L	10 ml	1.67 mg/L	1	0.07	0.50		7	12/28/19 15:55	N	I
KQ1919210-23	Carbon, Total Organic	DUP	K1911960-004	Water	23.44 mg/L	10 ml	23.4 mg/L	1	0.07	0.50		<1	12/28/19 17:22	N	I
KQ1919210-24	Carbon, Total Organic	DUP	K1911960-005	Water	8.85 mg/L	10 ml	8.85 mg/L	1	0.07	0.50		<1	12/28/19 17:50	N	I
KQ1919210-25	Carbon, Total Organic	DUP	K1911960-006	Water	15.42 mg/L	10 ml	15.4 mg/L	1	0.07	0.50		<1	12/28/19 18:18	N	I
KQ1919210-26	Carbon, Total Organic	DUP	K1911960-007	Water	4.68 mg/L	10 ml	37.4 mg/L	8	0.6	4.0		4	12/28/19 18:46	N	I
KQ1919210-27	Carbon, Total Organic	DUP	K1911960-008	Water	11.04 mg/L	10 ml	11.0 mg/L	1	0.07	0.50		2	12/28/19 19:14	N	I
KQ1919210-28	Carbon, Total Organic	DUP	K1911960-009	Water	15.45 mg/L	10 ml	15.4 mg/L	1	0.07	0.50		<1	12/28/19 19:42	N	I
KQ1919210-29	Carbon, Total Organic	DUP	K1912004-001	Water	-0.07 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	12/28/19 14:31	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 664901 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1911914-001	Carbon, Total Organic	N/A		Ground Water	0.55 mg/L	10 ml	0.55 mg/L	1	0.07	0.50			12/28/19 23:00	Y	IV
K1911914-002	Carbon, Total Organic	N/A		Ground Water	1.54 mg/L	10 ml	1.54 mg/L	1	0.07	0.50			12/28/19 23:57	N	IV
K1911914-003	Carbon, Total Organic	N/A		Ground Water	3.20 mg/L	10 ml	3.20 mg/L	1	0.07	0.50			12/29/19 00:25	N	IV
K1911914-004	Carbon, Total Organic	N/A		Ground Water	0.52 mg/L	10 ml	0.52 mg/L	1	0.07	0.50			12/29/19 00:53	N	IV
K1911914-005	Carbon, Total Organic	N/A		Ground Water	5.68 mg/L	10 ml	5.68 mg/L	1	0.07	0.50			12/29/19 01:22	N	IV
K1911914-006	Carbon, Total Organic	N/A		Ground Water	9.50 mg/L	10 ml	9.50 mg/L	1	0.07	0.50			12/29/19 02:48	N	IV
K1911914-007	Carbon, Total Organic	N/A		Ground Water	0.33 mg/L	10 ml	0.33 mg/L J	1	0.07	0.50			12/29/19 03:17	N	IV
K1911914-008	Carbon, Total Organic	N/A		Ground Water	-0.32 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/29/19 03:45	N	IV
K1911914-009	Carbon, Total Organic	N/A		Ground Water	-0.32 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/29/19 04:13	N	IV
K1911968-001	Carbon, Total Organic	N/A		Water	1.23 mg/L	10 ml	1.23 mg/L	1	0.07	0.50			12/28/19 20:11	N	IV
K1911968-002	Carbon, Total Organic	N/A		Water	1.15 mg/L	10 ml	1.15 mg/L	1	0.07	0.50			12/28/19 20:39	N	IV
K1911968-003	Carbon, Total Organic	N/A		Water	0.70 mg/L	10 ml	0.70 mg/L	1	0.07	0.50			12/28/19 21:36	N	IV
KQ1919211-01	Carbon, Total Organic	CCV		Water	24.79 mg/L	10 ml	24.8 mg/L	1					12/28/19 16:23	N	IV
KQ1919211-02	Carbon, Total Organic	CCV		Water	24.27 mg/L	10 ml	24.3 mg/L	1					12/28/19 21:07	N	IV
KQ1919211-03	Carbon, Total Organic	CCV		Water	24.10 mg/L	10 ml	24.1 mg/L	1					12/29/19 01:50	N	IV
KQ1919211-04	Carbon, Total Organic	CCV		Water	23.91 mg/L	10 ml	23.9 mg/L	1					12/29/19 06:21	N	IV
KQ1919211-05	Carbon, Total Organic	CCB		Water	-0.03 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/28/19 16:38	N	IV
KQ1919211-06	Carbon, Total Organic	CCB		Water	-0.25 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/28/19 21:21	N	IV
KQ1919211-07	Carbon, Total Organic	CCB		Water	-0.32 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/29/19 02:04	N	IV
KQ1919211-08	Carbon, Total Organic	CCB		Water	-0.32 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/29/19 06:35	N	IV
KQ1919211-09	Carbon, Total Organic	MB		Water	-0.32 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/28/19 16:53	N	IV
KQ1919211-10	Carbon, Total Organic	LCS		Water	25.70 mg/L	10 ml	25.7 mg/L	1	0.07	0.50	103		12/28/19 17:07	N	IV
KQ1919211-11	Carbon, Total Organic	MS	K1911914-001	Ground Water	27.35 mg/L	10 ml	27.3 mg/L	1	0.07	0.50	107		12/28/19 23:28	N	IV
KQ1919211-12	Carbon, Total Organic	DUP	K1911914-001	Ground Water	0.55 mg/L	10 ml	0.55 mg/L	1	0.07	0.50		<1	12/28/19 23:00	N	IV
KQ1919211-13	Carbon, Total Organic	DUP	K1911914-002	Ground Water	1.47 mg/L	10 ml	1.47 mg/L	1	0.07	0.50		5	12/28/19 23:57	N	IV
KQ1919211-14	Carbon, Total Organic	DUP	K1911914-003	Ground Water	3.11 mg/L	10 ml	3.11 mg/L	1	0.07	0.50		3	12/29/19 00:25	N	IV
KQ1919211-15	Carbon, Total Organic	DUP	K1911914-004	Ground Water	0.48 mg/L	10 ml	0.48 mg/L J	1	0.07	0.50		8	12/29/19 00:53	N	IV
KQ1919211-16	Carbon, Total Organic	DUP	K1911914-005	Ground Water	5.66 mg/L	10 ml	5.66 mg/L	1	0.07	0.50		<1	12/29/19 01:22	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 664901 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1919211-17	Carbon, Total Organic	DUP	K1911914-006	Ground Water	9.42 mg/L	10 ml	9.42 mg/L	1	0.07	0.50		<1	12/29/19 02:48	N	IV
KQ1919211-18	Carbon, Total Organic	DUP	K1911914-007	Ground Water	0.24 mg/L	10 ml	0.24 mg/L J	1	0.07	0.50		32*	12/29/19 03:17	N	IV
KQ1919211-19	Carbon, Total Organic	DUP	K1911914-008	Ground Water	-0.32 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	12/29/19 03:45	N	IV
KQ1919211-20	Carbon, Total Organic	DUP	K1911914-009	Ground Water	-0.32 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	12/29/19 04:13	N	IV
KQ1919211-21	Carbon, Total Organic	DUP	K1911968-001	Water	1.15 mg/L	10 ml	1.15 mg/L	1	0.07	0.50		7	12/28/19 20:11	N	IV
KQ1919211-22	Carbon, Total Organic	DUP	K1911968-002	Water	1.20 mg/L	10 ml	1.20 mg/L	1	0.07	0.50		4	12/28/19 20:39	N	IV
KQ1919211-23	Carbon, Total Organic	DUP	K1911968-003	Water	0.63 mg/L	10 ml	0.63 mg/L	1	0.07	0.50		10	12/28/19 21:36	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 664902 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1911970-001	Carbon, Total Organic	N/A		Ground Water	-0.32 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/29/19 04:41	N	IV
K1911970-002	Carbon, Total Organic	N/A		Ground Water	0.67 mg/L	10 ml	0.67 mg/L	1	0.07	0.50			12/29/19 05:09	N	IV
K1911970-003	Carbon, Total Organic	N/A		Ground Water	0.05 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/29/19 05:38	N	IV
K1911970-004	Carbon, Total Organic	N/A		Ground Water	17.01 mg/L	10 ml	17.0 mg/L	1	0.07	0.50			12/29/19 06:50	N	IV
K1911970-005	Carbon, Total Organic	N/A		Ground Water	0.85 mg/L	10 ml	0.85 mg/L	1	0.07	0.50			12/29/19 07:18	N	IV
K1912040-001	Carbon, Total Organic	N/A		Water	1.23 mg/L	10 ml	1.23 mg/L	1	0.07	0.50			12/29/19 08:43	N	IV
K1912040-002	Carbon, Total Organic	N/A		Water	16.08 mg/L	10 ml	16.1 mg/L	1	0.07	0.50			12/29/19 09:11	N	IV
K1912040-003	Carbon, Total Organic	N/A		Water	2.94 mg/L	10 ml	2.94 mg/L	1	0.07	0.50			12/29/19 09:39	N	IV
K1912074-001	Carbon, Total Organic	N/A		Water	8.38 mg/L	10 ml	838 mg/L	100	7	50			12/29/19 07:46	N	II
K1912074-002	Carbon, Total Organic	N/A		Water	6.55 mg/L	10 ml	655 mg/L	100	7	50			12/29/19 08:15	N	II
KQ1919213-01	Carbon, Total Organic	CCV		Ground Water	24.10 mg/L	10 ml	24.1 mg/L	1					12/29/19 01:50	N	IV
KQ1919213-02	Carbon, Total Organic	CCV		Ground Water	23.91 mg/L	10 ml	23.9 mg/L	1					12/29/19 06:21	N	IV
KQ1919213-03	Carbon, Total Organic	CCV		Ground Water	23.95 mg/L	10 ml	23.9 mg/L	1					12/29/19 10:07	N	IV
KQ1919213-04	Carbon, Total Organic	CCB		Ground Water	-0.32 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/29/19 02:04	N	IV
KQ1919213-05	Carbon, Total Organic	CCB		Ground Water	-0.32 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/29/19 06:35	N	IV
KQ1919213-06	Carbon, Total Organic	CCB		Ground Water	-0.32 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/29/19 10:22	N	IV
KQ1919213-07	Carbon, Total Organic	MB		Ground Water	-0.32 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50			12/29/19 02:19	N	IV
KQ1919213-08	Carbon, Total Organic	LCS		Ground Water	25.40 mg/L	10 ml	25.4 mg/L	1	0.07	0.50	102		12/29/19 02:34	N	IV
KQ1919213-09	Carbon, Total Organic	MS	K1911970-003	Ground Water	26.71 mg/L	10 ml	26.7 mg/L	1	0.07	0.50	107		12/29/19 06:06	N	IV
KQ1919213-10	Carbon, Total Organic	DUP	K1911970-001	Ground Water	-0.32 mg/L	10 ml	0.50 mg/L U	1	0.07	0.50		NC	12/29/19 04:41	N	IV
KQ1919213-11	Carbon, Total Organic	DUP	K1911970-005	Ground Water	0.75 mg/L	10 ml	0.75 mg/L	1	0.07	0.50		12*	12/29/19 07:18	N	IV
KQ1919213-12	Carbon, Total Organic	DUP	K1911970-002	Ground Water	0.64 mg/L	10 ml	0.64 mg/L	1	0.07	0.50		5	12/29/19 05:09	N	IV
KQ1919213-13	Carbon, Total Organic	DUP	K1911970-003	Ground Water	0.08 mg/L	10 ml	0.08 mg/L J	1	0.07	0.50		NC	12/29/19 05:38	N	IV
KQ1919213-14	Carbon, Total Organic	DUP	K1911970-004	Ground Water	17.18 mg/L	10 ml	17.2 mg/L	1	0.07	0.50		<1	12/29/19 06:50	N	IV
KQ1919213-15	Carbon, Total Organic	DUP	K1912040-002	Water	15.96 mg/L	10 ml	16.0 mg/L	1	0.07	0.50		<1	12/29/19 09:11	N	IV
KQ1919213-16	Carbon, Total Organic	DUP	K1912040-001	Water	1.14 mg/L	10 ml	1.14 mg/L	1	0.07	0.50		7	12/29/19 08:43	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 664902 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1919213-17	Carbon, Total Organic	DUP	K1912040-003	Water	2.87 mg/L	10 ml	2.87 mg/L	1	0.07	0.50		2	12/29/19 09:39	N	IV
KQ1919213-18	Carbon, Total Organic	DUP	K1912074-001	Water	8.44 mg/L	10 ml	844 mg/L	100	7	50		<1	12/29/19 07:46	N	II
KQ1919213-19	Carbon, Total Organic	DUP	K1912074-002	Water	6.51 mg/L	10 ml	651 mg/L	100	7	50		<1	12/29/19 08:15	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

0.901				OBSERVATIONS	13	ABOVE
0.345	0.345	0.345	0.345	STD Deviation	0.33082	0.3446
0.862				AVERAGE	0.26252	ABOVE
0.481	0.481			UCL	0.59335	0.4808
0.000				LCL	-0.06830	0
0.464	0.464					0.4641
0.291	0.291	0.291	0.291			0.2909
0.000				OBSERVATIONS	5	0
0.070	0.070			STD Deviation	0.12251	0.0696
0.000				AVERAGE	0.33000	0
0.000				UCL	0.45251	0
0.000				LCL	0.20749	0
0.000						0
						0
				OBSERVATIONS	2	0
				STD Deviation	0.08838	0
				AVERAGE	0.31775	0
				UCL	0.40613	0
				LCL	0.22937	0
						0
						0
				OBSERVATIONS	2	0
				STD Deviation	0.05370	0
				AVERAGE	0.31775	0
						0
						0
						0
						0
						0
						0

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	25.241	0.3178	24.9233	24.92325	24.9	12/27/2019
3	ccb	1	0.901	0.3178	0.5831	0.58305	0.6	12/27/2019
4	mb	1	0.345	0.3178	0.0269	0.02685	<0.5	12/27/2019
5	lcs	1	26.489	0.3178	26.1708	26.17075	26.2	12/27/2019
6	K1911995-001	1	2.955	0.3178	2.6369	2.63685	2.64	12/27/2019
7	K1911995-001	1	2.948	0.3178	2.6302	2.63015	2.6	12/27/2019
8	KQ1919209-11	1	28.386	0.3178	28.0678	28.06775	28	12/27/2019
9	K1911998-001	1	3.672	0.3178	3.3540	3.35395	3.35	12/27/2019
10	K1911998-001	1	3.668	0.3178	3.3502	3.35015	3.35	12/27/2019
11	K1911998-002	100	1.625	0.3178	1.3077	130.765	130.8	12/28/2019
12	K1911998-002	100	1.551	0.3178	1.2329	123.285	123.29	12/28/2019
13	K1911998-003	1000	0.637	0.3178	0.3194	319.35	319.35	12/28/2019
14	K1911998-003	1000	0.621	0.3178	0.3030	302.95	302.95	12/28/2019
15	K1911998-004	1	11.265	0.3178	10.9472	10.94715	10.9	12/28/2019
16	K1911998-004	1	11.121	0.3178	10.8035	10.80345	10.8	12/28/2019
17	ccv	1	26.337	0.3178	26.0197	26.01965	26.02	12/28/2019
18	ccb	1	0.862	0.3178	0.5443	0.54425	0.5	12/28/2019
19	K1911998-005	1	94.630	0.3178	94.3122	94.31215	94.3	12/28/2019
20	K1911998-005	1	95.146	0.3178	94.8286	94.82855	94.83	12/28/2019
21	K1911998-006	1	6.508	0.3178	6.1905	6.19045	6.19	12/28/2019
22	K1911998-006	1	3.924	0.3178	3.6058	3.60575	3.6	12/28/2019
23	K1912042-001	1	6.555	0.3178	6.2375	6.23745	6.2	12/28/2019
24	K1912042-001	1	6.107	0.3178	5.7892	5.78915	5.79	12/28/2019
25	K1912042-002	1	5.452	0.3178	5.1345	5.13445	5.13	12/28/2019

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

		date	time
Analyzed By: KCV	Date Analyzed	12/27/19	
Reviewed By: JC	Date Reviewed	12/31/19	

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1912042-002	1	5.163	0.3178	4.8450	4.84495	4.84	12/28/2019
27	K1912042-003	1	14.359	0.3178	14.0413	14.04125	14.04	12/28/2019
28	K1912042-003	1	14.240	0.3178	13.9223	13.92225	13.9	12/28/2019
29	K1912042-004	1	14.997	0.3178	14.6791	14.67905	14.7	12/28/2019
30	K1912042-004	1	15.218	0.3178	14.9001	14.90005	14.9	12/28/2019
31	K1912042-005	1	4.455	0.3178	4.1372	4.13715	4.1	12/28/2019
32	K1912042-005	1	3.898	0.3178	3.5806	3.58055	3.6	12/28/2019
33	K1911934-002	1	1.353	0.3178	1.0353	1.03525	1.0	12/28/2019
34	K1911934-002	1	1.192	0.3178	0.8746	0.87455	0.9	12/28/2019
35	K1911980-001	1	4.533	0.3178	4.2155	4.21545	4.2	12/28/2019
36	K1911980-001	1	4.484	0.3178	4.1659	4.16585	4.2	12/28/2019
37	K1911981-001	1	4.055	0.3178	3.7372	3.73715	3.7	12/28/2019
38	K1911981-001	1	3.976	0.3178	3.6578	3.65775	3.7	12/28/2019
39	ccv	1	24.936	0.3178	24.6181	24.61805	24.6	12/28/2019
40	ccb	1	0.481	0.3178	0.1631	0.16305	<0.5	12/28/2019
41	K1911895-001	1	0.768	0.3178	0.4502	0.45015	<0.5	12/28/2019
42	K1911895-001	1	0.614	0.3178	0.2964	0.29635	<0.5	12/28/2019
43	K1911762-003	100	4.396	0.3178	4.0784	407.835	407.8	12/28/2019
44	K1911762-003	100	4.433	0.3178	4.1152	411.515	411.5	12/28/2019
45	K1911762-004	100	5.663	0.3178	5.3455	534.545	534.5	12/28/2019
46	K1911762-004	100	5.668	0.3178	5.3498	534.975	535.0	12/28/2019
47	K1911762-005	100	5.831	0.3178	5.5134	551.335	551.3	12/28/2019
48	K1911762-005	100	5.749	0.3178	5.4308	543.075	543.1	12/28/2019
49	K1911807-004	1	0.976	0.3178	0.6581	0.65805	0.7	12/28/2019
50	K1911807-004	1	0.878	0.3178	0.5605	0.56045	0.6	12/28/2019

Analyzed By:	KP	Date Analyzed	12/27/19
Reviewed By:	JC	Date Reviewed	12/31/19

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	ccv	1	25.159	0.3178	24.8417	24.84165	24.84	12/28/2019
52	ccb	1	0.464	0.3178	0.1464	0.14635	<0.5	12/28/2019
53		1		0.0000	0.0000	0	<0.5	
54		1		0.0000	0.0000	0	<0.5	
55		1		0.0000	0.0000	0	<0.5	
56		1		0.0000	0.0000	0	<0.5	
57		1		0.0000	0.0000	0	<0.5	
58		1		0.0000	0.0000	0	<0.5	
59		1		0.0000	0.0000	0	<0.5	
60		1		0.0000	0.0000	0	<0.5	
61		1		0.0000	0.0000	0	<0.5	
62		1		0.0000	0.0000	0	<0.5	
63		1		0.0000	0.0000	0	<0.5	
64		1		0.0000	0.0000	0	<0.5	
65		1		0.0000	0.0000	0	<0.5	
66		1		0.0000	0.0000	0	<0.5	
67		1		0.0000	0.0000	0	<0.5	
68		1		0.0000	0.0000	0	<0.5	
69		1		0.0000	0.0000	0	<0.5	
70		1		0.0000	0.0000	0	<0.5	
71		1		0.0000	0.0000	0	<0.5	
72		1		0.0000	0.0000	0	<0.5	
73		1		0.0000	0.0000	0	<0.5	
74		1		0.0000	0.0000	0	<0.5	
75		1		0.0000	0.0000	0	<0.5	

Analyzed By: BCP	Date Analyzed 12/27/19
Reviewed By: JC	Date Reviewed 12/31/19

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	24.936	0.3178	24.6181	24.61805	24.6	12/28/2019
3	ccb	1	0.481	0.3178	0.1631	0.16305	<0.5	12/28/2019
4	mb	1	0.000	0.3178	-0.3178	-0.31775	<0.5	12/28/2019
5	lcs	1	26.176	0.3178	25.8584	25.85835	25.9	12/28/2019
6	K1911810-001	1	2.742	0.3178	2.4243	2.42425	2.42	12/28/2019
7	K1911810-001	1	2.703	0.3178	2.3848	2.38475	2.4	12/28/2019
8	K1911810-002	1	2.561	0.3178	2.2434	2.24335	2	12/28/2019
9	K1911810-002	1	2.553	0.3178	2.2354	2.23535	2.24	12/28/2019
10	KQ1919210-11	1	28.785	0.3178	28.4677	28.46765	28.47	12/28/2019
11	ccv	1	25.159	0.3178	24.8417	24.84165	24.8	12/28/2019
12	ccb	1	0.464	0.3178	0.1464	0.14635	<0.5	12/28/2019
13	K1911868-001	1	1.037	0.3178	0.7189	0.71885	0.72	12/28/2019
14	K1911868-001	1	1.014	0.3178	0.6965	0.69645	0.70	12/28/2019
15	K1911868-002	1	1.065	0.3178	0.7476	0.74755	0.7	12/28/2019
16	K1911868-002	1	1.031	0.3178	0.7129	0.71285	0.7	12/28/2019
17	K1911868-003	1	8.200	0.3178	7.8822	7.88215	7.88	12/28/2019
18	K1911868-003	1	8.241	0.3178	7.9237	7.92365	7.9	12/28/2019
19	K1911868-004	1	0.455	0.3178	0.1376	0.13755	<0.5	12/28/2019
20	K1911868-004	1	0.403	0.3178	0.0856	0.08555	<0.5	12/28/2019
21	K1911909-001	1	0.164	0.3178	-0.1542	-0.15415	<0.5	12/28/2019
22	K1911909-001	1	0.113	0.3178	-0.2046	-0.20455	<0.5	12/28/2019
23	K1911910-001	10	10.159	0.3178	9.8411	98.4105	98.4	12/28/2019
24	K1911910-001	10	10.027	0.3178	9.7092	97.0915	97.09	12/28/2019
25	K1912004-001	1	0.056	0.3178	-0.2621	-0.26205	<0.5	12/28/2019

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

		date	time
Analyzed By: KP	Date Analyzed 12/27/19		
Reviewed By:	Date Reviewed 12/31/19		

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ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1912004-001	1	0.250	0.3178	-0.0683	-0.06825	<0.5	12/28/2019
27	K1911960-001	1	9.254	0.3178	8.9358	8.93575	8.94	12/28/2019
28	K1911960-001	1	9.274	0.3178	8.9559	8.95585	9.0	12/28/2019
29	K1911960-002	1	12.963	0.3178	12.6449	12.64485	12.6	12/28/2019
30	K1911960-002	1	12.640	0.3178	12.3218	12.32175	12.3	12/28/2019
31	K1911960-003	1	2.117	0.3178	1.7992	1.79915	1.8	12/28/2019
32	K1911960-003	1	1.991	0.3178	1.6728	1.67275	1.7	12/28/2019
33	ccv	1	25.104	0.3178	24.7865	24.78645	24.8	12/28/2019
34	ccb	1	0.291	0.3178	-0.0269	-0.02685	<0.5	12/28/2019
35	K1911960-004	1	23.664	0.3178	23.3464	23.34635	23.3	12/28/2019
36	K1911960-004	1	23.753	0.3178	23.4351	23.43505	23.4	12/28/2019
37	K1911960-005	1	9.239	0.3178	8.9215	8.92145	8.9	12/28/2019
38	K1911960-005	1	9.171	0.3178	8.8533	8.85325	8.9	12/28/2019
39	K1911960-006	1	15.788	0.3178	15.4703	15.47025	15.5	12/28/2019
40	K1911960-006	1	15.741	0.3178	15.4229	15.42285	15.4	12/28/2019
41	K1911960-007	8	5.175	0.3178	4.8576	38.8604	38.9	12/28/2019
42	K1911960-007	8	4.998	0.3178	4.6805	37.4436	37.4	12/28/2019
43	K1911960-008	1	11.627	0.3178	11.3094	11.30935	11.3	12/28/2019
44	K1911960-008	1	11.358	0.3178	11.0407	11.04065	11.0	12/28/2019
45	K1911960-009	1	15.908	0.3178	15.5904	15.59035	15.6	12/28/2019
46	K1911960-009	1	15.767	0.3178	15.4491	15.44905	15.4	12/28/2019
47	ccv	1	24.588	0.3178	24.2698	24.26975	24.3	12/28/2019
48	ccb	1	0.070	0.3178	-0.2482	-0.24815	<0.5	12/28/2019
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By:	BCP	Date Analyzed	12/27/19
Reviewed By:	JC	Date Reviewed	12/31/19

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	25.104	0.3178	24.7865	24.78645	24.8	12/28/2019
3	ccb	1	0.291	0.3178	-0.0269	-0.02685	<0.5	12/28/2019
4	mb	1	0.000	0.3178	-0.3178	-0.31775	<0.5	12/28/2019
5	lcs	1	26.014	0.3178	25.6966	25.69655	25.7	12/28/2019
6	K1911968-001	1	1.551	0.3178	1.2336	1.23355	1.23	12/28/2019
7	K1911968-001	1	1.469	0.3178	1.1508	1.15075	1.2	12/28/2019
8	K1911968-002	1	1.466	0.3178	1.1482	1.14815	1	12/28/2019
9	K1911968-002	1	1.513	0.3178	1.1955	1.19545	1.20	12/28/2019
10	ccv	1	24.588	0.3178	24.2698	24.26975	24.27	12/28/2019
11	ccb	1	0.070	0.3178	-0.2482	-0.24815	<0.5	12/28/2019
12	K1911968-003	1	1.018	0.3178	0.7005	0.70045	0.70	12/28/2019
13	K1911968-003	1	0.949	0.3178	0.6315	0.63145	0.63	12/28/2019
14	K1911968-004	1	1.361	0.3178	1.0430	1.04295	1.04	12/28/2019
15	K1911968-004	1	1.318	0.3178	1.0003	1.00025	1.0	12/28/2019
16	K1911968-005	1	0.000	0.3178	-0.3178	-0.31775	<0.5	12/28/2019
17	K1911968-005	1	0.000	0.3178	-0.3178	-0.31775	<0.5	12/28/2019
18	K1911914-001	1	0.868	0.3178	0.5501	0.55005	0.6	12/28/2019
19	K1911914-001	1	0.869	0.3178	0.5512	0.55115	0.6	12/28/2019
20	KQ1919211-11	1	27.664	0.3178	27.3458	27.34575	27.35	12/28/2019
21	K1911914-002	1	1.861	0.3178	1.5430	1.54295	1.54	12/28/2019
22	K1911914-002	1	1.788	0.3178	1.4704	1.47035	1.5	12/28/2019
23	K1911914-003	1	3.520	0.3178	3.2018	3.20175	3.2	12/29/2019
24	K1911914-003	1	3.427	0.3178	3.1096	3.10955	3.11	12/29/2019
25	K1911914-004	1	0.839	0.3178	0.5213	0.52125	0.52	12/29/2019

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

		date time
Analyzed By:	Date Analyzed	12/27/19
Reviewed By:	Date Reviewed	12/31/19

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ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1911914-004	1	0.800	0.3178	0.4826	0.48255	<0.5	12/29/2019
27	K1911914-005	1	5.996	0.3178	5.6786	5.67855	5.68	12/29/2019
28	K1911914-005	1	5.978	0.3178	5.6600	5.65995	5.7	12/29/2019
29	ccv	1	24.413	0.3178	24.0955	24.09545	24.1	12/29/2019
30	ccb	1	0.000	0.3178	-0.3178	-0.31775	<0.5	12/29/2019
31	K1911914-006	1	9.818	0.3178	9.4999	9.49985	9.5	12/29/2019
32	K1911914-006	1	9.738	0.3178	9.4199	9.41985	9.4	12/29/2019
33	K1911914-007	1	0.649	0.3178	0.3317	0.33165	<0.5	12/29/2019
34	K1911914-007	1	0.559	0.3178	0.2408	0.24075	<0.5	12/29/2019
35	K1911914-008	1	0.000	0.3178	-0.3178	-0.31775	<0.5	12/29/2019
36	K1911914-008	1	0.000	0.3178	-0.3178	-0.31775	<0.5	12/29/2019
37	K1911914-009	1	0.000	0.3178	-0.3178	-0.31775	<0.5	12/29/2019
38	K1911914-009	1	0.000	0.3178	-0.3178	-0.31775	<0.5	12/29/2019
39	ccv	1	24.226	0.3178	23.9078	23.90775	23.9	12/29/2019
40	ccb	1	0.000	0.3178	-0.3178	-0.31775	<0.5	12/29/2019
41		1		0.0000	0.0000	0	<0.5	
42		1		0.0000	0.0000	0	<0.5	
43		1		0.0000	0.0000	0	<0.5	
44		1		0.0000	0.0000	0	<0.5	
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By: BCB	Date Analyzed 12/27/19
Reviewed By: JC	Date Reviewed 12/31/19

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	ccv	1	24.413	0.3178	24.0955	24.09545	24.1	12/29/2019
3	ccb	1	0.000	0.3178	-0.3178	-0.31775	<0.5	12/29/2019
4	mb	1	0.000	0.3178	-0.3178	-0.31775	<0.5	12/29/2019
5	lcs	1	25.715	0.3178	25.3971	25.39705	25.4	12/29/2019
6	K1911970-001	1	0.000	0.3178	-0.3178	-0.31775	<0.5	12/29/2019
7	K1911970-001	1	0.000	0.3178	-0.3178	-0.31775	<0.5	12/29/2019
8	K1911970-002	1	0.990	0.3178	0.6720	0.67195	1	12/29/2019
9	K1911970-002	1	0.959	0.3178	0.6414	0.64135	0.64	12/29/2019
10	K1911970-003	1	0.373	0.3178	0.0548	0.05475	<0.5	12/29/2019
11	K1911970-003	1	0.398	0.3178	0.0800	0.07995	<0.5	12/29/2019
12	KQ1919213-09	1	27.031	0.3178	26.7129	26.71285	26.71	12/29/2019
13	ccv	1	24.226	0.3178	23.9078	23.90775	23.91	12/29/2019
14	ccb	1	0.000	0.3178	-0.3178	-0.31775	<0.5	12/29/2019
15	K1911970-004	1	17.332	0.3178	17.0143	17.01425	17.0	12/29/2019
16	K1911970-004	1	17.495	0.3178	17.1771	17.17705	17.2	12/29/2019
17	K1911970-005	1	1.164	0.3178	0.8466	0.84655	0.85	12/29/2019
18	K1911970-005	1	1.069	0.3178	0.7513	0.75125	0.8	12/29/2019
19	K1912074-001	100	8.699	0.3178	8.3813	838.125	838.1	12/29/2019
20	K1912074-001	100	8.760	0.3178	8.4421	844.205	844.21	12/29/2019
21	K1912074-002	100	6.870	0.3178	6.5525	655.245	655.25	12/29/2019
22	K1912074-002	100	6.824	0.3178	6.5065	650.645	650.6	12/29/2019
23	K1912040-001	1	1.543	0.3178	1.2254	1.22535	1.2	12/29/2019
24	K1912040-001	1	1.461	0.3178	1.1433	1.14325	1.14	12/29/2019
25	K1912040-002	1	16.394	0.3178	16.0760	16.07595	16.08	12/29/2019

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

		date	time
Analyzed By: BCB	Date Analyzed	12/27/19	
Reviewed By: JC	Date Reviewed	12/31/19	

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	K1912040-002	1	16.273	0.3178	15.9556	15.95555	15.96	12/29/2019
27	K1912040-003	1	3.257	0.3178	2.9392	2.93915	2.94	12/29/2019
28	K1912040-003	1	3.192	0.3178	2.8743	2.87425	2.9	12/29/2019
29	ccv	1	24.267	0.3178	23.9497	23.94965	23.9	12/29/2019
30	ccb	1	0.000	0.3178	-0.3178	-0.31775	<0.5	12/29/2019
31		1		0.0000	0.0000	0	<0.5	
32		1		0.0000	0.0000	0	<0.5	
33		1		0.0000	0.0000	0	<0.5	
34		1		0.0000	0.0000	0	<0.5	
35		1		0.0000	0.0000	0	<0.5	
36		1		0.0000	0.0000	0	<0.5	
37		1		0.0000	0.0000	0	<0.5	
38		1		0.0000	0.0000	0	<0.5	
39		1		0.0000	0.0000	0	<0.5	
40		1		0.0000	0.0000	0	<0.5	
41		1		0.0000	0.0000	0	<0.5	
42		1		0.0000	0.0000	0	<0.5	
43		1		0.0000	0.0000	0	<0.5	
44		1		0.0000	0.0000	0	<0.5	
45		1		0.0000	0.0000	0	<0.5	
46		1		0.0000	0.0000	0	<0.5	
47		1		0.0000	0.0000	0	<0.5	
48		1		0.0000	0.0000	0	<0.5	
49		1		0.0000	0.0000	0	<0.5	
50		1		0.0000	0.0000	0	<0.5	

Analyzed By:	Date Analyzed 12/27/19
Reviewed By:	Date Reviewed 12/31/19

TOC: 664898, 664900, 664901, 664902

Schedule: 12272019b

Version: 2
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/12/27 17:30 - Friday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	10	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K1911995-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K1911995-001.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
5	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
6	Sample	K1911998-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K1911998-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K1911998-003.01 1000x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K1911998-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K1911998-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K1911998-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K1912042-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K1912042-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K1912042-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K1912042-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K1912042-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K1911934-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K1911980-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K1911981-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K1911895-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K1911762-003.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K1911762-004.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K1911762-005.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K1911807-004.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K1911810-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K1911810-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K1911810-001.02 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K1911868-001.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K1911868-002.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K1911868-003.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K1911868-004.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K1911909-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K1911910-001.04 10x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K1912004-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K1911960-001.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K1911960-002.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K1911960-003.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

Schedule: 12272019b

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K1911960-004.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K1911960-005.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K1911960-006.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K1911960-007.02 8x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K1911960-008.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K1911960-009.02	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K1911968-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	K1911968-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample	K1911968-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample	K1911968-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample	K1911968-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample	K1911914-001.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample	K1911914-001.15 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
53	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
54	Sample	K1911914-002.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample	K1911914-003.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample	K1911914-004.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
57	Sample	K1911914-005.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample	K1911914-006.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample	K1911914-007.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
61	Sample	K1911914-008.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
62	Sample	K1911914-009.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
63	Sample	K1911970-001.17	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
64	Sample	K1911970-002.17	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
65	Sample	K1911970-003.17	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
66	Sample	K1911970-003.17 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
67	Sample	K1911970-004.17	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
68	Sample	K1911970-005.17	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
69	Sample	K1912074-001.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
70	Sample	K1912074-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
71	Sample	K1912040-001.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
72	Sample	K1912040-002.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
73	Sample	K1912040-003.15	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - 12272019b
Friday, December 27, 2019 05:30 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/12/31 09:22 - Tuesday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	12272019b	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v1) Fusion1 (Fusion1) (v2)		
Comment:			

Report Results

Sample Type: Clean — From Schedule Version 1

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/12/27 17:30

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.29	16.86	4.57	49.49	05:21
2	TC Clean	6.57	10.18	3.61	49.94	04:02
3	TC Clean	2.92	6.53	3.61	50.03	03:47
4	TC Clean	1.77	5.39	3.62	50.00	03:54

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/12/27 17:52

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.81	4.38	3.57	49.51	05:21
2	TC Clean	6.44	10.21	3.77	50.03	04:04
3	TC Clean	3.63	7.20	3.57	49.98	03:49
4	TC Clean	2.71	6.27	3.56	49.94	03:53

Sample Type: Clean From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2019/12/27 18:14

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.97	4.54	3.57	49.41	05:22
2	TC Clean	8.19	11.96	3.77	50.04	04:00
3	TC Clean	4.38	8.04	3.66	50.03	03:47
4	TC Clean	2.72	6.39	3.67	50.01	03:46

Sample Type: Blank (Creating v1332) From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2019/12/27 18:36

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.17	4.75	3.57	49.60	05:23
2	TC Clean	8.55	12.23	3.68	49.94	04:00
3	TC Clean	5.26	8.93	3.67	50.02	03:45
4	TC Clean	3.21	7.06	3.85	49.92	03:44
5	Reagent Blank	18.61	22.61	4.00	49.93	05:04
6	Acid Blank	2.58	6.18	3.60	49.49	05:26

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.5662 ppm	0.2739 ppm	48.3700%	2019/12/27 19:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2975	12.9750	21.21	25.07	3.85	49.99	10:27
2	TOC	0.7216	7.2162	17.30	21.09	3.79	50.03	10:26
3	TOC	0.5472	5.4720	16.12	19.94	3.82	50.01	10:26
4	TOC	0.4790	4.7899	15.66	19.61	3.95	50.01	10:30
5	TOC	0.4326	4.3258	15.34	19.13	3.79	50.00	10:26
6	TOC	0.4862	4.8621	15.71	19.40	3.69	50.00	10:26
7	TOC	0.4528	4.5276	15.48	19.18	3.70	49.99	10:30

8	TOC	0.4206	4.2065	15.26	18.88	3.62	50.01	10:29
9	TOC	0.4489	4.4893	15.45	18.99	3.54	49.98	10:28
10	TOC	0.3759	3.7586	14.96	18.62	3.67	49.98	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.2410 ppm (PASS)	0.0000 ppm	0%	2019/12/27 21:30

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.2410	252.4101	180.80	184.44	3.64	49.96	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.9008 ppm (PASS)	0.0000 ppm	0%	2019/12/27 21:45

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.9008	9.0079	15.58	19.24	3.66	49.96	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.3446 ppm	0.0000 ppm	0.0000%	2019/12/27 21:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3446	3.4463	14.75	18.44	3.70	49.97	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	26.4885 ppm (PASS)	0.0000 ppm	0%	2019/12/27 22:14

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	26.4885	264.8852	189.26	192.85	3.59	49.94	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	1.0163 ppm	0.0000 ppm	0.0000%	2019/12/27 22:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0163	10.1626	19.30	22.94	3.64	49.96	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K1911995-001.01	2.9512 ppm	0.0047 ppm	0.1600%	2019/12/27 22:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.9546	29.5455	32.46	36.12	3.66	49.94	10:26
2	TOC	2.9479	29.4792	32.42	36.25	3.83	49.93	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1911995-001.01 ms	28.3855 ppm	0.0000 ppm	0.0000%	2019/12/27 23:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.3855	283.8554	205.09	208.77	3.69	49.92	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

◆	5	TOC	RB	0.5110 ppm	0.0000 ppm	0.0000%	2019/12/27 23:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5110	5.1096	15.88	19.70	3.82	49.93	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	6	TOC	K1911998-001.01	3.6698 ppm	0.0027 ppm	0.0700%	2019/12/27 23:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.6717	36.7171	37.33	41.13	3.80	49.91	10:26
2	TOC	3.6679	36.6788	37.30	41.00	3.69	49.93	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	7	TOC	K1911998-002.01 100x	1.5880 ppm	0.0529 ppm	3.3300%	2019/12/28 00:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.6254	16.2543	23.44	27.14	3.70	49.93	10:27
2	TOC	1.5506	15.5059	22.93	26.59	3.65	49.92	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	8	TOC	K1911998-003.01 1000x	0.6289 ppm	0.0116 ppm	1.8400%	2019/12/28 00:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6371	6.3706	16.73	20.36	3.63	49.91	10:27
2	TOC	0.6207	6.2071	16.62	20.38	3.76	49.92	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	9	TOC	K1911998-004.01	11.1931 ppm	0.1016 ppm	0.9100%	2019/12/28 01:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	11.2649	112.6488	88.87	92.56	3.68	49.90	10:27
2	TOC	11.1212	111.2124	87.90	91.68	3.78	49.90	10:26

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.3374 ppm (PASS)	0.0000 ppm	0%	2019/12/28 01:33

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	26.3374	263.3737	188.24	191.98	3.74	49.92	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.8620 ppm (PASS)	0.0000 ppm	0%	2019/12/28 01:47

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.8620	8.6205	15.31	18.91	3.60	49.89	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K1911998-005.01	94.8881 ppm	0.3651 ppm	0.3800%	2019/12/28 02:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	94.6299	946.2993	654.75	658.45	3.70	49.86	10:28
2	TOC	95.1463	951.4628	658.25	662.80	4.54	49.87	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	11	TOC	K1911998-006.01	5.2158 ppm	1.8277 ppm	35.0400%	2019/12/28 02:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.5082	65.0821	56.58	60.95	4.37	49.89	10:28
2	TOC	3.9235	39.2348	39.04	42.79	3.75	49.88	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	12	TOC	K1912042-001.01	6.3311 ppm	0.3170 ppm	5.0100%	2019/12/28 02:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.5552	65.5520	56.90	60.70	3.79	49.92	10:27
2	TOC	6.1069	61.0691	53.86	57.52	3.66	49.91	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	13	TOC	K1912042-002.01	5.3075 ppm	0.2047 ppm	3.8600%	2019/12/28 03:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.4522	54.5222	49.42	52.92	3.51	49.91	10:26
2	TOC	5.1627	51.6273	47.45	50.87	3.42	49.89	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	14	TOC	K1912042-003.01	14.2995 ppm	0.0842 ppm	0.5900%	2019/12/28 03:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	14.3590	143.5904	109.88	113.45	3.57	49.87	10:28
2	TOC	14.2400	142.4001	109.07	112.55	3.48	49.89	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	15	TOC	K1912042-004.01	15.1073 ppm	0.1563 ppm	1.0300%	2019/12/28 04:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	14.9968	149.9679	114.20	117.83	3.62	49.88	10:27
2	TOC	15.2178	152.1777	115.70	119.33	3.63	49.86	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC)	CAS_salt_010711	CAS_salt_010711

(v1332) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	16	TOC	K1912042-005.01	4.1766 ppm	0.3936 ppm	9.4200%	2019/12/28 04:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.4549	44.5486	42.65	46.32	3.67	49.90	10:27
2	TOC	3.8983	38.9829	38.87	42.52	3.66	49.87	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	17	TOC	K1911934-002.01	1.2727 ppm	0.1137 ppm	8.9300%	2019/12/28 05:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3530	13.5304	21.59	25.06	3.46	49.88	10:31
2	TOC	1.1923	11.9231	20.50	24.01	3.51	49.89	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	18	TOC	K1911980-001.01	4.5084 ppm	0.0351 ppm	0.7800%	2019/12/28 05:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.5332	45.3324	43.18	46.80	3.62	49.88	10:28
2	TOC	4.4836	44.8359	42.84	46.35	3.51	49.88	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	19	TOC	K1911981-001.01	4.0152 ppm	0.0561 ppm	1.4000%	2019/12/28 06:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.0549	40.5489	39.93	43.50	3.57	49.90	10:29
2	TOC	3.9755	39.7548	39.39	42.97	3.58	49.88	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time

◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.9358 ppm (PASS)	0.0000 ppm	0%	2019/12/28 06:43

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9358	249.3577	178.72	182.40	3.68	49.90	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.4808 ppm (PASS)	0.0000 ppm	0%	2019/12/28 06:58

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.4808	4.8078	12.73	16.46	3.74	49.90	10:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2019/12/28 07:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	12.27	15.90	3.63	49.90	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	26.1761 ppm (PASS)	0.0000 ppm	0%	2019/12/28 07:27

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	26.1761	261.7606	187.14	190.88	3.74	49.91	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	21	TOC	K1911895-001.01	0.6910 ppm	0.1088 ppm	15.7400%	2019/12/28 07:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7679	7.6788	17.62	21.33	3.71	49.90	10:31
2	TOC	0.6141	6.1408	16.58	20.39	3.81	49.90	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	22	TOC	K1911762-003.01 100x	4.4145 ppm	0.0260 ppm	0.5900%	2019/12/28 08:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.3961	43.9608	42.25	46.00	3.76	49.90	10:29
2	TOC	4.4329	44.3291	42.50	46.24	3.74	49.92	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	23	TOC	K1911762-004.01 100x	5.6653 ppm	0.0030 ppm	0.0500%	2019/12/28 08:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.6632	56.6318	50.85	54.53	3.68	49.90	10:27
2	TOC	5.6675	56.6745	50.88	54.47	3.59	49.93	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	24	TOC	K1911762-005.01 100x	5.7898 ppm	0.0584 ppm	1.0100%	2019/12/28 09:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.8311	58.3113	51.99	55.60	3.61	49.91	10:26
2	TOC	5.7485	57.4848	51.43	55.18	3.75	49.91	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K1911807-004.03	0.9270 ppm	0.0690 ppm	7.4400%	2019/12/28 09:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9758	9.7575	19.03	22.67	3.64	49.90	10:26
2	TOC	0.8782	8.7822	18.37	22.03	3.66	49.89	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K1911810-001.02	2.7222 ppm	0.0279 ppm	1.0300%	2019/12/28 10:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.7420	27.4197	31.02	34.71	3.69	49.89	10:27
2	TOC	2.7025	27.0249	30.75	34.34	3.59	49.89	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K1911810-002.02	2.5571 ppm	0.0056 ppm	0.2200%	2019/12/28 10:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5611	25.6106	29.79	33.53	3.74	49.90	10:26
2	TOC	2.5531	25.5311	29.74	33.46	3.73	49.92	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K1911810-001.02 ms	28.7854 ppm	0.0000 ppm	0.0000%	2019/12/28 10:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.7854	287.8536	207.80	211.55	3.75	49.91	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.1594 ppm (PASS)	0.0000 ppm	0%	2019/12/28 11:12

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1594	251.5940	180.24	184.00	3.76	49.92	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.4641 ppm (PASS)	0.0000 ppm	0%	2019/12/28 11:27

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.4641	4.6413	12.61	16.27	3.66	49.93	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	29	TOC	K1911868-001.15	1.0254 ppm	0.0158 ppm	1.5400%	2019/12/28 11:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0366	10.3659	19.44	23.20	3.76	49.92	10:30
2	TOC	1.0142	10.1420	19.29	22.99	3.70	49.95	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	30	TOC	K1911868-002.15	1.0479 ppm	0.0246 ppm	2.3500%	2019/12/28 12:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0653	10.6532	19.64	23.28	3.64	49.98	10:31
2	TOC	1.0306	10.3055	19.40	22.93	3.52	49.96	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	31	TOC	K1911868-003.15	8.2207 ppm	0.0294 ppm	0.3600%	2019/12/28 12:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.1999	81.9989	68.07	71.60	3.53	49.98	10:28
2	TOC	8.2414	82.4143	68.35	71.85	3.50	49.96	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	32	TOC	K1911868-004.15	0.4293 ppm	0.0368 ppm	8.5700%	2019/12/28 13:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4553	4.5527	15.50	19.14	3.65	49.99	10:28
2	TOC	0.4033	4.0326	15.14	18.65	3.50	50.01	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	33	TOC	K1911909-001.02	0.1384 ppm	0.0356 ppm	25.7400%	2019/12/28 13:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1636	1.6357	13.52	17.00	3.48	50.00	10:29
2	TOC	0.1132	1.1319	13.18	16.76	3.59	50.04	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	34	TOC	K1911910-001.04 10x	10.0929 ppm	0.0932 ppm	0.9200%	2019/12/28 14:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.1588	101.5880	81.36	84.88	3.51	49.99	10:28
2	TOC	10.0269	100.2695	80.47	84.18	3.71	50.00	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	35	TOC	K1912004-001.02	0.1526 ppm	0.1370 ppm	89.7700%	2019/12/28 14:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0557	0.5574	12.78	16.33	3.55	50.03	10:28
2	TOC	0.2495	2.4946	14.10	17.67	3.57	49.99	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC)	CAS_salt_010711	CAS_salt_010711

(v1332) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K1911960-001.02	9.2635 ppm	0.0142 ppm	0.1500%	2019/12/28 14:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.2535	92.5352	75.22	78.74	3.52	49.98	10:28
2	TOC	9.2736	92.7355	75.36	79.02	3.67	50.01	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K1911960-002.02	12.8011 ppm	0.2284 ppm	1.7800%	2019/12/28 15:27

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	12.9626	129.6260	100.40	104.17	3.77	49.97	10:29
2	TOC	12.6395	126.3952	98.20	101.92	3.72	49.99	10:22

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	K1911960-003.02	2.0537 ppm	0.0894 ppm	4.3500%	2019/12/28 15:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1169	21.1689	26.78	30.53	3.76	49.94	10:30
2	TOC	1.9905	19.9049	25.92	29.64	3.73	49.99	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.1042 ppm (PASS)	0.0000 ppm	0%	2019/12/28 16:23

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1042	251.0415	179.87	183.48	3.61	50.01	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.2909 ppm (PASS)	0.0000 ppm	0%	2019/12/28 16:38

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.2909	2.9089	11.44	15.05	3.61	49.99	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2019/12/28 16:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	10.91	14.46	3.55	50.00	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	26.0143 ppm (PASS)	0.0000 ppm	0%	2019/12/28 17:07

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	26.0143	260.1430	186.05	189.61	3.56	50.03	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	40	TOC	K1911960-004.02	23.7084 ppm	0.0627 ppm	0.2600%	2019/12/28 17:22

Rep	Base			Adjusted		Baseline	Pressure	Run

#	Analysis Type	ppm	µg	(Abs)	NDIR (Abs)	(Abs)	(psig)	Time
1	TOC	23.6641	236.6407	173.04	176.72	3.69	50.01	10:27
2	TOC	23.7528	237.5276	173.64	177.22	3.58	50.01	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K1911960-005.02	9.2051 ppm	0.0482 ppm	0.5200%	2019/12/28 17:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.2392	92.3923	75.12	78.86	3.74	49.98	10:29
2	TOC	9.1710	91.7102	74.66	78.30	3.65	50.00	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K1911960-006.02	15.7643 ppm	0.0335 ppm	0.2100%	2019/12/28 18:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	15.7880	157.8805	119.58	123.29	3.71	49.98	10:30
2	TOC	15.7406	157.4061	119.25	122.89	3.63	49.97	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K1911960-007.02 8x	5.0867 ppm	0.1252 ppm	2.4600%	2019/12/28 18:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.1753	51.7526	47.54	51.13	3.59	49.98	10:26
2	TOC	4.9982	49.9818	46.33	50.08	3.75	49.97	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K1911960-008.02	11.4928 ppm	0.1900 ppm	1.6500%	2019/12/28 19:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	11.6271	116.2714	91.33	95.12	3.79	49.94	10:27
2	TOC	11.3584	113.5843	89.51	93.31	3.80	49.94	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	15.9081	159.0811	120.39	124.14	3.75	49.96	10:25
2	TOC	15.7668	157.6683	119.43	123.27	3.84	49.97	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	K1911968-001.01	1.5099 ppm	0.0585 ppm	3.8800%	2019/12/28 20:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5513	15.5133	22.94	26.64	3.70	49.94	10:27
2	TOC	1.4685	14.6854	22.38	26.13	3.75	49.94	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	K1911968-002.01	1.4895 ppm	0.0334 ppm	2.2400%	2019/12/28 20:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.4659	14.6588	22.36	26.08	3.73	49.93	10:25
2	TOC	1.5132	15.1317	22.68	26.43	3.75	49.92	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.5875 ppm (PASS)	0.0000 ppm	0%	2019/12/28 21:07

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5875	245.8750	176.36	180.03	3.67	49.92	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0696 ppm (PASS)	0.0000 ppm	0%	2019/12/28 21:21

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0696	0.6961	9.94	13.73	3.80	49.92	10:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	48	TOC	K1911968-003.01	0.9837 ppm	0.0488 ppm	4.9600%	2019/12/28 21:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.0182	10.1818	19.32	22.91	3.59	49.90	10:28
2	TOC	0.9492	9.4923	18.85	22.61	3.76	49.91	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	49	TOC	K1911968-004.01	1.3393 ppm	0.0302 ppm	2.2600%	2019/12/28 22:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3607	13.6070	21.64	25.30	3.65	49.91	10:28
2	TOC	1.3180	13.1797	21.35	25.07	3.72	49.90	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	50	TOC	K1911968-005.01	0.0000 ppm	0.0000 ppm	0.0000%	2019/12/28 22:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.84	13.63	3.79	49.92	10:25
2	TOC	0.0000	0.0000	9.88	13.46	3.58	49.91	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

◆	51	TOC	K1911914-001.15	0.8684 ppm	0.0008 ppm	0.1000%	2019/12/28 23:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8678	8.6776	18.30	21.91	3.62	49.91	10:26
2	TOC	0.8689	8.6894	18.30	21.90	3.60	49.92	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	52	TOC	K1911914-001.15 ms	27.6635 ppm	0.0000 ppm	0.0000%	2019/12/28 23:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.6635	276.6352	200.18	203.73	3.54	49.90	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	53	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/12/28 23:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.34	13.06	3.73	49.90	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	54	TOC	K1911914-002.15	1.8244 ppm	0.0514 ppm	2.8100%	2019/12/28 23:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8607	18.6070	25.04	28.69	3.65	49.91	10:26
2	TOC	1.7881	17.8807	24.54	28.23	3.69	49.89	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	55	TOC	K1911914-003.15	3.4734 ppm	0.0652 ppm	1.8800%	2019/12/29 00:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.5195	35.1953	36.30	39.92	3.63	49.92	10:27
2	TOC	3.4273	34.2730	35.67	39.10	3.43	49.89	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8390	8.3904	18.10	21.56	3.46	49.89	10:29
2	TOC	0.8003	8.0029	17.84	21.44	3.60	49.89	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	57	TOC	K1911914-005.15	5.9870 ppm	0.0131 ppm	0.2200%	2019/12/29 01:22

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.9963	59.9627	53.11	56.59	3.48	49.85	10:29
2	TOC	5.9777	59.7771	52.98	56.57	3.58	49.86	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.4132 ppm (PASS)	0.0000 ppm	0%	2019/12/29 01:50

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.4132	244.1322	175.18	178.89	3.71	49.83	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/12/29 02:04

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.80	12.34	3.55	49.79	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D

Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	58	TOC	MB4	0.0000 ppm	0.0000 ppm	0.0000%	2019/12/29 02:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.16	11.78	3.61	49.79	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	25.7148 ppm (PASS)	0.0000 ppm	0%	2019/12/29 02:34

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.7148	257.1480	184.01	187.45	3.44	49.78	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	59	TOC	K1911914-006.15	9.7776 ppm	0.0566 ppm	0.5800%	2019/12/29 02:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.8176	98.1761	79.05	82.68	3.63	49.78	10:25
2	TOC	9.7376	97.3761	78.50	82.20	3.70	49.79	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	60	TOC	K1911914-007.15	0.6040 ppm	0.0643 ppm	10.6400%	2019/12/29 03:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	0.6494	6.4944	16.81	20.50	3.68	49.78	10:26
2	TOC	0.5585	5.5854	16.20	19.77	3.57	49.77	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	61	TOC	K1911914-008.15	0.0000 ppm	0.0000 ppm	0.0000%	2019/12/29 03:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.95	12.59	3.64	49.78	10:26
2	TOC	0.0000	0.0000	8.91	12.36	3.45	49.80	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	62	TOC	K1911914-009.15	0.0000 ppm	0.0000 ppm	0.0000%	2019/12/29 04:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.15	11.75	3.60	49.81	10:25
2	TOC	0.0000	0.0000	8.11	11.69	3.58	49.80	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	63	TOC	K1911970-001.17	0.0000 ppm	0.0000 ppm	0.0000%	2019/12/29 04:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.88	11.51	3.63	49.83	10:30
2	TOC	0.0000	0.0000	7.73	11.42	3.69	49.84	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	64	TOC	K1911970-002.17	0.9744 ppm	0.0217 ppm	2.2200%	2019/12/29 05:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9897	9.8975	19.12	22.79	3.67	49.84	10:30
2	TOC	0.9591	9.5910	18.92	22.49	3.58	49.84	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	65	TOC	K1911970-003.17	0.3851 ppm	0.0178 ppm	4.6300%	2019/12/29 05:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3725	3.7247	14.94	18.63	3.70	49.83	10:29
2	TOC	0.3977	3.9767	15.11	18.56	3.46	49.86	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	66	TOC	K1911970-003.17 ms	27.0306 ppm	0.0000 ppm	0.0000%	2019/12/29 06:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.0306	270.3063	195.89	199.51	3.62	49.85	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.2255 ppm (PASS)	0.0000 ppm	0%	2019/12/29 06:21

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.2255	242.2554	173.90	177.52	3.62	49.84	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/12/29 06:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.48	11.18	3.69	49.86	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria	Do Nothing	CAS_salt_010711	CAS_salt_010711	0 ppmC

met.	(v4)	(v30)

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	67	TOC	K1911970-004.17	17.4134 ppm	0.1151 ppm	0.6600%	2019/12/29 06:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	17.3320	173.3196	130.06	133.74	3.69	49.86	10:30
2	TOC	17.4948	174.9475	131.16	134.76	3.60	49.86	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	68	TOC	K1911970-005.17	1.1167 ppm	0.0674 ppm	6.0400%	2019/12/29 07:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1643	11.6432	20.31	23.95	3.64	49.87	10:28
2	TOC	1.0690	10.6900	19.66	23.22	3.56	49.86	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	69	TOC	K1912074-001.01 100x	8.7294 ppm	0.0430 ppm	0.4900%	2019/12/29 07:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.6990	86.9901	71.46	75.03	3.58	49.89	10:31
2	TOC	8.7598	87.5985	71.87	75.53	3.66	49.87	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	70	TOC	K1912074-002.01 100x	6.8472 ppm	0.0325 ppm	0.4700%	2019/12/29 08:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	6.8702	68.7017	59.04	62.60	3.55	49.87	10:28
2	TOC	6.8242	68.2421	58.73	62.52	3.79	49.89	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

◆	71	TOC	K1912040-001.15	1.5021 ppm	0.0580 ppm	3.8600%	2019/12/29 08:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5431	15.4308	22.88	26.63	3.75	49.87	10:31
2	TOC	1.4610	14.6102	22.32	25.86	3.53	49.86	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	72	TOC	K1912040-002.15	16.3335 ppm	0.0851 ppm	0.5200%	2019/12/29 09:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	16.3937	163.9368	123.69	127.23	3.54	49.87	10:27
2	TOC	16.2733	162.7332	122.87	126.56	3.69	49.87	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	73	TOC	K1912040-003.15	3.2244 ppm	0.0458 ppm	1.4200%	2019/12/29 09:39

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.2569	32.5685	34.51	38.15	3.64	49.87	10:31
2	TOC	3.1920	31.9203	34.07	37.70	3.62	49.88	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.4067 (IC) (v1332)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.2674 ppm (PASS)	0.0000 ppm	0%	2019/12/29 10:07

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.2674	242.6738	174.19	177.71	3.52	49.88	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

			Concentration			Min / Max				

	Pos	BAT	(ppm)	Dil	Sample ID	(% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/12/29 10:22

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.26	10.83	3.57	49.86	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1331	6.0703	3.0960	0.0000	0.0000	0.0000	2019/12/27 15:34	Fusion1 (Fusion1)
v1332	6.2033	2.5850	0.0000	0.0000	0.0000	2019/12/27 19:09	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v30	Calibration curve formula:	TOC: y = 6.788x + 9.463
Ver Creation:	2019/03/05 17:42	r^2 value:	TOC: r^2 = 0.99963
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	7.8970	0.0000		2019/03/05 16:15
0.500 ppm	11.5280	0.5000		2019/03/05 16:29
1.0 ppm	14.9760	1.0000		2019/03/05 16:44
5.0 ppm	43.6500	5.0000		2019/03/05 16:58
10 ppm	79.6020	10.0000		2019/03/05 17:12
25 ppm	183.3580	25.0000		2019/03/05 17:26
50 ppm	346.3230	50.0000		2019/03/05 17:40

Methods

Name: CAS_salt_010711 (TOC)

Version: v4 Operator: Fusion1 (Fusion1)
Ver Creation: 2019/02/21 17:57
Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date

1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2019/12/29 10:37

ALS Environmental

StarLIMS Run: 664898, 664900, 664901, 664902

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-82C 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-82C 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-83H

21 % H3PO4: 11-GEN-05-83G

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: BCP	Date Analyzed: 12/27/19
Reviewed By:	Date Reviewed: 12/31/19

Work Request # Original ( ) K1911934, 11980, 11981, 11995, 11998, 12042, 11912, 11968, 12074, 12105, 12140, 11963

Tier: I II II IV IV IV II IV II IV II II

Date Analyzed: 12/31/19

Analyst: BCP

Analysis: TOC/DOC

TOC: 665302, 665303

Run # DOC: 665304

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	(yes)/no/NA
2.	Holding times met for all analyses and for all samples?	(yes)/no/NA
3.	Are calculations correct?	(yes)/no/NA
4.	Is the reporting basis correct? (Dry Weight)	(yes)/no/NA
5.	All quality control criteria met?	(yes)/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	(yes)/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	(yes)/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	(yes)/no/NA
9.	Are results for methods blanks all ND?	(yes)/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/(no)/NA
11.	Are all exceptions explained?	(yes)/no/NA
12.	Have all applicable service requests been reviewed?	(yes)/no/NA
13.	Are all samples labeled correctly?	(yes)/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	(yes)/no/NA
15.	Are detection limits and units reported correctly?	(yes)/no/NA
16.	Is the unused space on the benchsheet crossed out?	(yes)/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/(no)/NA

COMMENTS: K1911934-2/2d report a high %RSD. However, these samples are less than 5x the MRL.
K1912042-5/5d report a high %RSD due to suspected non-homogenous sample.
K1911998-3 Sent for RA due to being overdiluted.

Final Approved by: _____ Date: 01/03/20

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 665302 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1911934-002	Carbon, Total Organic	N/A		Drinking Water	0.80 mg/L	10 mL	0.80 mg/L	1	0.07	0.50			1/1/20 04:24:00	N	I
K1911980-001	Carbon, Total Organic	N/A		Water	3.94 mg/L	10 mL	3.94 mg/L	1	0.07	0.50			1/1/20 04:52:00	N	II
K1911981-001	Carbon, Total Organic	N/A		Water	3.51 mg/L	10 mL	3.51 mg/L	1	0.07	0.50			1/1/20 05:20:00	N	II
K1911995-001	Carbon, Total Organic	N/A		Water	2.19 mg/L	10 mL	2.19 mg/L	1	0.07	0.50			12/31/19 21:48:00	N	IV
K1911998-001	Carbon, Total Organic	N/A		Ground Water	2.96 mg/L	10 mL	2.96 mg/L	1	0.07	0.50			12/31/19 22:45:00	N	IV
K1911998-002	Carbon, Total Organic	N/A		Ground Water	0.92 mg/L	10 mL	92 mg/L	100	7	50			12/31/19 23:14:00	N	IV
K1911998-003	Carbon, Total Organic	N/A		Ground Water	0.00 mg/L	10 mL	500 mg/L U	1000	70	500			12/31/19 23:42:00	N	IV
K1911998-004	Carbon, Total Organic	N/A		Ground Water	9.94 mg/L	10 mL	9.94 mg/L	1	0.07	0.50			1/1/20 00:10:00	N	IV
K1911998-005	Carbon, Total Organic	N/A		Ground Water	2.54 mg/L	10 mL	127 mg/L	50	4	25			1/1/20 01:07:00	N	IV
K1911998-006	Carbon, Total Organic	N/A		Ground Water	1.75 mg/L	10 mL	1.75 mg/L	1	0.07	0.50			1/1/20 01:35:00	N	IV
K1912042-001	Carbon, Total Organic	N/A		Ground Water	4.44 mg/L	10 mL	4.44 mg/L	1	0.07	0.50			1/1/20 02:03:00	N	IV
K1912042-002	Carbon, Total Organic	N/A		Ground Water	4.10 mg/L	10 mL	4.10 mg/L	1	0.07	0.50			1/1/20 02:32:00	N	IV
K1912042-003	Carbon, Total Organic	N/A		Ground Water	13.05 mg/L	10 mL	13.1 mg/L	1	0.07	0.50			1/1/20 03:00:00	N	IV
K1912042-004	Carbon, Total Organic	N/A		Ground Water	13.77 mg/L	10 mL	13.8 mg/L	1	0.07	0.50			1/1/20 03:28:00	N	IV
K1912042-005	Carbon, Total Organic	N/A		Ground Water	3.48 mg/L	10 mL	3.48 mg/L	1	0.07	0.50			1/1/20 03:56:00	N	IV
KQ1919248-01	Carbon, Total Organic	CCV		Water	23.98 mg/L	10 mL	24.0 mg/L	1					12/31/19 20:35:00	N	IV
KQ1919248-02	Carbon, Total Organic	CCV		Water	25.08 mg/L	10 mL	25.1 mg/L	1					1/1/20 00:38:00	N	IV
KQ1919248-03	Carbon, Total Organic	CCV		Water	24.03 mg/L	10 mL	24.0 mg/L	1					1/1/20 05:48:00	N	IV
KQ1919248-04	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			12/31/19 20:49:00	N	IV
KQ1919248-05	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			1/1/20 00:53:00	N	IV
KQ1919248-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			1/1/20 06:03:00	N	IV
KQ1919248-07	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			12/31/19 21:04:00	N	IV
KQ1919248-08	Carbon, Total Organic	LCS		Water	25.12 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		12/31/19 21:19:00	N	IV
KQ1919248-09	Carbon, Total Organic	MS	K1911995-001	Water	28.29 mg/L	10 mL	28.3 mg/L	1	0.07	0.50	104		12/31/19 22:16:00	N	IV
KQ1919248-10	Carbon, Total Organic	DUP	K1911934-002	Drinking Water	0.63 mg/L	10 mL	0.63 mg/L	1	0.07	0.50		23*	1/1/20 04:24:00	N	I
KQ1919248-11	Carbon, Total Organic	DUP	K1911980-001	Water	3.92 mg/L	10 mL	3.92 mg/L	1	0.07	0.50		<1	1/1/20 04:52:00	N	II
KQ1919248-12	Carbon, Total Organic	DUP	K1911981-001	Water	3.50 mg/L	10 mL	3.50 mg/L	1	0.07	0.50		<1	1/1/20 05:20:00	N	II
KQ1919248-13	Carbon, Total Organic	DUP	K1911995-001	Water	2.23 mg/L	10 mL	2.23 mg/L	1	0.07	0.50		2	12/31/19 21:48:00	N	IV
KQ1919248-14	Carbon, Total Organic	DUP	K1911998-002	Ground Water	0.88 mg/L	10 mL	88 mg/L	100	7	50		5	12/31/19 23:14:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

01/03/20

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 665302 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1919248-15	Carbon, Total Organic	DUP	K1911998-001	Ground Water	2.86 mg/L	10 mL	2.86 mg/L	1	0.07	0.50		3	12/31/19 22:45:00	N	IV
KQ1919248-16	Carbon, Total Organic	DUP	K1911998-003	Ground Water	0.00 mg/L	10 mL	500 mg/L U	1000	70	500		NC	12/31/19 23:42:00	N	IV
KQ1919248-17	Carbon, Total Organic	DUP	K1911998-004	Ground Water	9.77 mg/L	10 mL	9.77 mg/L	1	0.07	0.50		2	1/1/20 00:10:00	N	IV
KQ1919248-18	Carbon, Total Organic	DUP	K1911998-005	Ground Water	2.50 mg/L	10 mL	125 mg/L	50	4	25		2	1/1/20 01:07:00	N	IV
KQ1919248-19	Carbon, Total Organic	DUP	K1911998-006	Ground Water	1.77 mg/L	10 mL	1.77 mg/L	1	0.07	0.50		1	1/1/20 01:35:00	N	IV
KQ1919248-20	Carbon, Total Organic	DUP	K1912042-002	Ground Water	4.01 mg/L	10 mL	4.01 mg/L	1	0.07	0.50		2	1/1/20 02:32:00	N	IV
KQ1919248-21	Carbon, Total Organic	DUP	K1912042-001	Ground Water	4.41 mg/L	10 mL	4.41 mg/L	1	0.07	0.50		<1	1/1/20 02:03:00	N	IV
KQ1919248-22	Carbon, Total Organic	DUP	K1912042-003	Ground Water	13.43 mg/L	10 mL	13.4 mg/L	1	0.07	0.50		3	1/1/20 03:00:00	N	IV
KQ1919248-23	Carbon, Total Organic	DUP	K1912042-004	Ground Water	14.50 mg/L	10 mL	14.5 mg/L	1	0.07	0.50		5	1/1/20 03:28:00	N	IV
KQ1919248-24	Carbon, Total Organic	DUP	K1912042-005	Ground Water	3.01 mg/L	10 mL	3.01 mg/L	1	0.07	0.50		14*	1/1/20 03:56:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 665303 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1911912-001	Carbon, Total Organic	N/A		Water	1.32 mg/L	10 mL	1.32 mg/L	1	0.07	0.50			1/1/20 07:44:00	N	II
K1911912-002	Carbon, Total Organic	N/A		Water	0.42 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			1/1/20 08:12:00	N	II
K1911912-003	Carbon, Total Organic	N/A		Water	0.62 mg/L	10 mL	0.62 mg/L	1	0.07	0.50			1/1/20 08:40:00	N	II
K1911912-004	Carbon, Total Organic	N/A		Water	0.35 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			1/1/20 09:08:00	N	II
K1911968-004	Carbon, Total Organic	N/A		Water	1.15 mg/L	10 mL	1.15 mg/L	1	0.07	0.50			1/1/20 09:36:00	N	IV
K1911968-005	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			1/1/20 10:34:00	N	IV
K1912074-003	Carbon, Total Organic	N/A		Water	7.12 mg/L	10 mL	7.12 mg/L	1	0.07	0.50			1/1/20 11:02:00	N	II
K1912105-001	Carbon, Total Organic	N/A		Water	2.46 mg/L	10 mL	2.46 mg/L	1	0.07	0.50			1/1/20 06:47:00	N	IV
K1912140-001	Carbon, Total Organic	N/A		Water	7.36 mg/L	10 mL	7.36 mg/L	1	0.07	0.50			1/1/20 11:30:00	N	II
KQ1919247-01	Carbon, Total Organic	CCV		Water	24.03 mg/L	10 mL	24.0 mg/L	1					1/1/20 05:48:00	N	IV
KQ1919247-02	Carbon, Total Organic	CCV		Water	23.99 mg/L	10 mL	24.0 mg/L	1					1/1/20 10:04:00	N	IV
KQ1919247-03	Carbon, Total Organic	CCV		Water	23.70 mg/L	10 mL	23.7 mg/L	1					1/1/20 15:01:00	N	IV
KQ1919247-04	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			1/1/20 06:03:00	N	IV
KQ1919247-05	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			1/1/20 10:19:00	N	IV
KQ1919247-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			1/1/20 15:15:00	N	IV
KQ1919247-07	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			1/1/20 06:18:00	N	IV
KQ1919247-08	Carbon, Total Organic	LCS		Water	25.08 mg/L	10 mL	25.1 mg/L	1	0.07	0.50	100		1/1/20 06:32:00	N	IV
KQ1919247-09	Carbon, Total Organic	MS	K1912105-001	Water	28.13 mg/L	10 mL	28.1 mg/L	1	0.07	0.50	103		1/1/20 07:15:00	N	IV
KQ1919247-10	Carbon, Total Organic	DUP	K1911912-001	Water	1.28 mg/L	10 mL	1.28 mg/L	1	0.07	0.50		3	1/1/20 07:44:00	N	II
KQ1919247-11	Carbon, Total Organic	DUP	K1911912-002	Water	0.40 mg/L	10 mL	0.40 mg/L J	1	0.07	0.50		NC	1/1/20 08:12:00	N	II
KQ1919247-12	Carbon, Total Organic	DUP	K1911912-003	Water	0.63 mg/L	10 mL	0.63 mg/L	1	0.07	0.50		2	1/1/20 08:40:00	N	II
KQ1919247-13	Carbon, Total Organic	DUP	K1911912-004	Water	0.35 mg/L	10 mL	0.35 mg/L J	1	0.07	0.50		NC	1/1/20 09:08:00	N	II
KQ1919247-14	Carbon, Total Organic	DUP	K1911968-004	Water	1.21 mg/L	10 mL	1.21 mg/L	1	0.07	0.50		5	1/1/20 09:36:00	N	IV
KQ1919247-15	Carbon, Total Organic	DUP	K1911968-005	Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50		NC	1/1/20 10:34:00	N	IV
KQ1919247-16	Carbon, Total Organic	DUP	K1912074-003	Water	7.18 mg/L	10 mL	7.18 mg/L	1	0.07	0.50		<1	1/1/20 11:02:00	N	II
KQ1919247-17	Carbon, Total Organic	DUP	K1912105-001	Water	2.33 mg/L	10 mL	2.33 mg/L	1	0.07	0.50		5	1/1/20 06:47:00	N	IV
KQ1919247-18	Carbon, Total Organic	DUP	K1912140-001	Water	7.35 mg/L	10 mL	7.35 mg/L	1	0.07	0.50		<1	1/1/20 11:30:00	N	II

01/03/20

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 665304 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K1911963-001	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	2.40 mg/L	10 mL	2.40 mg/L	1	0.07	0.50			1/1/20 12:13:00	N	II
K1911963-002	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	2.38 mg/L	10 mL	2.38 mg/L	1	0.07	0.50			1/1/20 12:41:00	N	II
K1911963-003	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	0.51 mg/L	10 mL	0.51 mg/L	1	0.07	0.50			1/1/20 13:09:00	N	II
K1911963-004	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	1.57 mg/L	10 mL	1.57 mg/L	1	0.07	0.50			1/1/20 13:37:00	N	II
K1911963-005	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	1.50 mg/L	10 mL	1.50 mg/L	1	0.07	0.50			1/1/20 14:05:00	N	II
K1911963-006	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	1.96 mg/L	10 mL	1.96 mg/L	1	0.07	0.50			1/1/20 14:33:00	N	II
K1911963-007	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	2.14 mg/L	10 mL	2.14 mg/L	1	0.07	0.50			1/1/20 16:00:00	N	II
K1911963-008	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	1.92 mg/L	10 mL	1.92 mg/L	1	0.07	0.50			1/1/20 16:28:00	N	II
K1911963-009	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	1.95 mg/L	10 mL	1.95 mg/L	1	0.07	0.50			1/1/20 16:56:00	N	II
K1911963-010	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	2.04 mg/L	10 mL	2.04 mg/L	1	0.07	0.50			1/1/20 17:25:00	N	II
K1911963-011	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	1.93 mg/L	10 mL	1.93 mg/L	1	0.07	0.50			1/1/20 17:53:00	N	II
K1911963-012	Carbon, Dissolved Organic (DOC)	N/A		Surface Water	0.46 mg/L	10 mL	0.46 mg/L J	1	0.07	0.50			1/1/20 18:21:00	N	II
KQ1919246-01	Carbon, Dissolved Organic (DOC)	MS	K1911963-012	Surface Water	27.18 mg/L	10 mL	27.2 mg/L	1	0.07	0.50	107		1/1/20 18:49:00	N	II
KQ1919246-02	Carbon, Dissolved Organic (DOC)	CCV		Surface Water	23.99 mg/L	10 mL	24.0 mg/L	1					1/1/20 10:04:00	N	II
KQ1919246-03	Carbon, Dissolved Organic (DOC)	CCV		Surface Water	23.70 mg/L	10 mL	23.7 mg/L	1					1/1/20 15:01:00	N	II
KQ1919246-04	Carbon, Dissolved Organic (DOC)	CCV		Surface Water	23.80 mg/L	10 mL	23.8 mg/L	1					1/1/20 19:32:00	N	II
KQ1919246-05	Carbon, Dissolved Organic (DOC)	CCB		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			1/1/20 10:19:00	N	II
KQ1919246-06	Carbon, Dissolved Organic (DOC)	CCB		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			1/1/20 15:15:00	N	II
KQ1919246-07	Carbon, Dissolved Organic (DOC)	CCB		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			1/1/20 19:46:00	N	II
KQ1919246-08	Carbon, Dissolved Organic (DOC)	MB		Surface Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			1/1/20 15:30:00	N	II
KQ1919246-09	Carbon, Dissolved Organic (DOC)	LCS		Surface Water	24.87 mg/L	10 mL	24.9 mg/L	1	0.07	0.50	99		1/1/20 15:45:00	N	II
KQ1919246-10	Carbon, Dissolved Organic (DOC)	DUP	K1911963-001	Surface Water	2.35 mg/L	10 mL	2.35 mg/L	1	0.07	0.50		2	1/1/20 12:13:00	N	II
KQ1919246-11	Carbon, Dissolved Organic (DOC)	DUP	K1911963-002	Surface Water	2.35 mg/L	10 mL	2.35 mg/L	1	0.07	0.50		1	1/1/20 12:41:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

01/03/20

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 665304 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ1919246-12	Carbon, Dissolved Organic (DOC)	DUP	K1911963-003	Surface Water	0.51 mg/L	10 mL	0.51 mg/L	1	0.07	0.50		1	1/1/20 13:09:00	N	II
KQ1919246-13	Carbon, Dissolved Organic (DOC)	DUP	K1911963-004	Surface Water	1.53 mg/L	10 mL	1.53 mg/L	1	0.07	0.50		3	1/1/20 13:37:00	N	II
KQ1919246-14	Carbon, Dissolved Organic (DOC)	DUP	K1911963-005	Surface Water	1.40 mg/L	10 mL	1.40 mg/L	1	0.07	0.50		7	1/1/20 14:05:00	N	II
KQ1919246-15	Carbon, Dissolved Organic (DOC)	DUP	K1911963-006	Surface Water	1.93 mg/L	10 mL	1.93 mg/L	1	0.07	0.50		1	1/1/20 14:33:00	N	II
KQ1919246-16	Carbon, Dissolved Organic (DOC)	DUP	K1911963-007	Surface Water	2.00 mg/L	10 mL	2.00 mg/L	1	0.07	0.50		6	1/1/20 16:00:00	N	II
KQ1919246-17	Carbon, Dissolved Organic (DOC)	DUP	K1911963-008	Surface Water	1.89 mg/L	10 mL	1.89 mg/L	1	0.07	0.50		2	1/1/20 16:28:00	N	II
KQ1919246-18	Carbon, Dissolved Organic (DOC)	DUP	K1911963-009	Surface Water	1.82 mg/L	10 mL	1.82 mg/L	1	0.07	0.50		7	1/1/20 16:56:00	N	II
KQ1919246-19	Carbon, Dissolved Organic (DOC)	DUP	K1911963-010	Surface Water	1.90 mg/L	10 mL	1.90 mg/L	1	0.07	0.50		7	1/1/20 17:25:00	N	II
KQ1919246-20	Carbon, Dissolved Organic (DOC)	DUP	K1911963-011	Surface Water	1.88 mg/L	10 mL	1.88 mg/L	1	0.07	0.50		2	1/1/20 17:53:00	N	II
KQ1919246-21	Carbon, Dissolved Organic (DOC)	DUP	K1911963-012	Surface Water	0.46 mg/L	10 mL	0.46 mg/L J	1	0.07	0.50		<1	1/1/20 18:21:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

TOC: 665302, 665303
DOC: 665304

Schedule: Daily Run Method 010711

Version: 80
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2019/12/31 16:45 - Tuesday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	10	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K1911995-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K1911995-001.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
5	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
6	Sample	K1911998-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K1911998-002.01 100x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K1911998-003.01 1000x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K1911998-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K1911998-005.01 50x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K1911998-006.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K1912042-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K1912042-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K1912042-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K1912042-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K1912042-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K1911934-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K1911980-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K1911981-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K1912105-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K1912105-001.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
23	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
24	Sample	K1911912-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K1911912-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K1911912-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K1911912-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K1911968-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K1911968-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K1912074-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K1912140-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	FB 12/20/19 1501	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
33	Sample	K1911963-001.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K1911963-002.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K1911963-003.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K1911963-004.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K1911963-005.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K1911963-006.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

01/03/20

Schedule: Daily Run Method 010711

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K1911963-007.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K1911963-008.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K1911963-009.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K1911963-010.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K1911963-011.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K1911963-012.01 doc	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	K1911963-012.01 ms doc	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
47	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - Daily Run Method 010711 Tuesday, December 31, 2019 04:35 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2020/01/03 09:21 - Friday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	Daily Run Method 010711	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v79) Fusion1 (Fusion1) (v80)		
Comment:			

Report Results

01/03/20

Sample Type: Clean — From Schedule Version 79

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/12/31 16:35

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	13.71	19.28	5.58	49.47	05:23
2	TC Clean	14.29	17.33	3.04	50.01	04:04
3	TC Clean	2.88	6.69	3.81	49.97	03:47
4	TC Clean	2.31	6.12	3.80	50.02	03:53

Sample Type: Clean — From Schedule Version 80

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/12/31 16:57

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.21	5.09	3.88	49.61	05:24
2	TC Clean	5.91	9.66	3.76	50.10	04:01
3	TC Clean	2.51	6.24	3.73	50.04	03:45
4	TC Clean	2.01	5.82	3.81	49.94	03:47

Sample Type: Clean From Schedule Version 80

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2019/12/31 17:19

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.28	5.01	3.73	49.37	05:20
2	TC Clean	6.29	10.12	3.84	50.05	04:01
3	TC Clean	2.28	6.27	3.99	50.05	03:44
4	TC Clean	2.20	5.97	3.77	50.08	03:46

Sample Type: Blank (Creating v1333) From Schedule Version 80

	Pos	Analysis Type	Sample ID	Start Time
◈	(blank)		Reagent/Acid Blank	2019/12/31 17:40

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.32	5.05	3.72	49.64	05:13
2	TC Clean	5.58	9.42	3.84	49.99	04:01
3	TC Clean	2.53	6.30	3.78	50.09	03:47
4	TC Clean	2.36	6.26	3.90	49.92	03:51
5	Reagent Blank	4.25	8.29	4.04	50.14	05:02
6	Acid Blank	1.36	5.20	3.84	49.53	05:26

Sample Type: Sample From Schedule Version 80

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	0.0441 ppm	0.1394 ppm	316.2300%	2019/12/31 18:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4407	4.4075	11.79	15.74	3.95	50.07	10:28
2	TOC	0.0000	0.0000	7.58	11.48	3.89	50.07	10:27
3	TOC	0.0000	0.0000	6.95	10.79	3.84	50.09	10:25
4	TOC	0.0000	0.0000	7.18	11.14	3.96	50.11	10:27
5	TOC	0.0000	0.0000	6.53	10.27	3.73	50.09	10:27
6	TOC	0.0000	0.0000	6.62	10.19	3.57	50.12	10:27
7	TOC	0.0000	0.0000	6.43	10.02	3.58	50.08	10:26

8	TOC	0.0000	0.0000	6.52	10.04	3.52	50.11	10:28
9	TOC	0.0000	0.0000	6.12	9.81	3.70	50.09	10:29
10	TOC	0.0000	0.0000	6.26	10.07	3.82	50.10	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 80

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.9773 ppm (PASS)	0.0000 ppm	0%	2019/12/31 20:35

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.9773	239.7730	172.22	176.04	3.82	50.08	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 80

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2019/12/31 20:49

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.78	10.54	3.76	50.08	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 80

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2019/12/31 21:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.94	9.79	3.85	50.09	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 80

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.1165 ppm (PASS)	0.0000 ppm	0%	2019/12/31 21:19

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.1165	251.1653	179.95	183.84	3.89	50.07	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 80

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.0636 ppm	0.0000 ppm	0.0000%	2019/12/31 21:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0636	0.6361	9.23	13.06	3.83	50.09	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K1911995-001.01	2.2088 ppm	0.0314 ppm	1.4200%	2019/12/31 21:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1866	21.8664	23.64	27.48	3.83	50.06	10:27
2	TOC	2.2310	22.3098	23.94	27.71	3.76	50.06	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K1911995-001.01 ms	28.2887 ppm	0.0000 ppm	0.0000%	2019/12/31 22:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.2887	282.8866	200.82	204.62	3.80	50.05	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

◈	5	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2019/12/31 22:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.43	11.35	3.92	50.02	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K1911998-001.01	2.9073 ppm	0.0683 ppm	2.3500%	2019/12/31 22:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.9556	29.5565	28.86	32.62	3.76	50.06	10:29
2	TOC	2.8590	28.5901	28.21	31.99	3.78	50.04	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K1911998-002.01 100x	0.8965 ppm	0.0303 ppm	3.3800%	2019/12/31 23:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9179	9.1792	15.03	18.91	3.88	50.07	10:27
2	TOC	0.8750	8.7505	14.74	18.37	3.63	50.05	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K1911998-003.01 1000x	0.0000 ppm	0.0000 ppm	0.0000%	2019/12/31 23:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.30	12.03	3.73	50.06	10:27
2	TOC	0.0000	0.0000	7.79	11.74	3.94	50.07	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K1911998-004.01	9.8591 ppm	0.1210 ppm	1.2300%	2020/01/01 00:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.9447	99.4466	76.30	80.14	3.84	50.03	10:31
2	TOC	9.7735	97.7347	75.14	79.02	3.87	50.08	10:29

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 80

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.0809 ppm (PASS)	0.0000 ppm	0%	2020/01/01 00:38

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.0809	250.8088	179.71	183.63	3.92	50.04	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 80

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/01/01 00:53

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.54	11.40	3.87	50.02	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 80

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K1911998-005.01 50x	2.5177 ppm	0.0309 ppm	1.2300%	2020/01/01 01:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.5396	25.3962	26.04	29.64	3.60	50.04	10:30
2	TOC	2.4959	24.9586	25.74	29.62	3.88	50.03	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	11	TOC	K1911998-006.01	1.7592 ppm	0.0168 ppm	0.9500%	2020/01/01 01:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7473	17.4733	20.66	24.42	3.76	50.04	10:29
2	TOC	1.7710	17.7105	20.82	24.62	3.79	50.03	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K1912042-001.01	4.4235 ppm	0.0222 ppm	0.5000%	2020/01/01 02:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.4392	44.3916	38.93	42.78	3.85	50.07	10:30
2	TOC	4.4078	44.0778	38.72	42.49	3.77	50.03	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K1912042-002.01	4.0549 ppm	0.0614 ppm	1.5100%	2020/01/01 02:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.0983	40.9826	36.62	40.28	3.66	50.04	10:28
2	TOC	4.0115	40.1149	36.03	39.76	3.73	50.02	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K1912042-003.01	13.2410 ppm	0.2666 ppm	2.0100%	2020/01/01 03:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.0525	130.5252	97.40	101.21	3.82	50.04	10:26
2	TOC	13.4295	134.2952	99.96	103.63	3.67	50.04	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K1912042-004.01	14.1339 ppm	0.5156 ppm	3.6500%	2020/01/01 03:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.7692	137.6924	102.26	106.01	3.75	50.01	10:24
2	TOC	14.4985	144.9847	107.21	111.01	3.80	50.04	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC)	CAS_salt_010711	CAS_salt_010711

(v1333) (v4) (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	16	TOC	K1912042-005.01	3.2440 ppm	0.3311 ppm	10.2100%	2020/01/01 03:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.4780	34.7804	32.41	36.29	3.88	50.01	10:27
2	TOC	3.0099	30.0986	29.23	33.20	3.97	50.04	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	17	TOC	K1911934-002.01	0.7151 ppm	0.1165 ppm	16.2900%	2020/01/01 04:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7974	7.9741	14.21	17.98	3.77	50.03	10:28
2	TOC	0.6327	6.3270	13.09	16.84	3.74	50.02	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	18	TOC	K1911980-001.01	3.9289 ppm	0.0122 ppm	0.3100%	2020/01/01 04:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.9375	39.3754	35.53	39.23	3.70	50.03	10:28
2	TOC	3.9203	39.2030	35.41	39.09	3.68	50.03	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	19	TOC	K1911981-001.01	3.5048 ppm	0.0034 ppm	0.1000%	2020/01/01 05:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.5072	35.0721	32.61	36.21	3.61	50.02	10:30
2	TOC	3.5024	35.0235	32.57	36.34	3.77	50.01	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 80

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time

◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.0346 ppm (PASS)	0.0000 ppm	0%	2020/01/01 05:48

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.0346	240.3461	172.61	176.27	3.66	50.03	10:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 80

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/01/01 06:03

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.34	9.85	3.50	50.01	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 80

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2020/01/01 06:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.53	9.23	3.70	50.02	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 80

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	25.0849 ppm (PASS)	0.0000 ppm	0%	2020/01/01 06:32

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	25.0849	250.8486	179.74	183.47	3.74	50.04	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample

From Schedule Version 80

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	21	TOC	K1912105-001.01	2.3905 ppm	0.0923 ppm	3.8600%	2020/01/01 06:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4558	24.5579	25.47	29.13	3.66	50.00	10:28
2	TOC	2.3253	23.2526	24.58	28.29	3.70	50.01	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	22	TOC	K1912105-001.01 ms	28.1332 ppm	0.0000 ppm	0.0000%	2020/01/01 07:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.1332	281.3324	199.77	203.34	3.58	50.01	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	23	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/01/01 07:29

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.30	10.96	3.66	50.03	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	24	TOC	K1911912-001.01	1.3018 ppm	0.0289 ppm	2.2200%	2020/01/01 07:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3222	13.2216	17.77	21.47	3.70	50.03	10:28
2	TOC	1.2814	12.8135	17.50	21.26	3.76	50.02	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

◆	25	TOC	K1911912-002.01	0.4133 ppm	0.0138 ppm	3.3300%	2020/01/01 08:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4231	4.2307	11.67	15.28	3.60	50.04	10:26
2	TOC	0.4036	4.0362	11.54	15.27	3.73	50.03	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	26	TOC	K1911912-003.01	0.6258 ppm	0.0079 ppm	1.2700%	2020/01/01 08:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.6202	6.2018	13.01	16.67	3.66	50.04	10:28
2	TOC	0.6314	6.3138	13.08	16.79	3.70	50.02	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	27	TOC	K1911912-004.01	0.3476 ppm	0.0006 ppm	0.1800%	2020/01/01 09:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3481	3.4808	11.16	14.86	3.70	50.03	10:26
2	TOC	0.3472	3.4720	11.16	14.61	3.45	50.01	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	28	TOC	K1911968-004.01	1.1812 ppm	0.0446 ppm	3.7700%	2020/01/01 09:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.1497	11.4965	16.60	20.31	3.71	50.03	10:30
2	TOC	1.2127	12.1270	17.03	20.61	3.57	50.02	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 80

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.9870 ppm (PASS)	0.0000 ppm	0%	2020/01/01 10:04

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.9870	239.8703	172.28	176.01	3.73	50.03	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 80

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/01/01 10:19

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.23	10.09	3.86	50.04	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 80

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K1911968-005.01	0.0000 ppm	0.0000 ppm	0.0000%	2020/01/01 10:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.30	10.10	3.80	50.04	10:30
2	TOC	0.0000	0.0000	6.26	9.91	3.66	50.05	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K1912074-003.01	7.1478 ppm	0.0402 ppm	0.5600%	2020/01/01 11:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.1194	71.1935	57.12	60.83	3.70	50.03	10:28
2	TOC	7.1762	71.7622	57.51	61.16	3.65	50.03	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K1912140-001.01	7.3546 ppm	0.0080 ppm	0.1100%	2020/01/01 11:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.3602	73.6022	58.76	62.25	3.49	50.02	10:30
2	TOC	7.3489	73.4888	58.68	62.37	3.69	50.03	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	FB 12/20/19 1501	0.0000 ppm	0.0000 ppm	0.0000%	2020/01/01 11:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.83	10.55	3.72	50.02	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K1911963-001.01 doc	2.3762 ppm	0.0331 ppm	1.3900%	2020/01/01 12:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3997	23.9966	25.09	28.67	3.58	50.02	10:25
2	TOC	2.3528	23.5281	24.77	28.44	3.67	50.03	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K1911963-002.01 doc	2.3673 ppm	0.0236 ppm	1.0000%	2020/01/01 12:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3840	23.8405	24.98	28.84	3.86	50.04	10:27
2	TOC	2.3506	23.5060	24.76	28.37	3.61	50.03	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K1911963-003.01 doc	0.5096 ppm	0.0047 ppm	0.9200%	2020/01/01 13:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5063	5.0630	12.24	16.00	3.76	50.02	10:29
2	TOC	0.5129	5.1293	12.28	15.83	3.55	50.02	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	36	TOC	K1911963-004.01 doc	1.5474 ppm	0.0310 ppm	2.0100%	2020/01/01 13:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5694	15.6937	19.45	23.25	3.80	50.02	10:26
2	TOC	1.5255	15.2546	19.15	22.81	3.66	50.03	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	37	TOC	K1911963-005.01 doc	1.4530 ppm	0.0733 ppm	5.0500%	2020/01/01 14:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.5048	15.0484	19.01	22.69	3.68	50.05	10:30
2	TOC	1.4011	14.0113	18.31	22.18	3.87	50.03	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	38	TOC	K1911963-006.01 doc	1.9425 ppm	0.0184 ppm	0.9500%	2020/01/01 14:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9555	19.5549	22.07	25.96	3.89	50.07	10:27
2	TOC	1.9294	19.2942	21.90	25.73	3.84	50.03	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 80

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.6980 ppm (PASS)	0.0000 ppm	0%	2020/01/01 15:01

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.6980	236.9798	170.32	174.08	3.75	50.05	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 80

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/01/01 15:15

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.31	10.01	3.71	50.03	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Sample Type: Sample From Schedule Version 80

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2020/01/01 15:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.21	9.12	3.91	50.03	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> LCS From Schedule Version 80

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	24.8695 ppm (PASS)	0.0000 ppm	0%	2020/01/01 15:45

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	24.8695	248.6947	178.28	182.07	3.80	50.03	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	25 ppmC

Sample Type: Sample From Schedule Version 80

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	40	TOC	K1911963-007.01 doc	2.0700 ppm	0.0933 ppm	4.5100%	2020/01/01 16:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	2.1360	21.3596	23.30	27.18	3.88	50.03	10:29
2	TOC	2.0040	20.0396	22.40	26.30	3.90	50.06	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K1911963-008.01 doc	1.9025 ppm	0.0215 ppm	1.1300%	2020/01/01 16:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9176	19.1763	21.82	25.60	3.79	50.04	10:30
2	TOC	1.8873	18.8728	21.61	25.29	3.68	50.05	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K1911963-009.01 doc	1.8852 ppm	0.0954 ppm	5.0600%	2020/01/01 16:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9527	19.5269	22.05	25.78	3.72	50.07	10:27
2	TOC	1.8177	18.1775	21.14	24.92	3.79	50.08	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K1911963-010.01 doc	1.9715 ppm	0.0951 ppm	4.8200%	2020/01/01 17:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.0387	20.3873	22.64	26.35	3.71	50.05	10:24
2	TOC	1.9042	19.0422	21.72	25.60	3.87	50.04	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K1911963-011.01 doc	1.9039 ppm	0.0315 ppm	1.6500%	2020/01/01 17:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9262	19.2617	21.87	25.48	3.60	50.05	10:29
2	TOC	1.8817	18.8168	21.57	25.40	3.83	50.04	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	45	TOC	K1911963-012.01 doc	0.4572 ppm	0.0020 ppm	0.4300%	2020/01/01 18:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4558	4.5577	11.89	15.63	3.73	50.04	10:26
2	TOC	0.4586	4.5857	11.91	15.54	3.63	50.04	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	46	TOC	K1911963-012.01 ms doc	27.1795 ppm	0.0000 ppm	0.0000%	2020/01/01 18:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.1795	271.7949	193.29	197.03	3.73	50.05	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	47	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/01/01 19:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.24	10.00	3.76	50.05	10:28
2	TOC	0.0000	0.0000	6.14	9.84	3.70	50.05	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 8.7992 (IC) (v1333)	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 80

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.7970 ppm (PASS)	0.0000 ppm	0%	2020/01/01 19:32

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.7970	237.9698	170.99	174.59	3.59	50.06	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 80

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/01/01 19:46

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.81	9.46	3.65	50.06	10:35

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v30)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1332	6.2033	2.5850	0.0000	0.0000	0.0000	2019/12/27 19:09	Fusion1 (Fusion1)
v1333	1.4150	1.3570	0.0000	0.0000	0.0000	2019/12/31 18:14	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v30	Calibration curve formula:	TOC: y = 6.788x + 9.463
Ver Creation:	2019/03/05 17:42	r^2 value:	TOC: r^2 = 0.99963
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	7.8970	0.0000		2019/03/05 16:15
0.500 ppm	11.5280	0.5000		2019/03/05 16:29
1.0 ppm	14.9760	1.0000		2019/03/05 16:44
5.0 ppm	43.6500	5.0000		2019/03/05 16:58
10 ppm	79.6020	10.0000		2019/03/05 17:12
25 ppm	183.3580	25.0000		2019/03/05 17:26
50 ppm	346.3230	50.0000		2019/03/05 17:40

Methods

Name: CAS_salt_010711 (TOC)

Version: v4 Operator: Fusion1 (Fusion1)
Ver Creation: 2019/02/21 17:57
Comment:

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0
LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date

1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2020/01/01 20:01

ALS Environmental

StarLIMS Run: 665302, 665303, 665304

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-82C 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-82C 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-83H

21 % H3PO4: 11-GEN-05-83I

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By: BCB	Date Analyzed: 12/31/19
Reviewed By: [signature]	Date Reviewed: ~~12~~/01/03/20 TH

January 10, 2020 Service Request No:R1912491

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

Laboratory Results for: LHAAP / Site 58

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory December 20, 2019
For your reference, these analyses have been assigned our service request number **R1912491.**

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at Janice.Jaeger@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental



Janice Jaeger
Project Manager

CC: Joni Blankfield

ADDRESS 1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
PHONE +1 585 288 5380 | FAX +1 585 288 8475
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

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Client: ALS Environmental - US
Project: LHAAP / Site 58
Sample Matrix: Water

Service Request: R1912491
Date Received: 12/20/2019

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Five water samples were received for analysis at ALS Environmental on 12/20/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivoa GC:

Method Organic Acids, 12/24/2019: The upper control criterion was exceeded for one or more analytes in the Laboratory Control Sample (LCS). There were no detections of the analyte(s) above the MRL in the associated field samples. The error associated with elevated recovery equates to a high bias. The sample data is not significantly affected. No further corrective action was appropriate. Analyte affected: Pyruvic Acid.
Method Organic Acids, 12/24/2019: Due to shifting retention times, Propionic Acid could not be reported on the first run. All samples and QC were run again on another column with more stable retention times for only Propionic Acid. The results of the two runs were merged.

Please note: This report has been revised to add the LOD and MDL.

Approved by _____ Date 12/30/2019

SAMPLE DETECTION SUMMARY

CLIENT ID: 35AWW20_121919			Lab ID: R1912491-003			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Acetic Acid	3.1	J	0.56	4.0	mg/L	Organic Acids

Sample Receipt Information

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www.alsglobal.com

Client: ALS Environmental - US **Service Request:**R1912491
Project: LHAAP / Site 58/NWO1312.0150

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
R1912491-001	35AWW10_121919	12/19/2019	0835
R1912491-002	35AWW10_121919_a	12/19/2019	0835
R1912491-003	35AWW20_121919	12/19/2019	0940
R1912491-004	35AWW06_121919	12/19/2019	1035
R1912491-005	LHSMW07_121919	12/19/2019	1130

bhate ENVIRONMENTAL CONSTRUCTION I NUCY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Sample Analysis Requested (5): Number of containers	Volatile Fatty Acids	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35AWW10_121919	19Dec2019	0835	-	N		WG	1	X				
35AWW10_121919_EB	19Dec2019	0835	-	FD		WG	1	X				
35AWW20_121919	19Dec2019	0940	-	N		WG	1	X				
35AWW06_121919	19Dec2019	1035	-	N		WG	1	X				
LHSMW07_121919	19Dec2019	1130	-	N		WG	1	X				

Quality Assurance Samples (6)

COMMENTS: ____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	12/19/19	1430	1. Barry Bohan	12/20/19	1105
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

____ Method of Shipment: ____

____ Fed Ex ____ Airbill Number:

____ Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot (

R1912491
ALS Laboratory Group
LHAAP / Site 58

5

00997385

Cooler Receipt and Preservation Check Form

R1912491 5
ALS Laboratory Group
LHAAP / Site 68

Project/Client LHAAP 58 / bhate Folder Number

Cooler received on 12/20/19 by: GB

COURIER: ALS UPS (FEDEX) VELOCITY CLIENT

1	Were **Custody seals** on outside of cooler?	(Y)	N
2	**Custody papers** properly completed (ink, signed)?	(Y)	N
3	Did all bottles arrive in good **condition** (unbroken)?	(Y)	N
4	Circle: (**Wet Ice**) **Dry Ice** **Gel packs** present?	(Y)	N

5a	**Perchlorate** samples have required headspace?	Y	N	(NA)
5b	Did VOA vials, Alk,or Sulfide have sig* **bubbles**?	Y	N	(NA)
6	Where did the bottles originate?	(ALS/ROC)	CLIENT	
7	Soil VOA received as: Bulk Encore 5035set			(NA)

8. Temperature Readings Date: 12/20/19 Time: 1109 ID: IR#7 (IR#10) From: Temp Blank (Sample Bottle)

Observed Temp (°C)	1.4						
Within 0-6°C?	(Y) N	Y N	Y N	Y N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y (N)	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed (described below) Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R002 by GB on 12/20 at 1112
5035 samples placed in storage location: _____ by _____ on _____ at _____

Cooler Breakdown/Preservation Check**: Date: 12/20/19 Time: 1630 by: [illegible]

9. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? (YES) NO
10. Did all bottle labels and tags agree with custody papers? (YES) NO
11. Were correct containers used for the tests indicated? (YES) NO
12. Were 5035 vials acceptable (no extra lahels, not leaking)? YES NO (N/A)
13. Air Samples: Cassettes / Tubes Intact with MS? Canisters Pressurized Tedlar® Bags Inflated (N/A)

pH	Lot of test paper	Reagent	Preserved? Yes	Preserved? No	Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
≥12		NaOH								
≤2		HNO_3								
≤2		H_2SO_4								
<4		$NaHSO_4$								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add $Na_2S_2O_3$ (625, 608, CN), ascorbic (phenol).					
		$Na_2S_2O_3$								
		ZnAcetate	-	-						
		HCl	**	**						

**VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).

Bottle lot numbers: Clear label

Explain all Discrepancies/ Other Comments:

HPROD	BULK
HTR	FLDT
SUB	HGFB
ALS	LL3541

Labels secondary reviewed by: [signature]

PC Secondary Review: _____

*significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

Miscellaneous Forms

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ALS Environmental

REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the ñNotesò column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an ñimmediateò hold time criteria.

Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (Ó100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

Rochester Lab ID # for State Certifications[1]

Connecticut ID # PH0556	Maine ID #NY0032	Pennsylvania ID# 68-786
Delaware Approved	New Hampshire ID # 2941	Rhode Island ID # 158
DoD ELAP #65817	New York ID # 10145	Virginia #460167
Florida ID # E87674	North Carolina #676	

[1] Analyses were performed according to our laboratoryôs NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental

ALS Laboratory Group

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: ALS Environmental - US
Project: LHAAP / Site 58/NWO1312.0150
Service Request: R1912491

Sample Name: 35AWW10_121919
Lab Code: R1912491-001
Sample Matrix: Water
Date Collected: 12/19/19
Date Received: 12/20/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name: 35AWW10_121919_a
Lab Code: R1912491-002
Sample Matrix: Water
Date Collected: 12/19/19
Date Received: 12/20/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name: 35AWW20_121919
Lab Code: R1912491-003
Sample Matrix: Water
Date Collected: 12/19/19
Date Received: 12/20/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name: 35AWW06_121919
Lab Code: R1912491-004
Sample Matrix: Water
Date Collected: 12/19/19
Date Received: 12/20/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name: LHSMW07_121919
Lab Code: R1912491-005
Sample Matrix: Water
Date Collected: 12/19/19
Date Received: 12/20/19

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	

Sample Results

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Semivolatile Organic Compounds by GC

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dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1912491
Project:	LHAAP / Site 58/NWO1312.0150	**Date Collected:**	12/19/19 08:35
Sample Matrix:	Water	**Date Received:**	12/20/19 11:05
Sample Name:	35AWW10_121919	**Units:**	mg/L
Lab Code:	R1912491-001	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	12/25/19 06:00	
Acetic Acid	ND U	4.0	2.0	0.56	1	12/25/19 06:00	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	12/25/19 06:00	
Lactic Acid	ND U	2.0	1.0	0.14	1	12/25/19 06:00	
Propionic Acid	ND U	2.0	1.0	0.19	1	12/27/19 06:09	

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1912491
Project:	LHAAP / Site 58/NWO1312.0150	**Date Collected:**	12/19/19 08:35
Sample Matrix:	Water	**Date Received:**	12/20/19 11:05
Sample Name:	35AWW10_121919_a	**Units:**	mg/L
Lab Code:	R1912491-002	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	12/25/19 06:43	
Acetic Acid	ND U	4.0	2.0	0.56	1	12/25/19 06:43	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	12/25/19 06:43	
Lactic Acid	ND U	2.0	1.0	0.14	1	12/25/19 06:43	
Propionic Acid	ND U	2.0	1.0	0.19	1	12/27/19 06:52	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1912491
Project:	LHAAP / Site 58/NWO1312.0150	**Date Collected:**	12/19/19 09:40
Sample Matrix:	Water	**Date Received:**	12/20/19 11:05
Sample Name:	35AWW20_121919	**Units:**	mg/L
Lab Code:	R1912491-003	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.20	0.10	0.016	1	12/25/19 07:26	
Acetic Acid	**3.1**	**J**	4.0	2.0	0.56	1	12/25/19 07:26	
Butanoic Acid (Butyric Acid)	ND	U	2.0	1.0	0.32	1	12/25/19 07:26	
Lactic Acid	ND	U	2.0	1.0	0.14	1	12/25/19 07:26	
Propionic Acid	ND	U	2.0	1.0	0.19	1	12/27/19 07:35	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1912491
Project:	LHAAP / Site 58/NWO1312.0150	**Date Collected:**	12/19/19 10:35
Sample Matrix:	Water	**Date Received:**	12/20/19 11:05
Sample Name:	35AWW06_121919	**Units:**	mg/L
Lab Code:	R1912491-004	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	12/25/19 08:09	
Acetic Acid	ND U	4.0	2.0	0.56	1	12/25/19 08:09	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	12/25/19 08:09	
Lactic Acid	ND U	2.0	1.0	0.14	1	12/25/19 08:09	
Propionic Acid	ND U	2.0	1.0	0.19	1	12/27/19 08:18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1912491
Project:	LHAAP / Site 58/NWO1312.0150	**Date Collected:**	12/19/19 11:30
Sample Matrix:	Water	**Date Received:**	12/20/19 11:05
Sample Name:	LHSMW07_121919	**Units:**	mg/L
Lab Code:	R1912491-005	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	12/25/19 08:49	
Acetic Acid	ND U	4.0	2.0	0.56	1	12/25/19 08:49	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	12/25/19 08:49	
Lactic Acid	ND U	2.0	1.0	0.14	1	12/25/19 08:49	
Propionic Acid	ND U	2.0	1.0	0.19	1	12/27/19 08:58	

QC Summary Forms

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Semivolatile Organic Compounds by GC

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R1912491
Project:	LHAAP / Site 58/NWO1312.0150	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	mg/L
Lab Code:	RQ1915097-02	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	12/24/19 13:32	
Acetic Acid	ND U	4.0	2.0	0.56	1	12/24/19 13:32	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	12/24/19 13:32	
Lactic Acid	ND U	2.0	1.0	0.14	1	12/24/19 13:32	
Propionic Acid	ND U	2.0	1.0	0.19	1	12/26/19 13:41	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58/NWO1312.0150
Sample Matrix: Water

Service Request: R1912491
Date Analyzed: 12/24/19 - 12/26/19

Duplicate Lab Control Sample Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Units:mg/L
Basis:NA

		Lab Control Sample			Duplicate Lab Control Sample					
		RQ1915097-03			RQ1915097-04					
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	Organic Acids	2.49	2.02	123 *	2.31	2.02	114	73-122	7	30
Acetic Acid	Organic Acids	21.9	20.1	109	19.7	20.1	98	80-130	10	30
Butanoic Acid (Butyric Acid)	Organic Acids	19.8	19.9	99	18.8	19.9	94	86-128	5	30
Lactic Acid	Organic Acids	23.2	19.9	117 *	21.3	19.9	107	81-114	9	30
Propionic Acid	Organic Acids	21.1	20.3	104	20.3	20.3	100	63-153	4	30

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LABORATORY REPORT

January 7, 2020

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

RE: HS19121155

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on December 21, 2019. For your reference, these analyses have been assigned our service request number P1907802.

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 5:02 pm, Jan 07, 2020

Hayden Akers
Project Manager

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: ALS Laboratory Group
Project: HS19121155

Service Request No: P1907802

CASE NARRATIVE

The samples were received intact under chain of custody on December 21, 2019 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 also 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	4068-006
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: HS19121155

Service Request: P1907802

Date Received: 12/21/2019
Time Received: 10:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
35AWW10-121919	P1907802-001	Water	12/19/2019	08:35	X	X
35AWW10-121919_a	P1907802-002	Water	12/19/2019	08:35	X	X
35AWW20-121919	P1907802-003	Water	12/19/2019	09:40	X	X
35AWW06-121919	P1907802-004	Water	12/19/2019	10:35	X	X
LHSMW07-121919	P1907802-005	Water	12/19/2019	11:30	X	X

P190702

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: **Texas**

COC ID: **12926**

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:	HS19121155
TSR:	Danielle Winnings

	LAB SAMPLE ID / ANALYSIS REQUESTED	CLIENT SAMPLE ID	MATRIX	COLLECT DATE / DUE DATE
1.	**HS19121155-01**	**35AWW10-121919**	**Groundwater**	**19 Dec 2019 08:35**
	MEE plus CO2 Sub to ALS SimiValley			31 Dec 2019
2.	**HS19121155-02**	**35AWW10-121919_a**	**Groundwater**	**19 Dec 2019 08:35**
	MEE plus CO2 Sub to ALS SimiValley			31 Dec 2019
3.	**HS19121155-03**	**35AWW20-121919**	**Groundwater**	**19 Dec 2019 09:40**
	MEE plus CO2 Sub to ALS SimiValley			31 Dec 2019
4.	**HS19121155-04**	**35AWW06-121919**	**Groundwater**	**19 Dec 2019 10:35**
	MEE plus CO2 Sub to ALS SimiValley			31 Dec 2019
5.	**HS19121155-05**	**LHSMW07-121919**	**Groundwater**	**19 Dec 2019 11:30**
	MEE plus CO2 Sub to ALS SimiValley			31 Dec 2019

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

QC Level: DOD IV (DoD Data Package)

P1907802

Subcontract Chain of Custody

SAMPLING STATE: **Texas**

COC ID: **12926**

Relinquished By: _____ Date/Time: 12/20/19 1800.

Received By: _____ Date/Time: 12-21-19 1030

Cooler ID(s): _____ Temperature(s): 2° uncor 1 cor

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1907802

Project: HS19121155

Sample(s) received on: 12/21/19 Date opened: 12/21/19 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 Thermometer ID T-111 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
P1907802-001.01	40mL VOA NP		5		A	LD 12/26/2019
P1907802-001.02	40mL VOA NP				A	
P1907802-001.04	40ml VOA HCL		1		A	LD 12/27/2019
P1907802-001.05	40ml VOA HCL				A	
P1907802-001.06	40ml VOA HCL				A	
P1907802-002.01	40mL VOA NP		5		A	LD 12/26/2019
P1907802-002.02	40mL VOA NP				A	
P1907802-002.04	40ml VOA HCL		1		A	LD 12/27/2019
P1907802-002.05	40ml VOA HCL				A	
P1907802-002.06	40ml VOA HCL				A	
P1907802-003.01	40mL VOA NP		6		A	LD 12/26/2019
P1907802-003.02	40mL VOA NP				A	
P1907802-003.04	40ml VOA HCL		1		A	LD 12/27/2019
P1907802-003.05	40ml VOA HCL				A	
P1907802-003.06	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
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1907802

Project: HS19121155

Sample(s) received on: 12/21/19 Date opened: 12/21/19 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1907802-004.01	40mL VOA NP		6		A	LD 12/26/2019
P1907802-004.02	40mL VOA NP				A	
P1907802-004.04	40ml VOA HCL		1		A	LD 12/27/2019
P1907802-004.05	40ml VOA HCL				A	
P1907802-004.06	40ml VOA HCL				A	
P1907802-005.01	40mL VOA NP		6		A	LD 12/26/2019
P1907802-005.02	40mL VOA NP				A	
P1907802-005.04	40ml VOA HCL		1		A	LD 12/27/2019
P1907802-005.05	40ml VOA HCL				A	
P1907802-005.06	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 Laboratory Group**
Client Project ID: **HS19121155** ALS Project ID: P1907802

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD Date(s) Collected: 12/19/19
Analyst: Li Donghao Date Received: 12/21/19
Matrix: Water Date Analyzed: 12/26/19
Test Notes:

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	**Result µg/L**	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
35AWW10-121919	P1907802-001	0.10	**210,000**	1,000	860	370	
35AWW10-121919_a	P1907802-002	0.10	**180,000**	1,000	860	370	
35AWW20-121919	P1907802-003	0.10	**270,000**	1,000	860	370	
35AWW06-121919	P1907802-004	0.10	**270,000**	1,000	860	370	
LHSMW07-121919	P1907802-005	0.10	**250,000**	1,000	860	370	
Method Control Sample	P191226-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 Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1907802
Client Project ID: **HS19121155** ALS Sample ID: P191226-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Li Donghao Date Analyzed: 12/26/19
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	20,000	19,400	**87**	**85**	80-122	2	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: **35AWW10-121919**
Client Project ID: **HS19121155**

ALS Project ID: P1907802
ALS Sample ID: P1907802-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 12/19/19
Date Received: 12/21/19
Date Analyzed: 12/27/19
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: **35AWW10-121919_a**
Client Project ID: **HS19121155**

ALS Project ID: P1907802
ALS Sample ID: P1907802-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 12/19/19
Date Received: 12/21/19
Date Analyzed: 12/27/19
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: **35AWW20-121919**
Client Project ID: **HS19121155**

ALS Project ID: P1907802
ALS Sample ID: P1907802-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 12/19/19
Date Received: 12/21/19
Date Analyzed: 12/27/19
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	**310**	1.3	1.0	0.51	
74-85-1	Ethene	**6.3**	1.0	0.55	0.24	
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: **35AWW06-121919**
Client Project ID: **HS19121155**

ALS Project ID: P1907802
ALS Sample ID: P1907802-004

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 12/19/19
Date Received: 12/21/19
Date Analyzed: 12/27/19
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	**1,500**	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: **LHSMW07-121919**
Client Project ID: **HS19121155**

ALS Project ID: P1907802
ALS Sample ID: P1907802-005

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 12/19/19
Date Received: 12/21/19
Date Analyzed: 12/27/19
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	**100**	1.3	1.0	0.51	
74-85-1	Ethene	**2.8**	1.0	0.55	0.24	
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: P1907802
Client Project ID: **HS19121155** ALS Sample ID: P191227-MB

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Li Donghao Date Analyzed: 12/27/19
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 Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS19121155**

ALS Project ID: P1907802
ALS Sample ID: P191227-LCS
P191227-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 12/27/19
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	2.40	2.44	**95**	**97**	73-125	2	26	
74-85-1	Ethene	4.40	4.49	4.46	**102**	**101**	72-133	1	11	
74-84-0	Ethane	4.72	4.73	4.75	**100**	**101**	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\2019_12\26\
Data File : 12261914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 13:56:40
Operator : LD
Sample : P1907802-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 15:19:36 2019
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 :

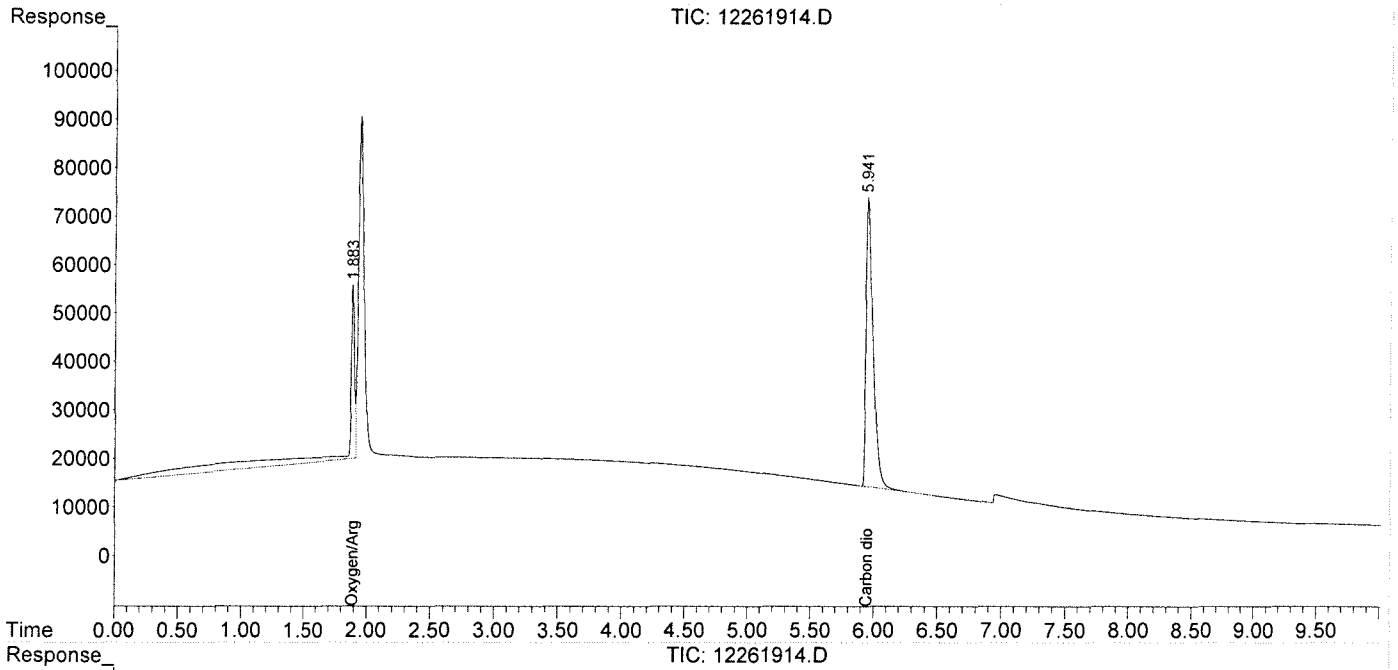
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	1801598	0.379	ppm
2)	Carbon monoxide	1.884	1801598	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.942	2302250	9808.111	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	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

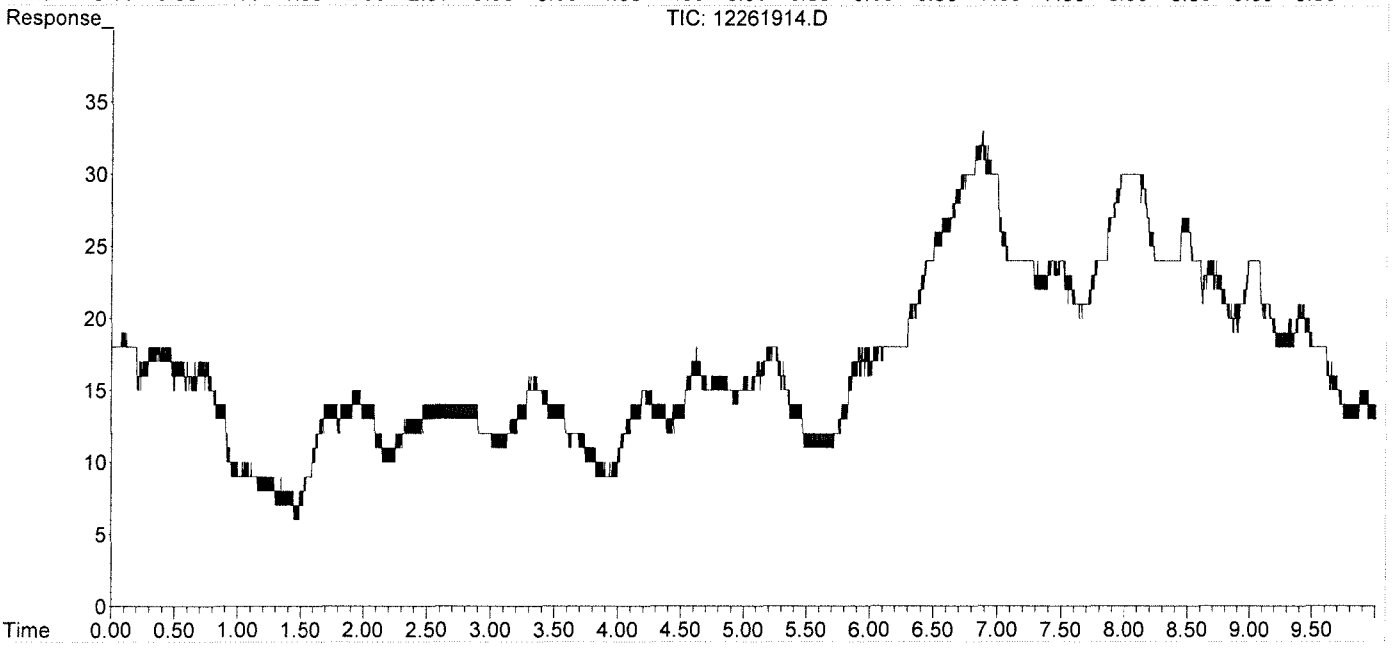
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 13:56:40
Operator : LD
Sample : P1907802-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 15:19:36 2019
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\2019_12\26\
Data File : 12261915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 14:09:49
Operator : LD
Sample : P1907802-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 15:19:47 2019
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 :

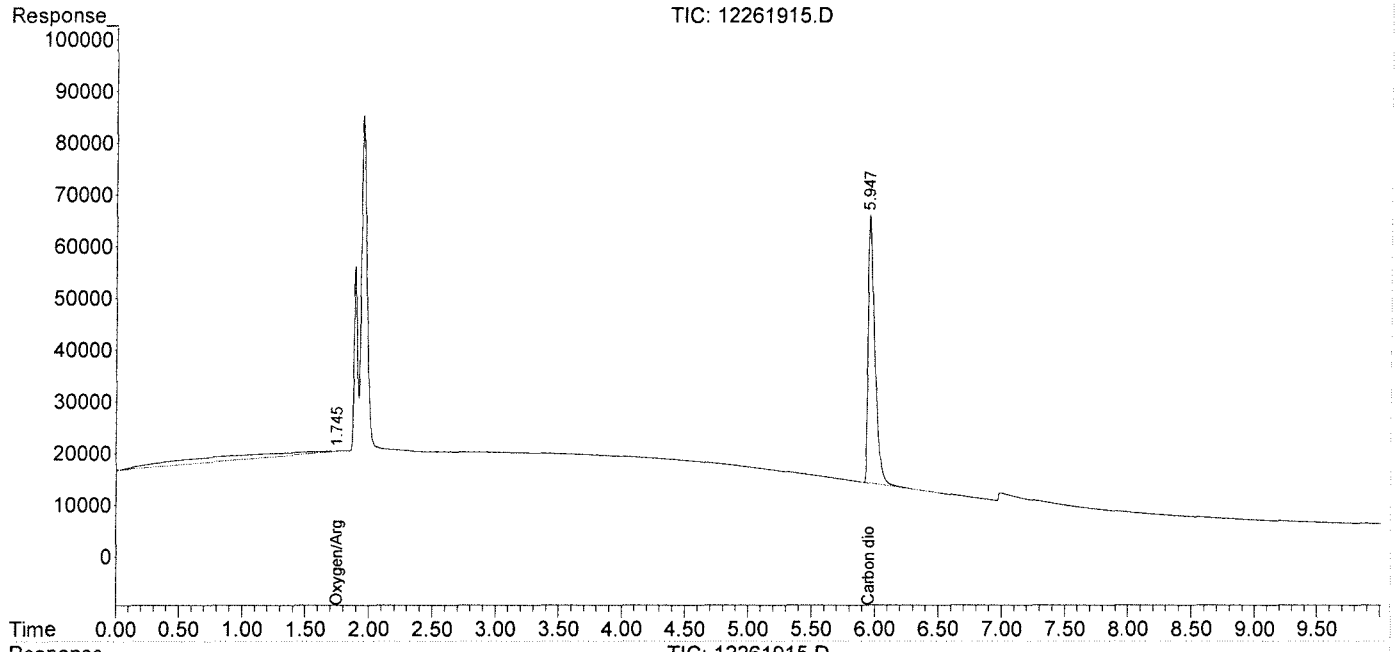
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.745	621087	0.130	ppm
2)	Carbon monoxide	1.745	621087	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.948	1914367	8155.640	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	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

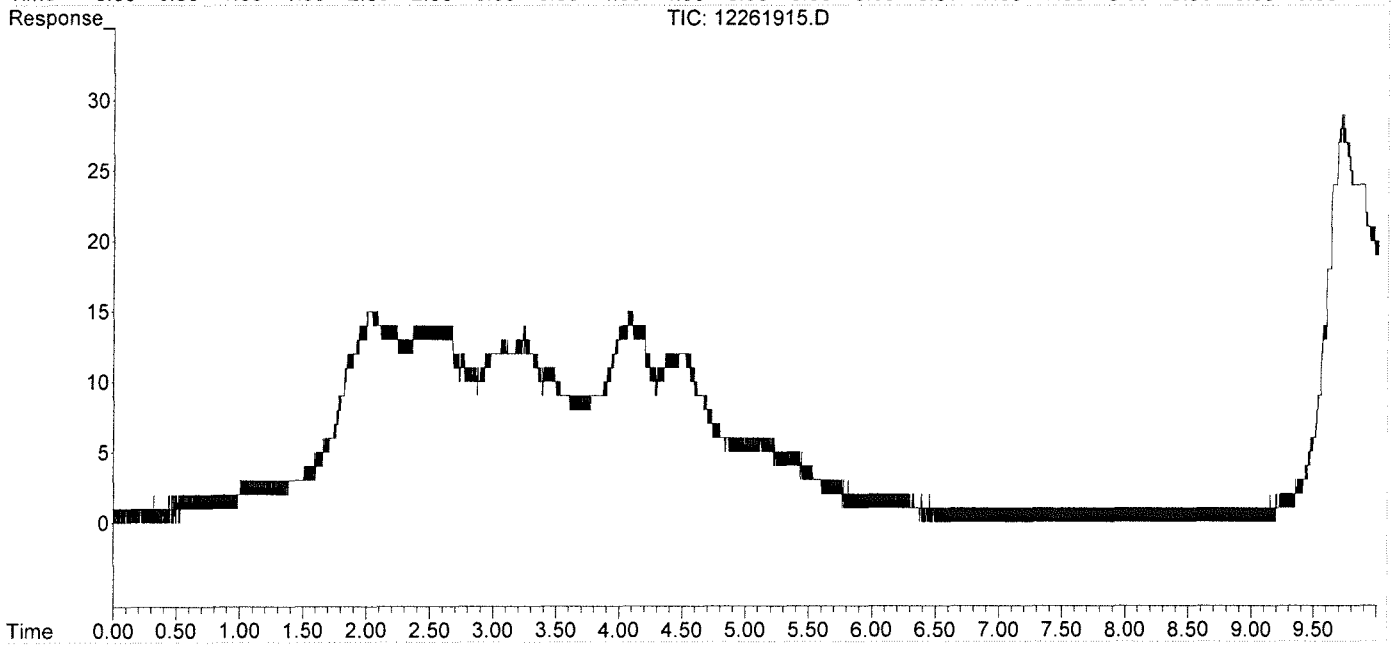
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 14:09:49
Operator : LD
Sample : P1907802-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 15:19:47 2019
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\2019_12\26\
Data File : 12261916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 14:25:42
Operator : LD
Sample : P1907802-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 15:19:57 2019
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 :

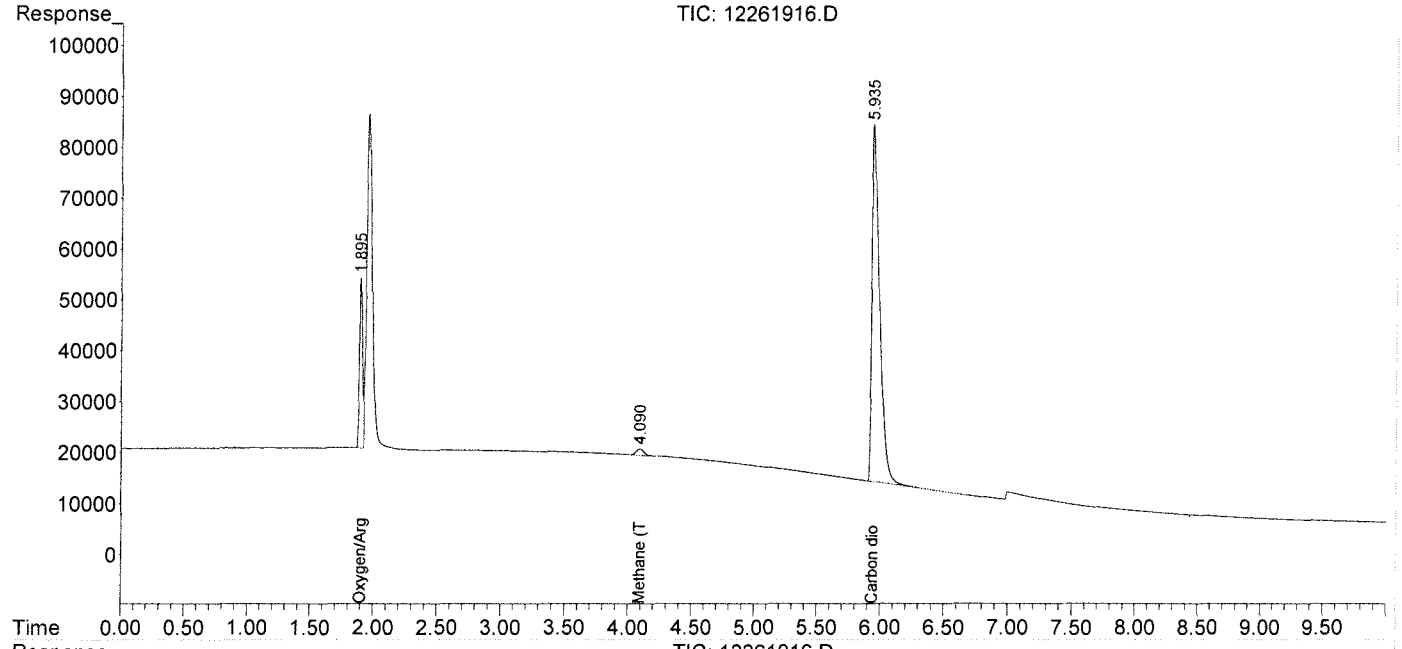
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.896	569398	0.120	ppm
2)	Carbon monoxide	1.896	569398	N.D.	ppm
3)	Methane (TCD)	4.091f	56953	6022.066	ppm
4)	Carbon dioxide	5.935	2929067	12478.493	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	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

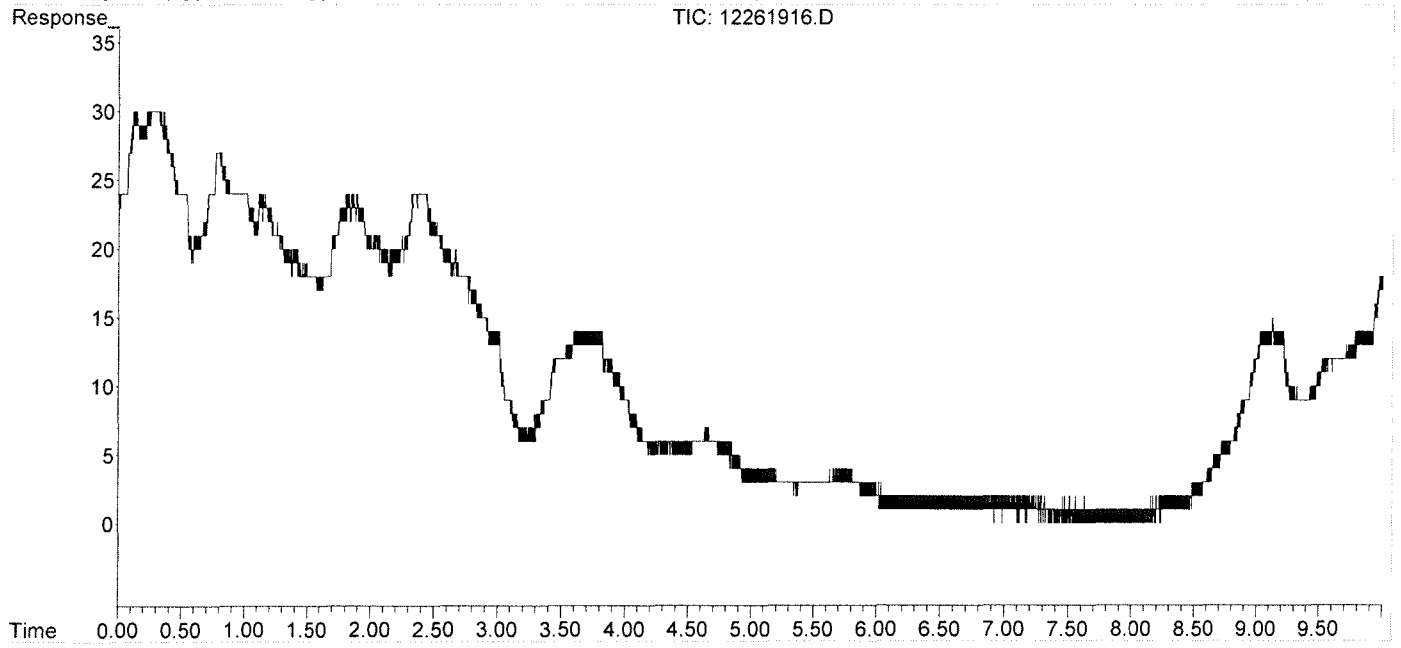
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 14:25:42
Operator : LD
Sample : P1907802-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 15:19:57 2019
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\2019_12\26\
Data File : 12261917.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 14:38:40
Operator : LD
Sample : P1907802-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 15:20:08 2019
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 :

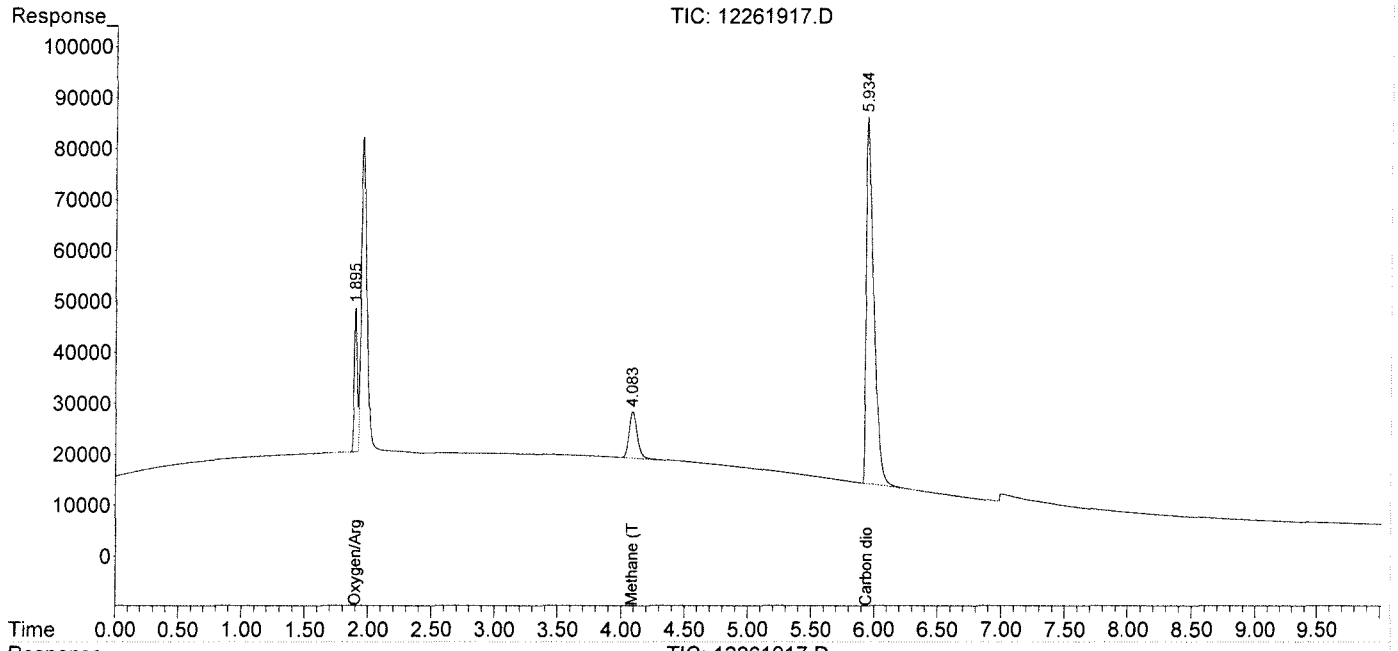
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.896	484151	0.102	ppm
2)	Carbon monoxide	1.896	484151	N.D.	ppm
3)	Methane (TCD)	4.084f	415818	43967.739	ppm
4)	Carbon dioxide	5.936	2948198	12559.996	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	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

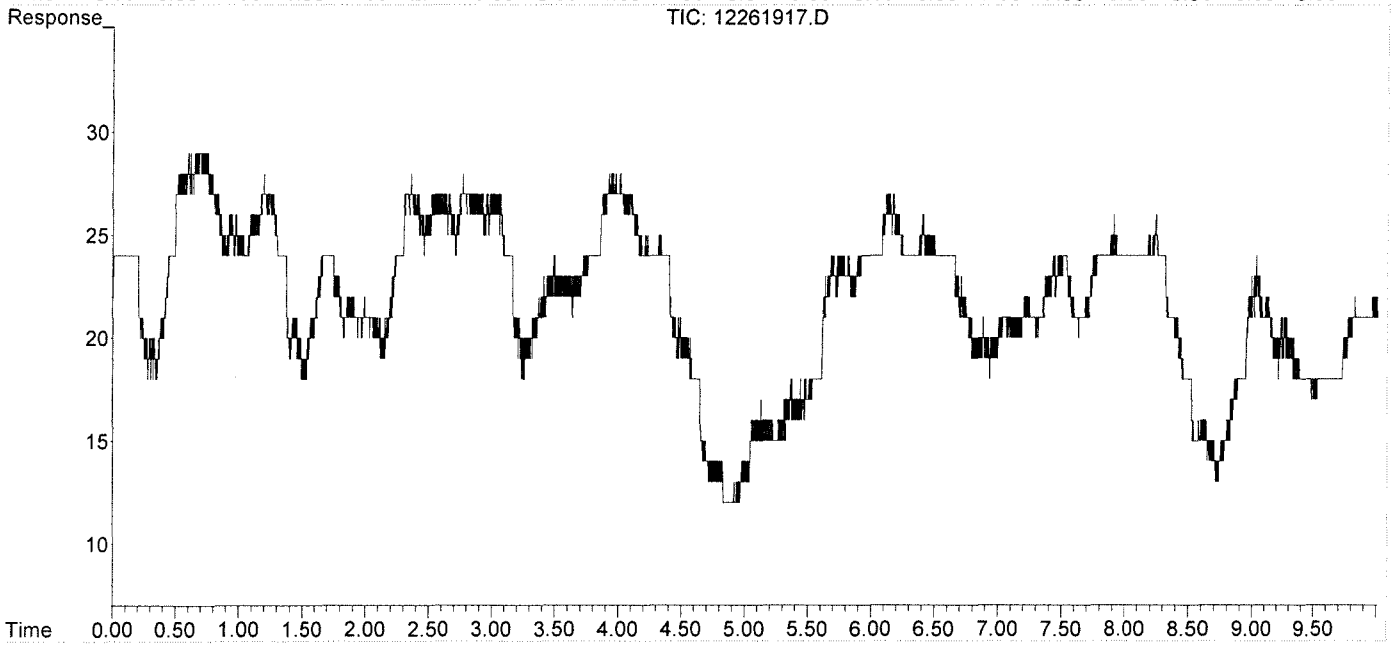
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261917.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 14:38:40
Operator : LD
Sample : P1907802-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 15:20:08 2019
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\2019_12\26\
Data File : 12261919.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 15:09:48
Operator : LD
Sample : P1907802-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 15:23:38 2019
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 :

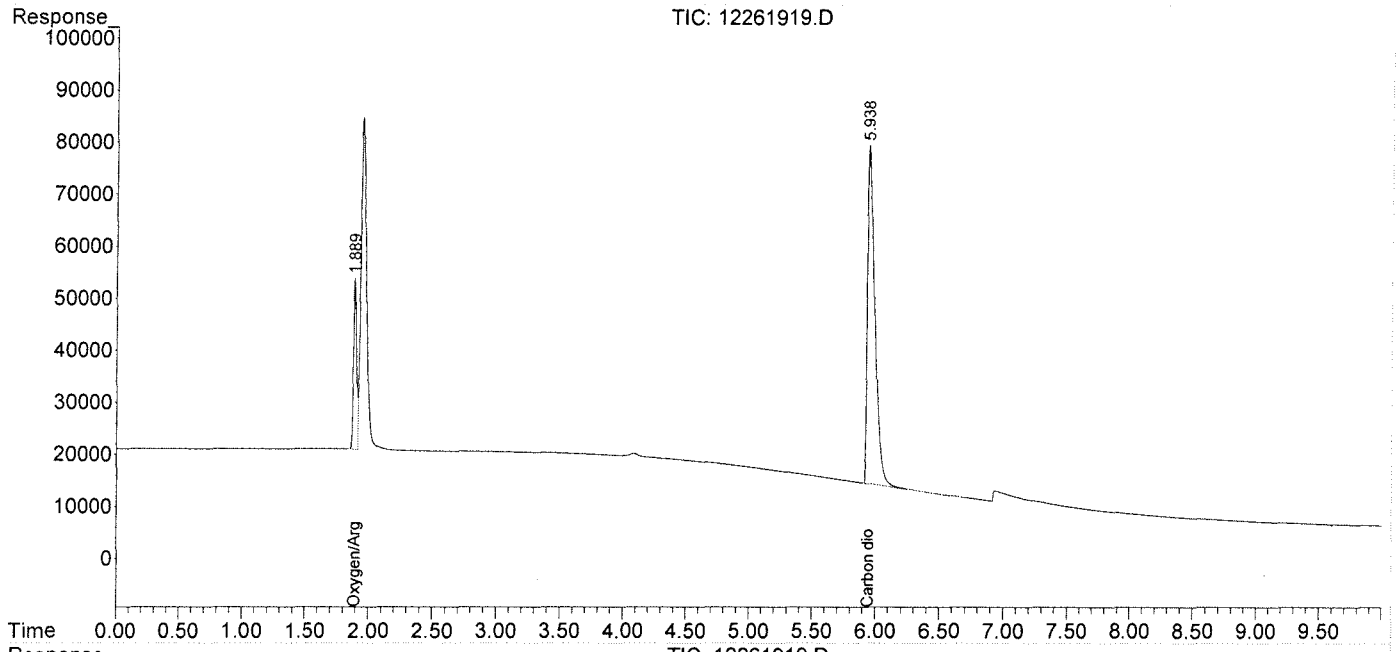
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.889	562753	0.118	ppm
2)	Carbon monoxide	1.889	562753	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.939	2640424	11248.808	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	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

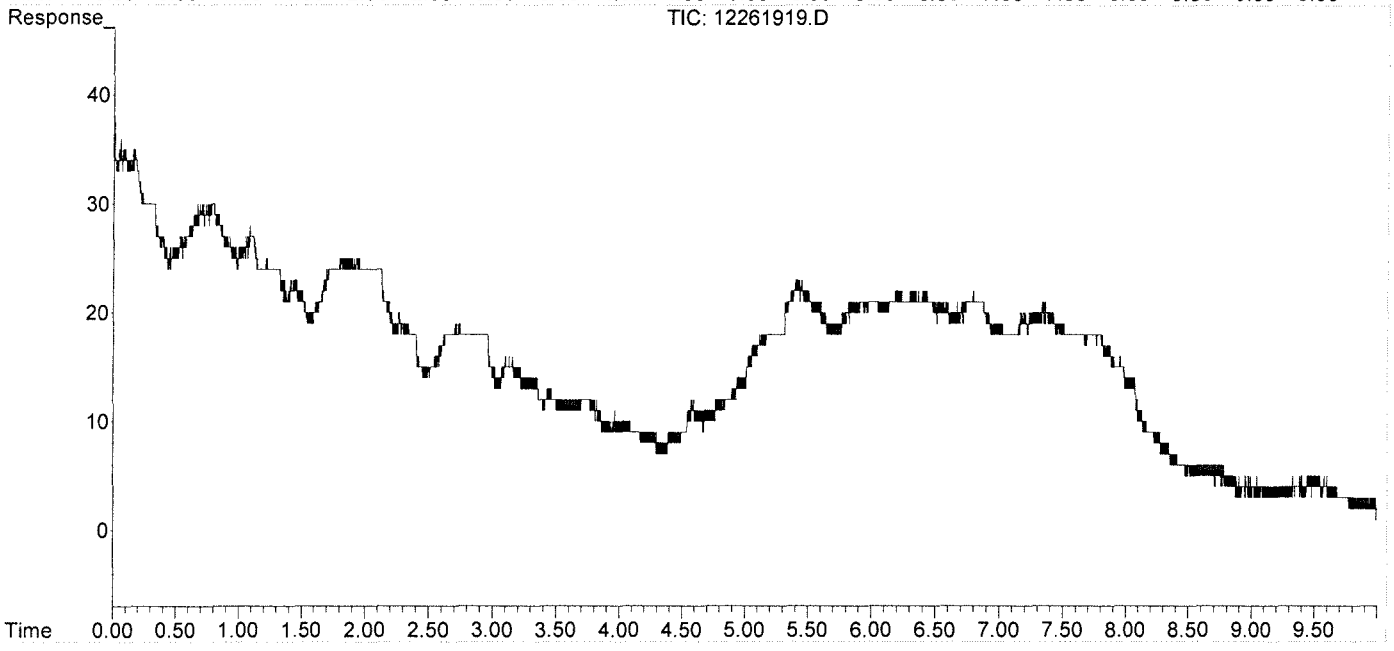
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261919.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 15:09:48
Operator : LD
Sample : P1907802-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 15:23:38 2019
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\2019_12\26\
Data File : 12261903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 11:27:12
Operator : LD
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: Dec 26 11:40:19 2019
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 :

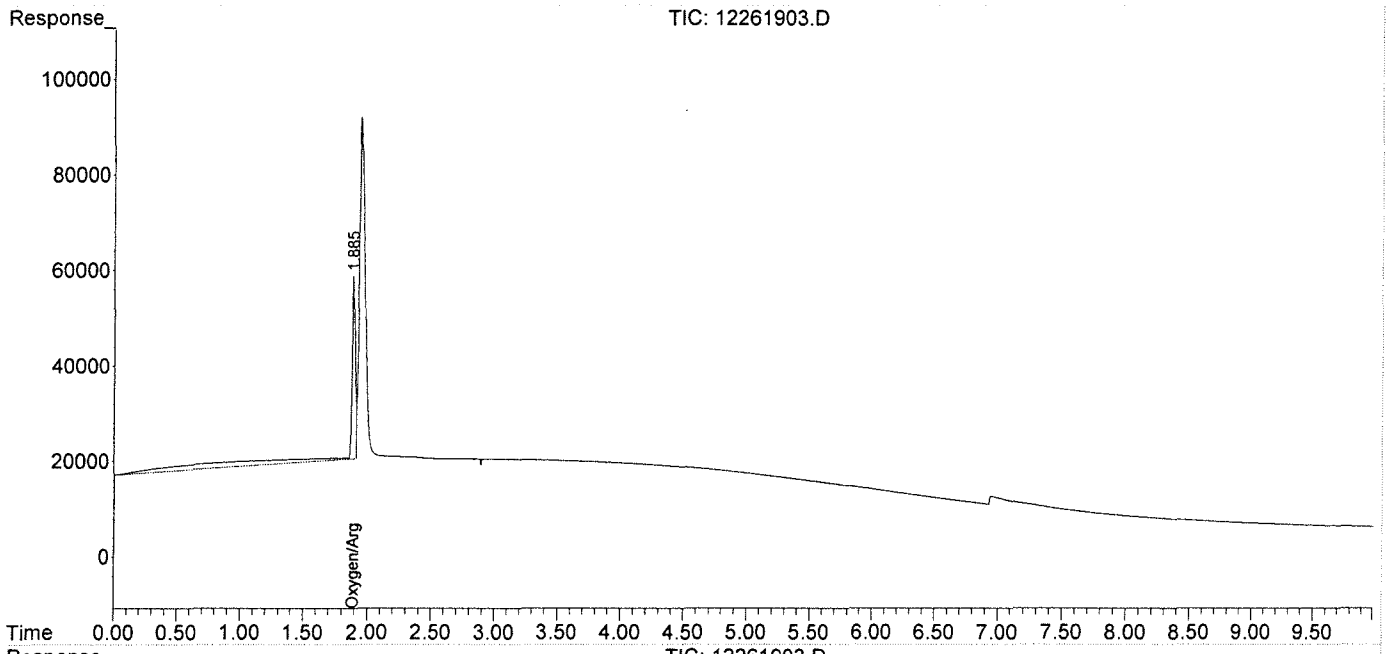
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.885	1447047	0.304	ppm
2)	Carbon monoxide	1.885	1447047	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	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

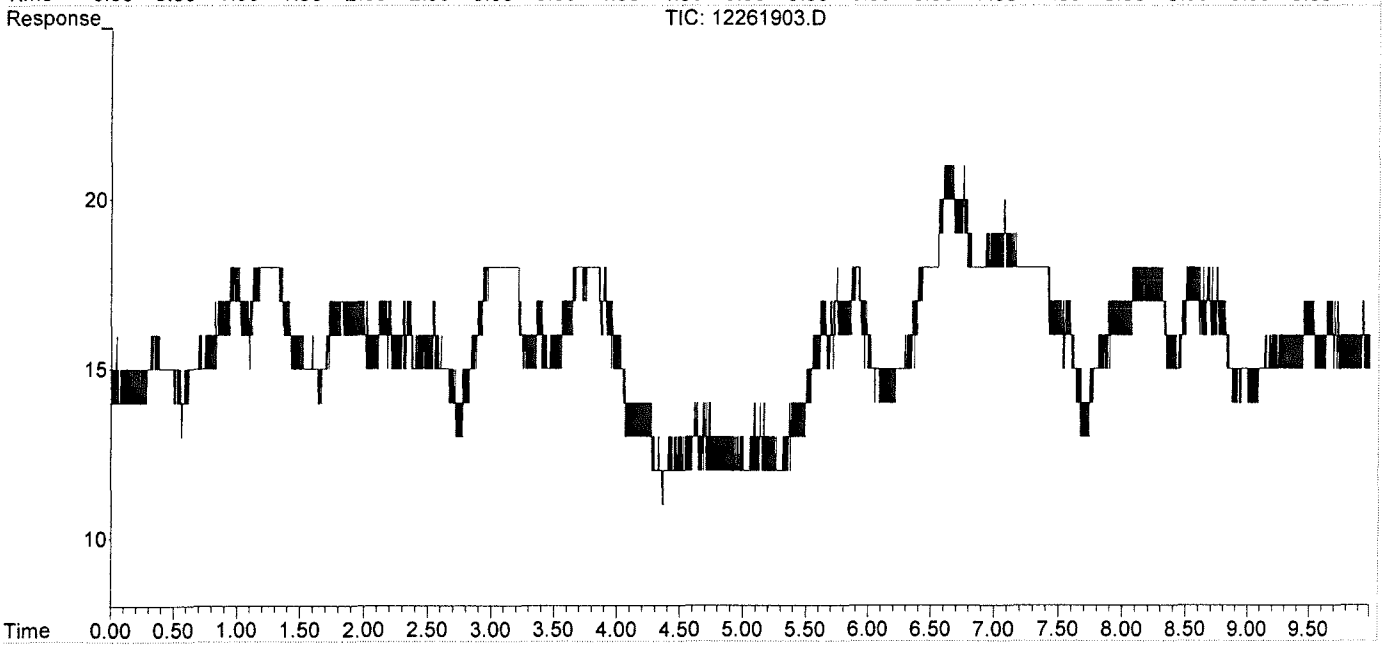
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 11:27:12
Operator : LD
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: Dec 26 11:40:19 2019
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\2019_12\26\
Data File : 12261920.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 15:58:59
Operator : LD
Sample : LCS S32-08141901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 16:09:53 2019
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	1.872	2342022	0.492	ppm	
2)	Carbon monoxide	1.872	2342022	N.D.	ppm	
3)	Methane (TCD)	4.092f	614956	65024.173	ppm	
4)	Carbon dioxide	5.995	215418	917.730	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	

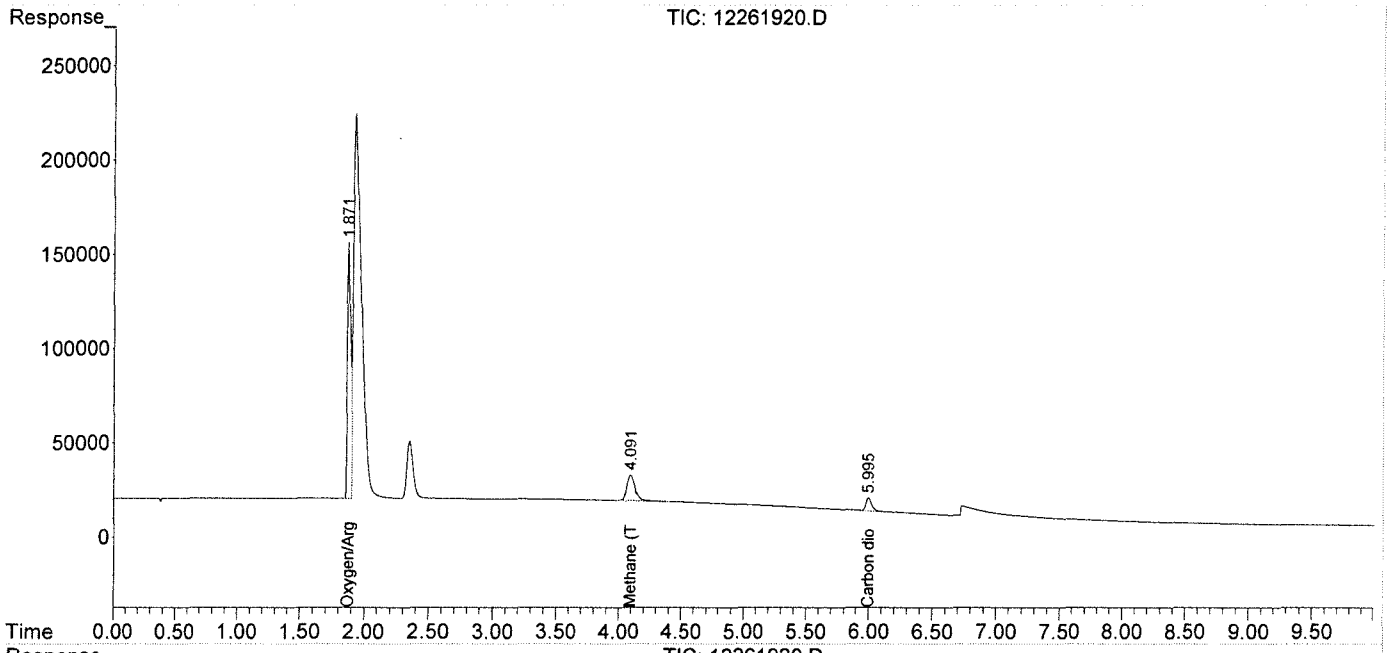
(f)=RT Delta > 1/2 Window (m)=manual int.

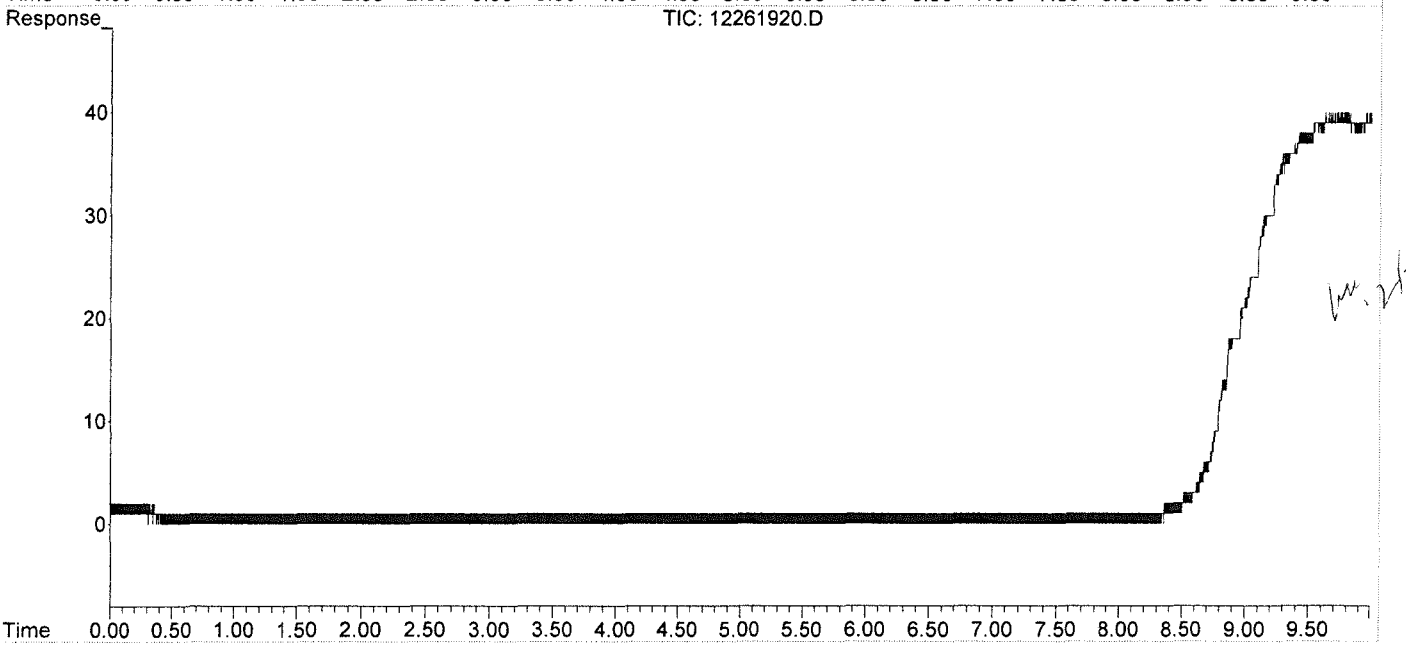
Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261920.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 15:58:59
Operator : LD
Sample : LCS S32-08141901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 16:09:53 2019
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

LP
BLC
no previous
12/27

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





Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261921.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 16:11:50
Operator : LD
Sample : LCSD S32-08141901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 16:20:39 2019
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	1.871	4178770	0.878	ppm	
2)	Carbon monoxide	1.871	4178770	N.D.	ppm	
3)	Methane (TCD)	4.095f	598607	63295.457	ppm	
4)	Carbon dioxide	5.996	208562	888.523	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	

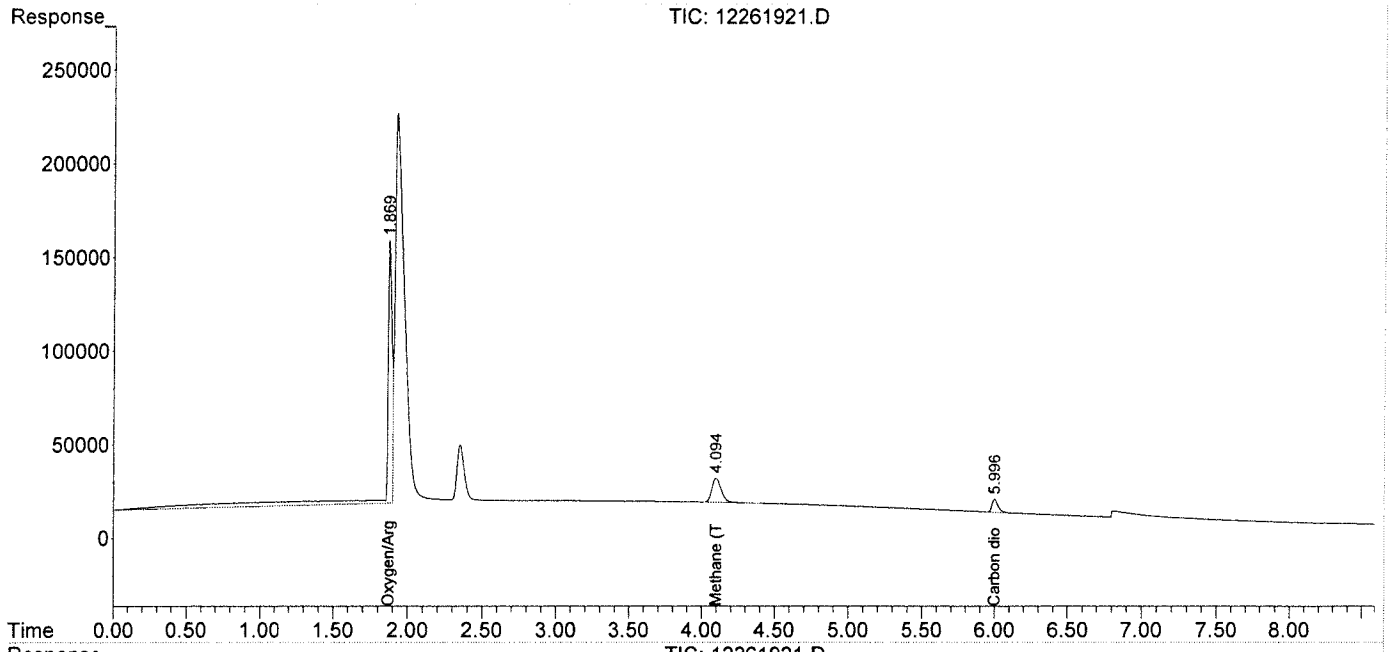
(f)=RT Delta > 1/2 Window (m)=manual int.

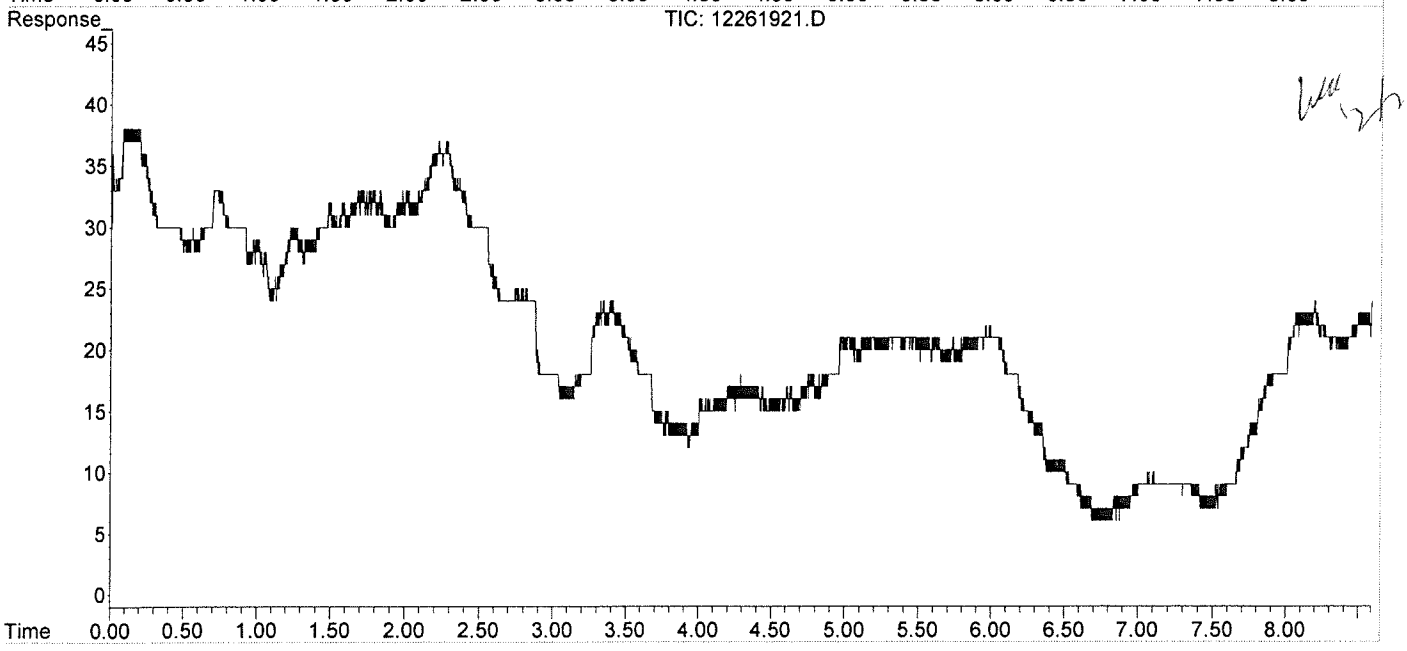
Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261921.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 16:11:50
Operator : LD
Sample : LCSD S32-08141901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 16:20:39 2019
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

LD
BLC
No previous
12/27

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





Response Factor Report HP5890

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

dit Compounds -- Compound #4 -- Carbon dioxide

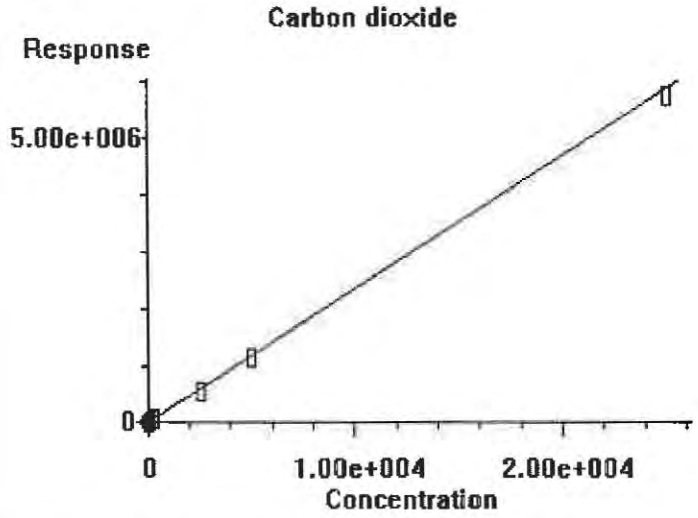
Search by: Ret Time | Name | Index — Find Compound

- 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

00997436

Calibration Status Report HP5890

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

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 :

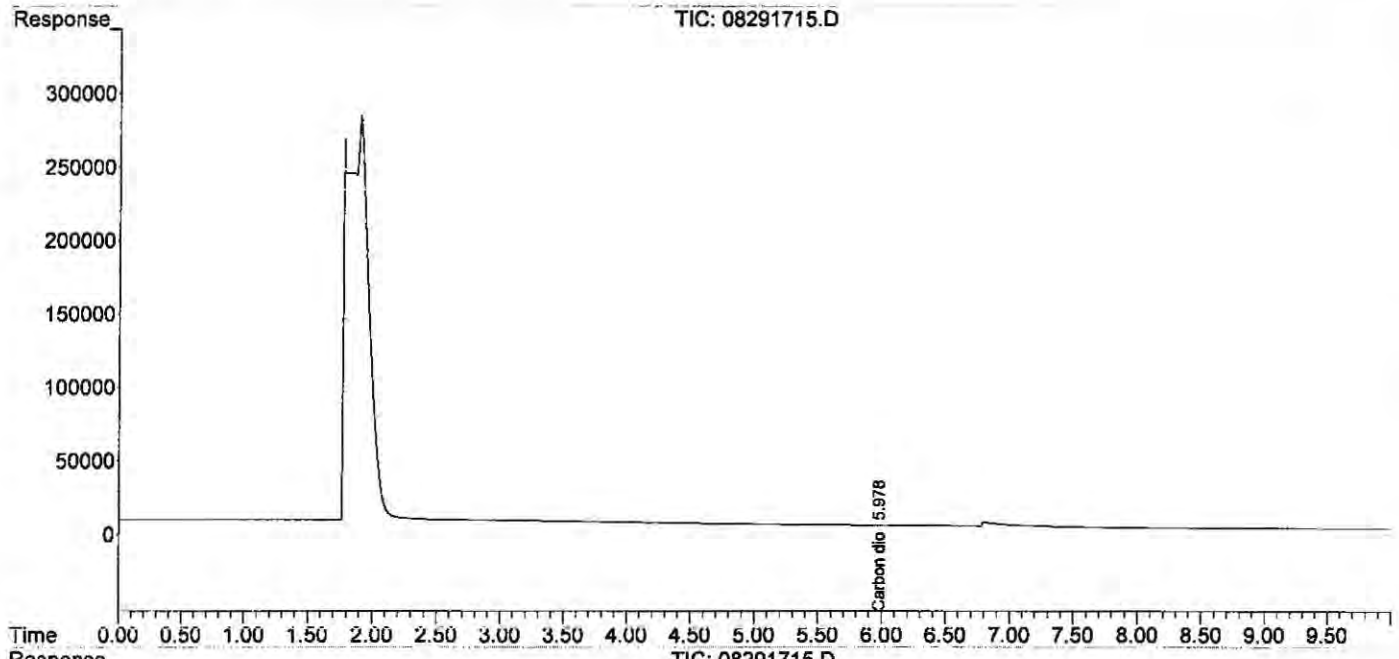
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	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	

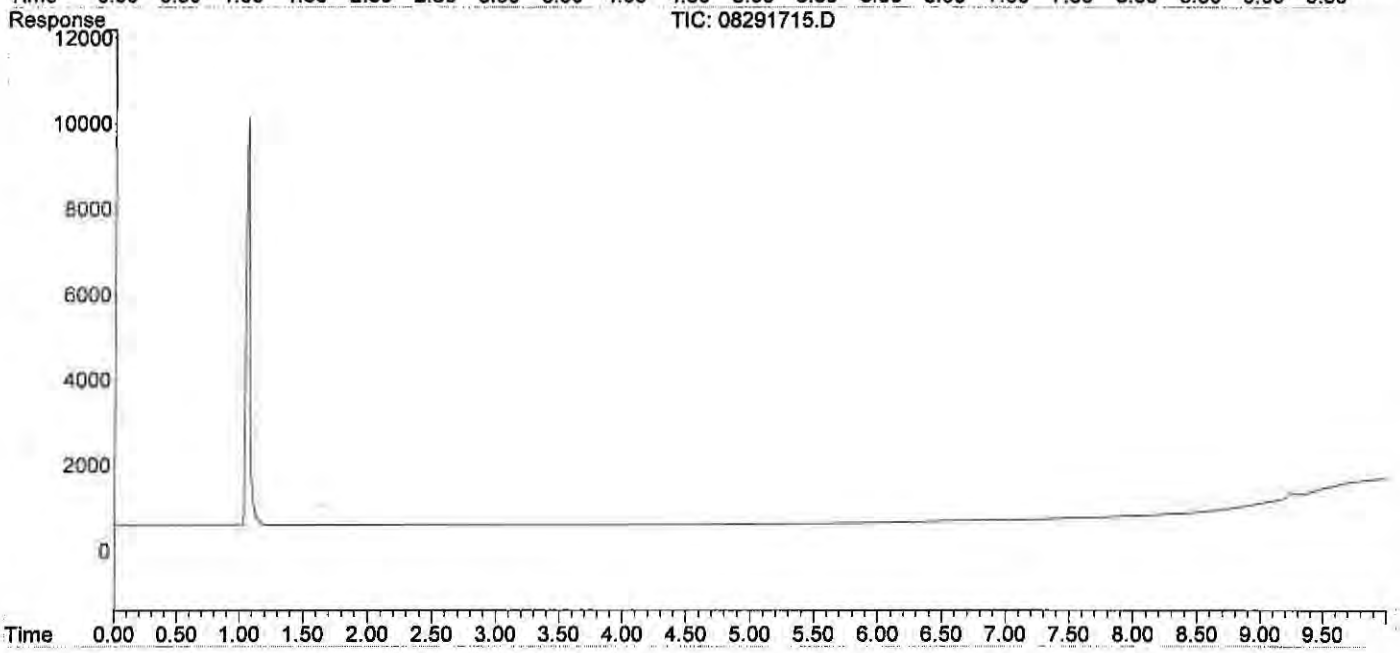
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



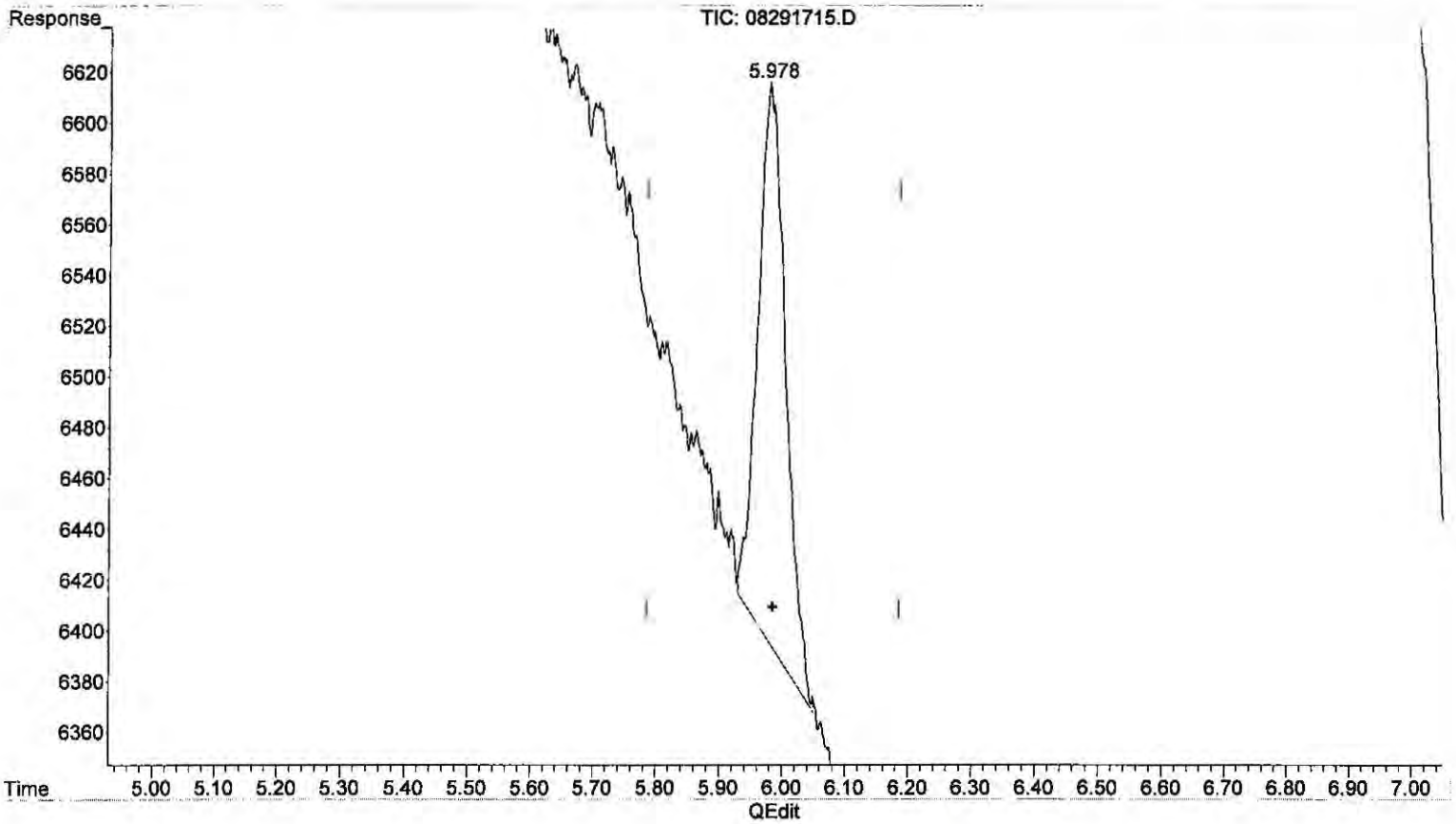


Quantitation Report (Qedit)

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

(+) = 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 :

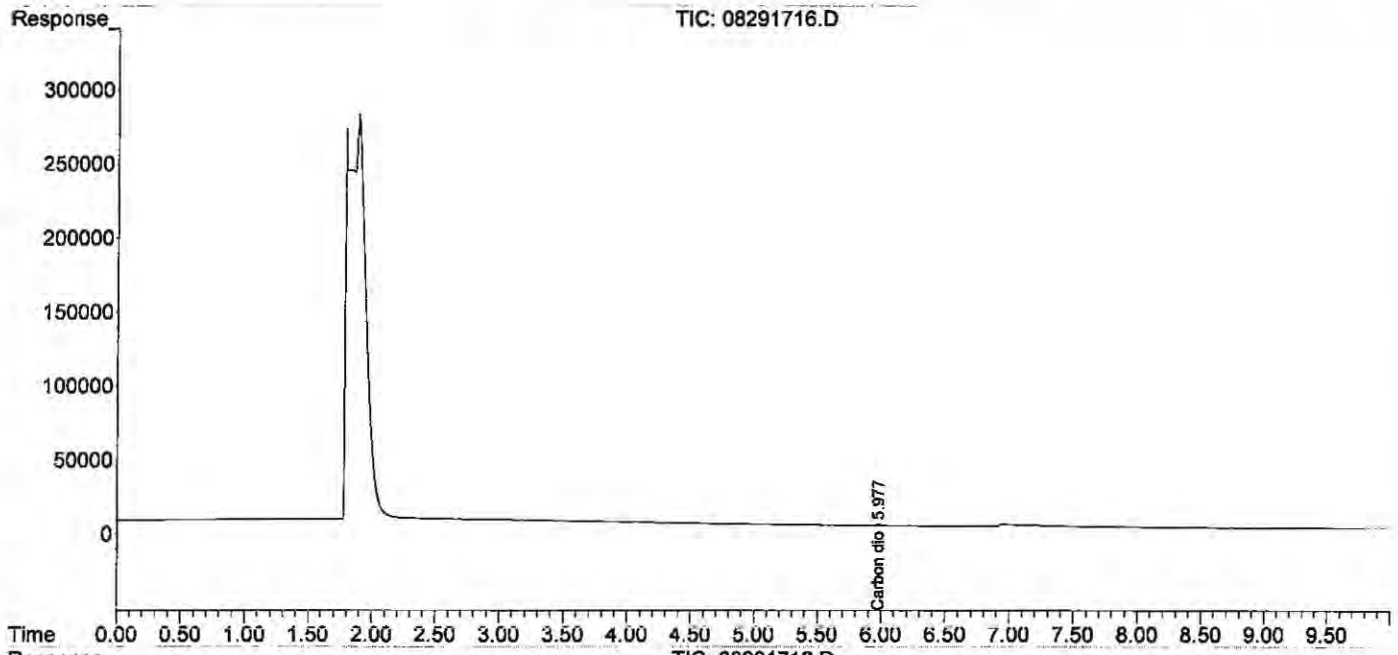
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	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	

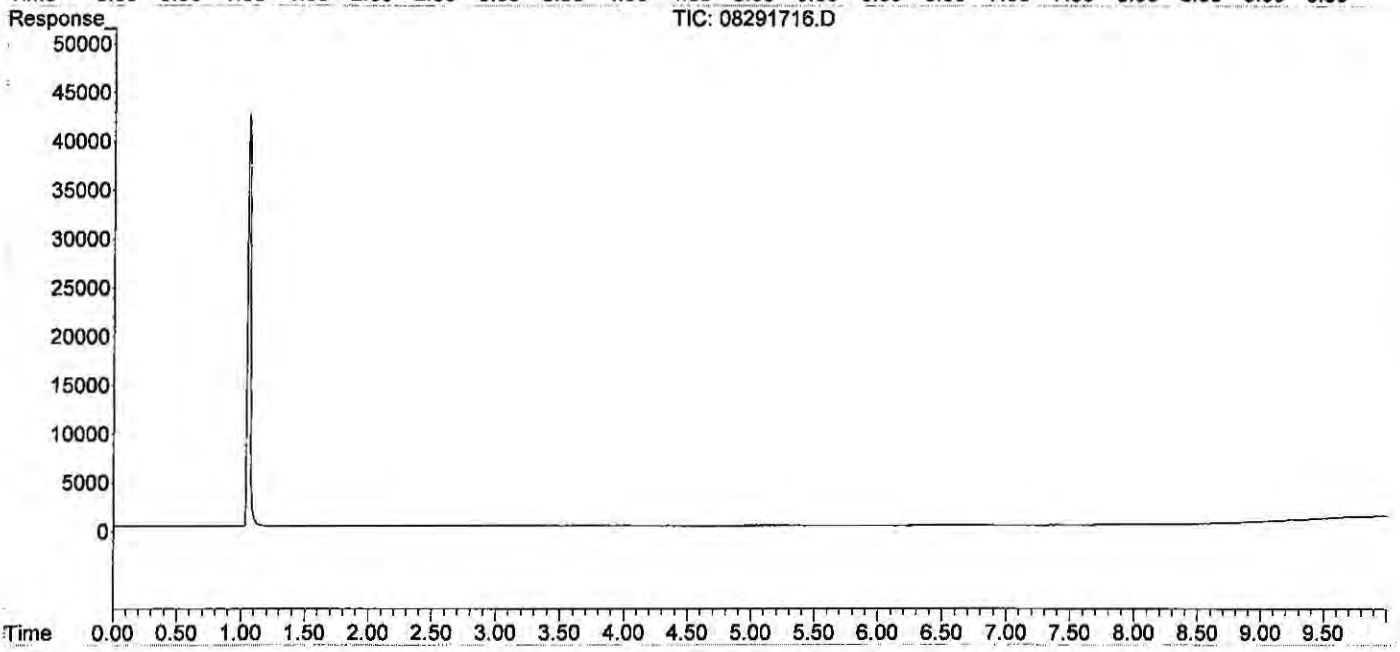
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

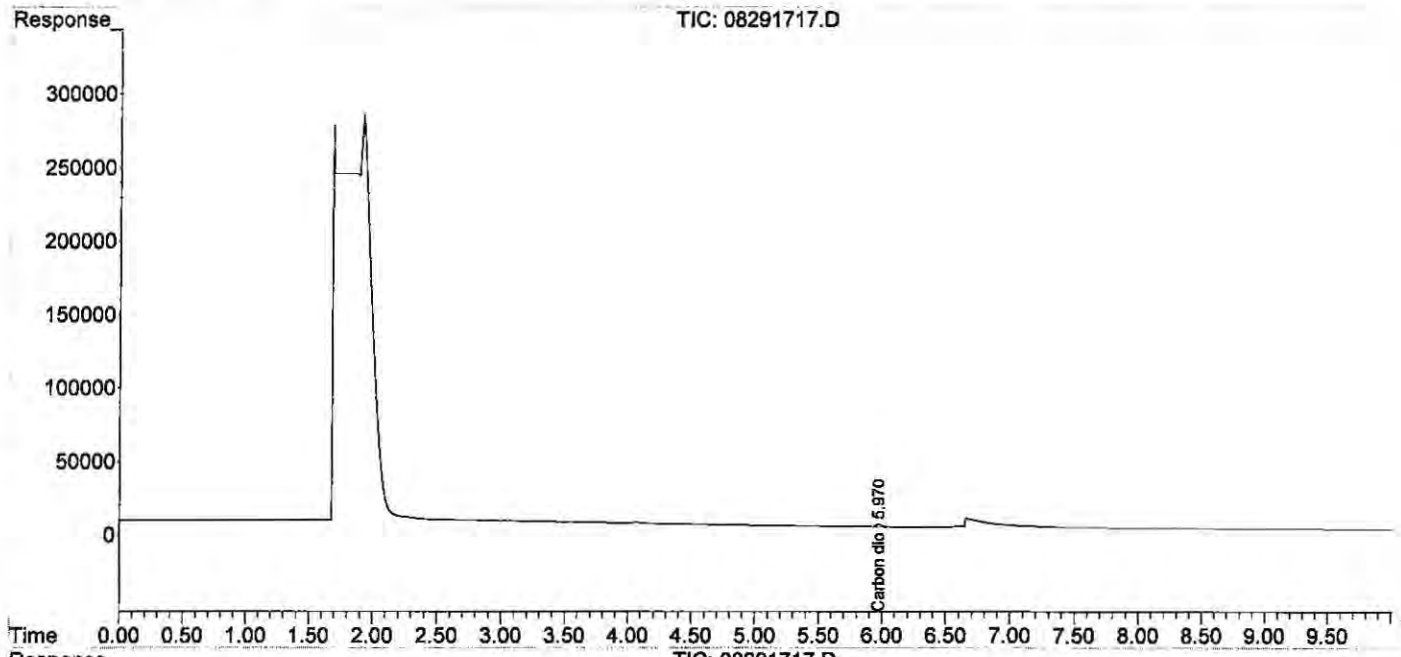
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	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	

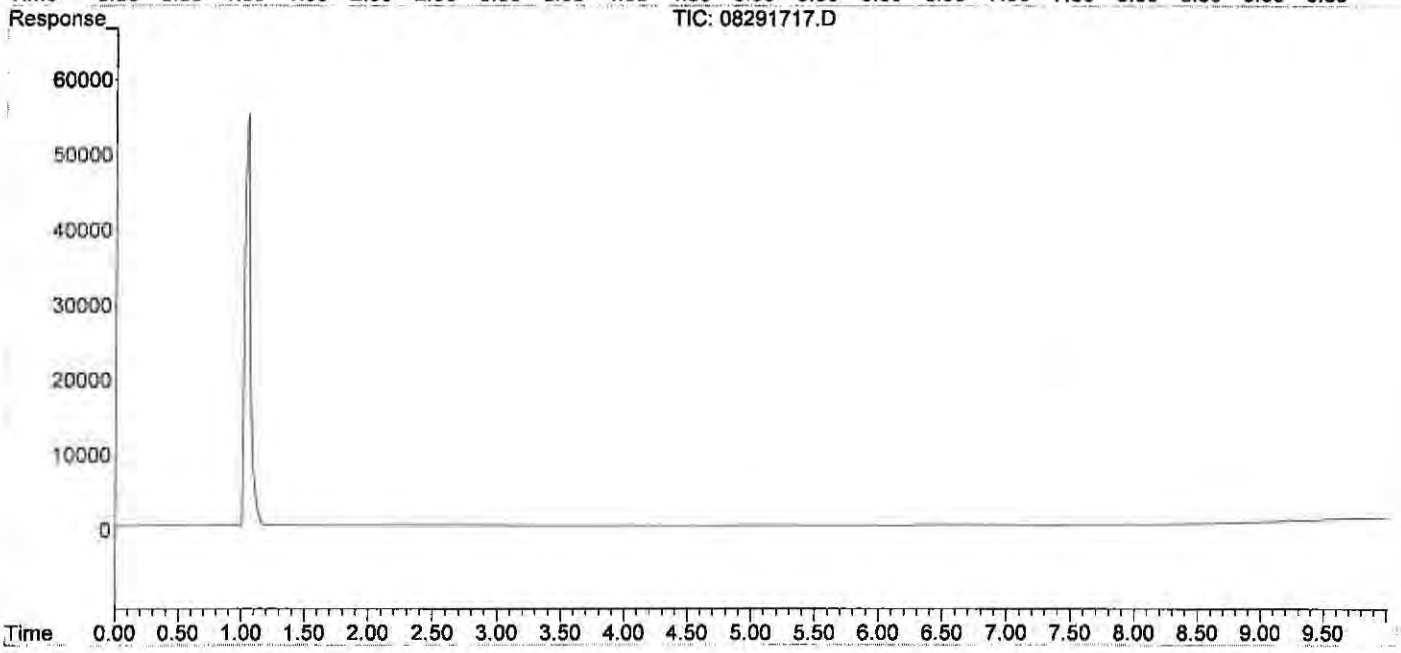
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

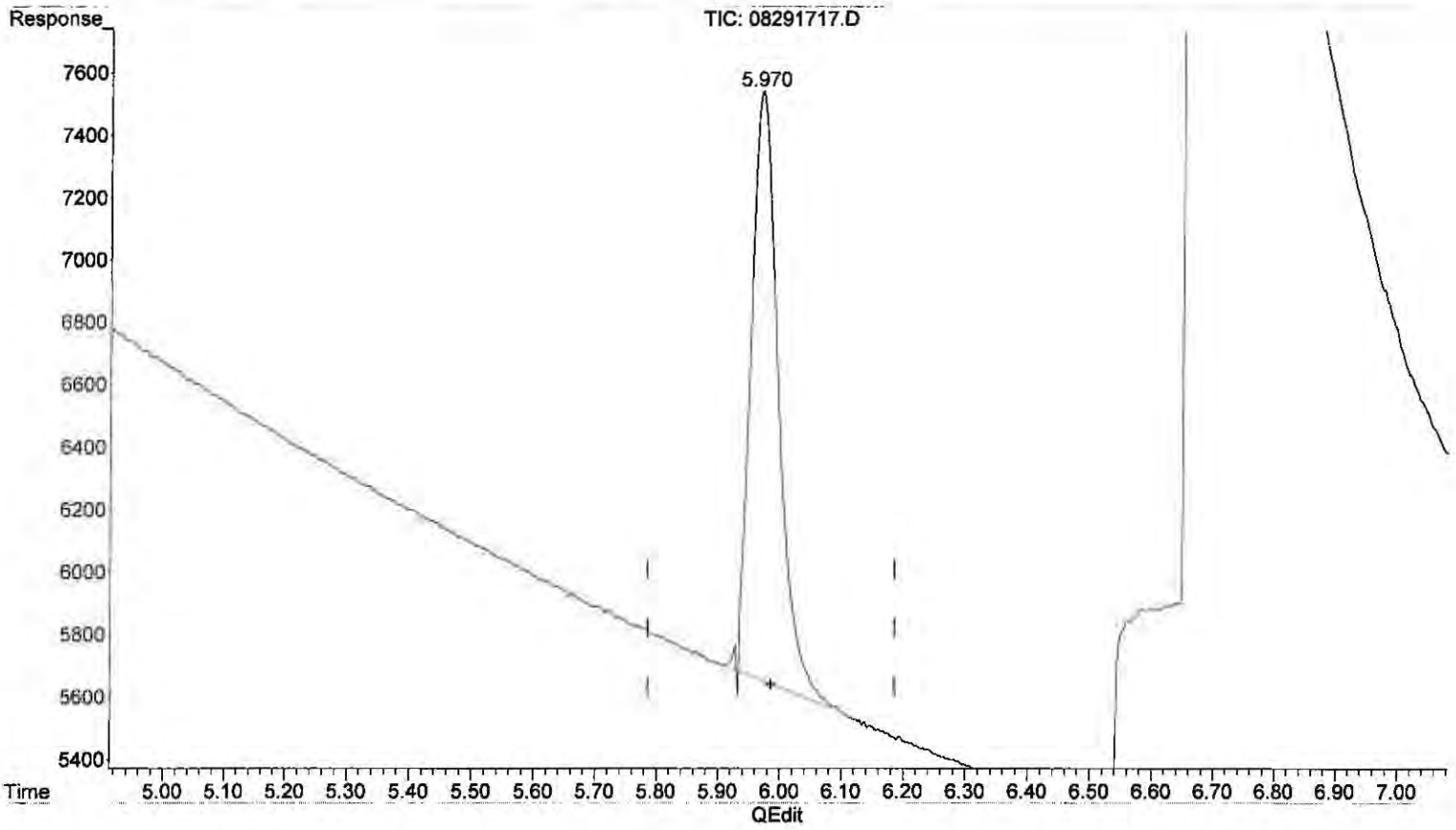




Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

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 #1 Info :
Signal #2 Phase:
Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

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	

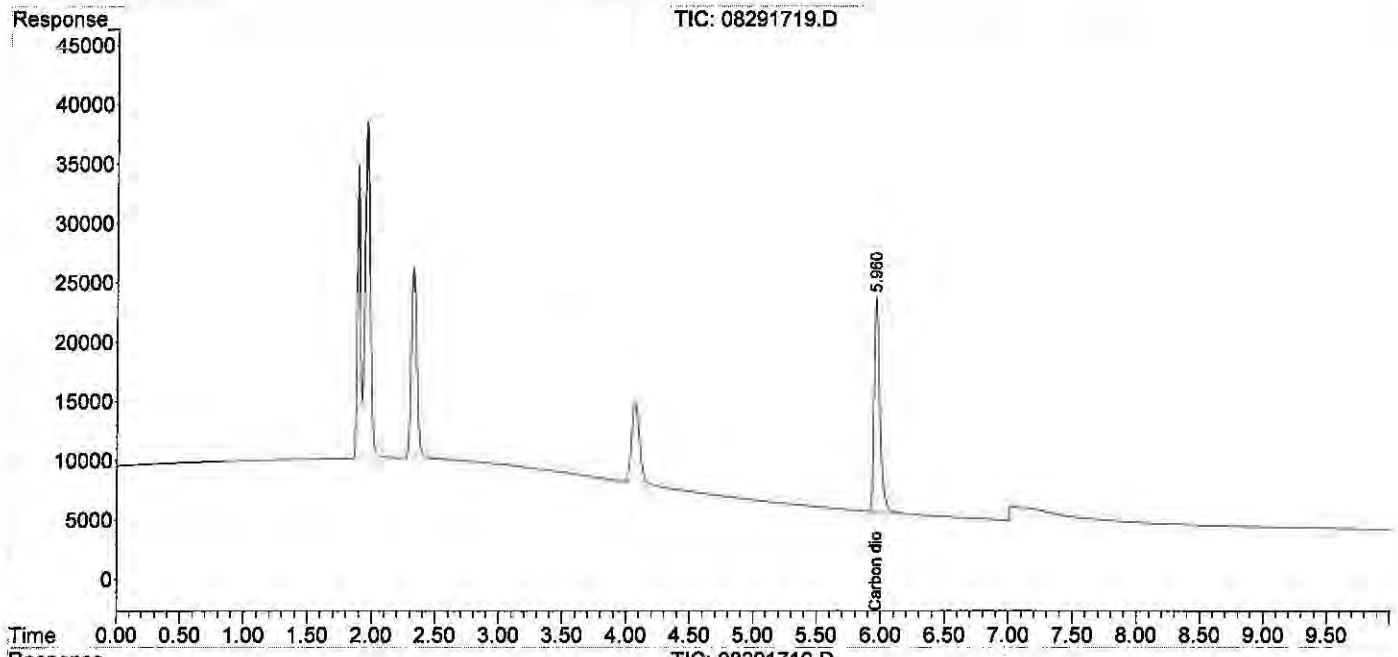
(f)=RT Delta > 1/2 Window (m)=manual int.

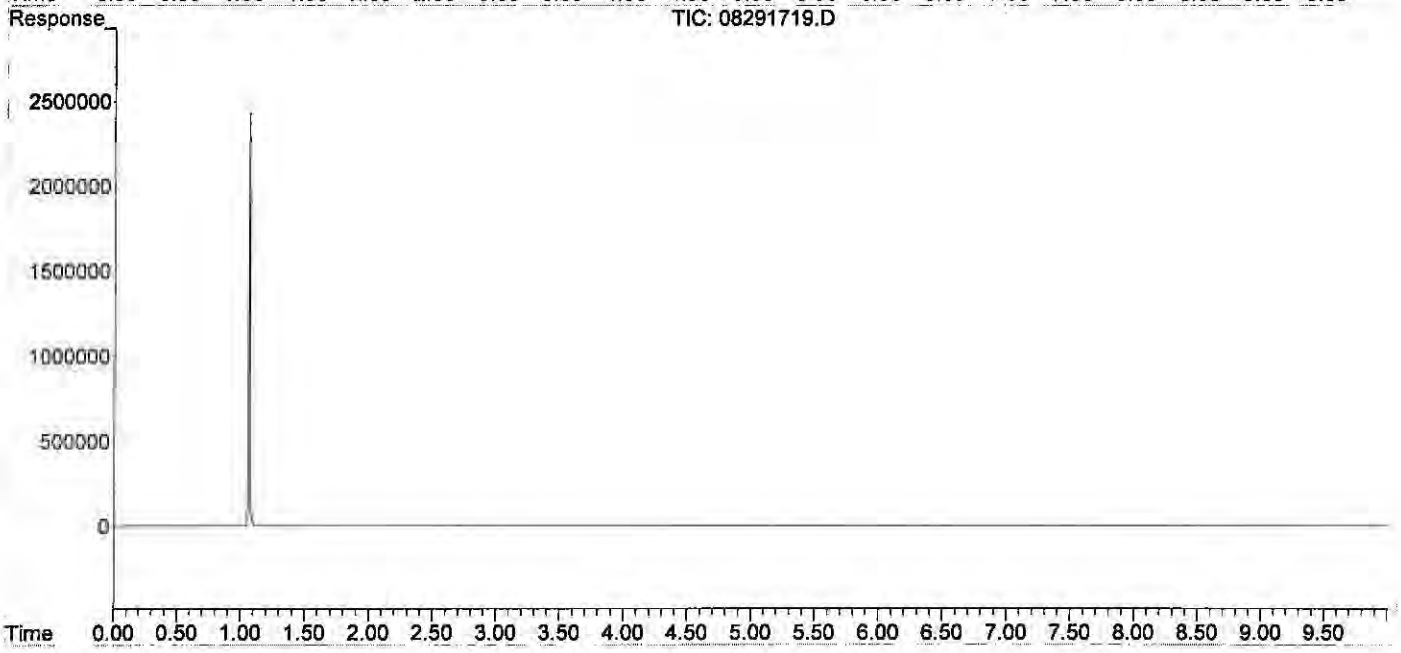
Quantitation Report (QT Reviewed)

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 :





Quantitation Report (QT Reviewed)

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	

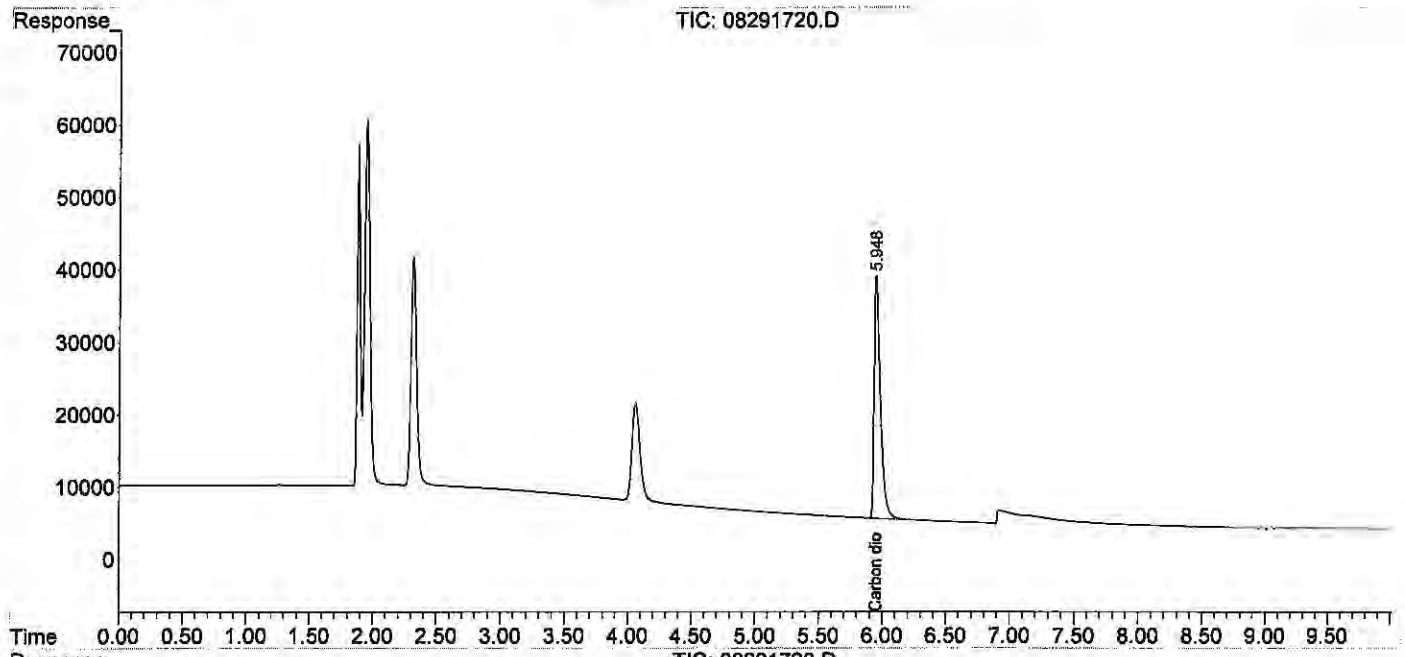
(f)=RT Delta > 1/2 Window (m)=manual int.

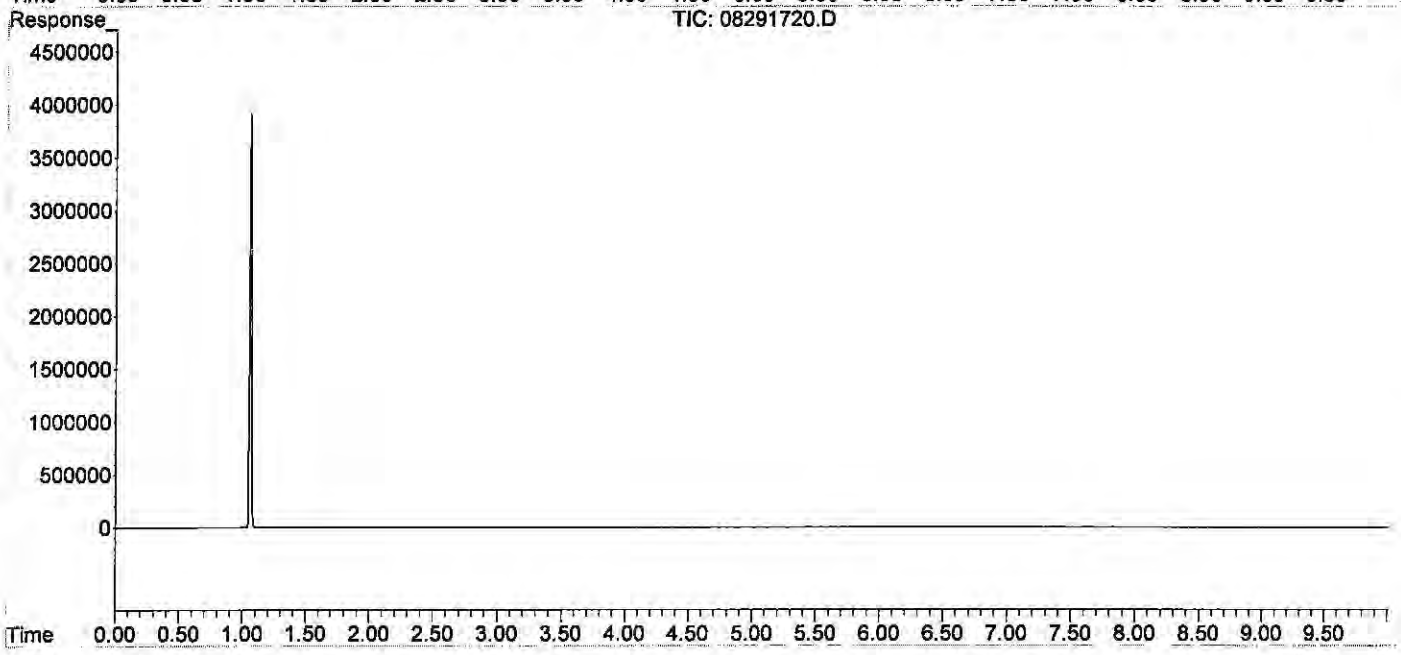
Quantitation Report (QT Reviewed)

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 :

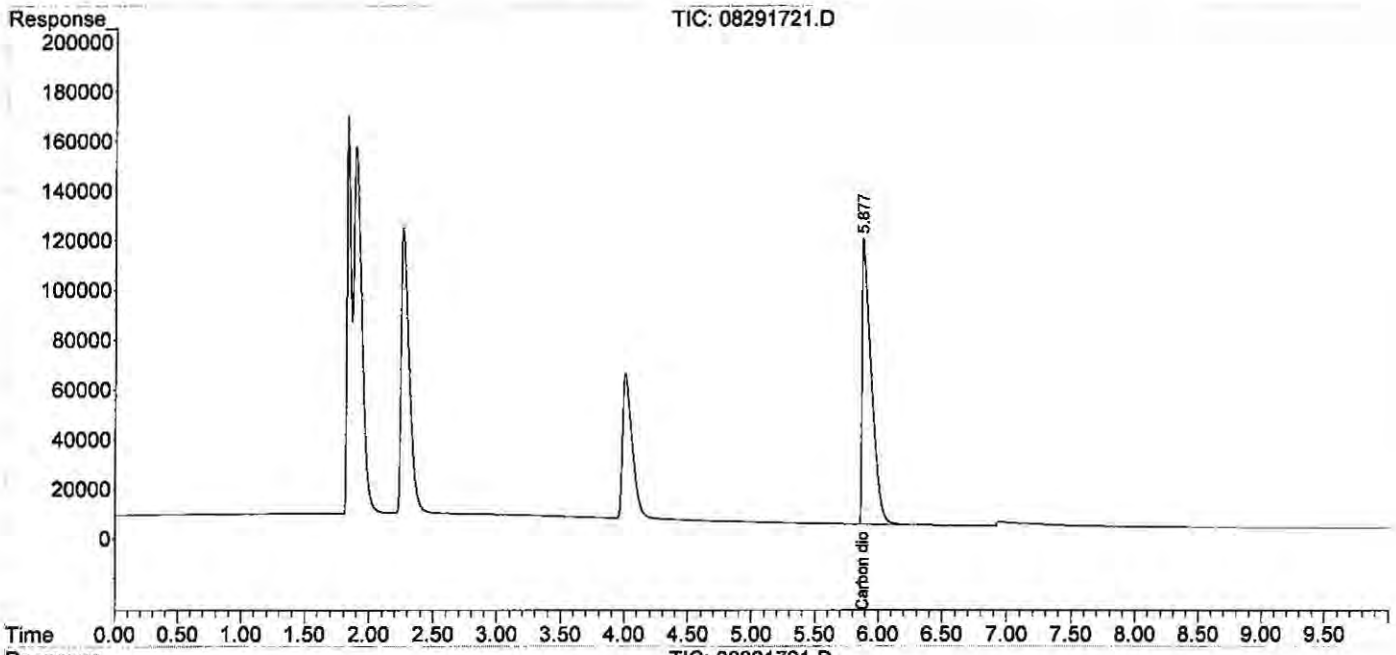
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	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	

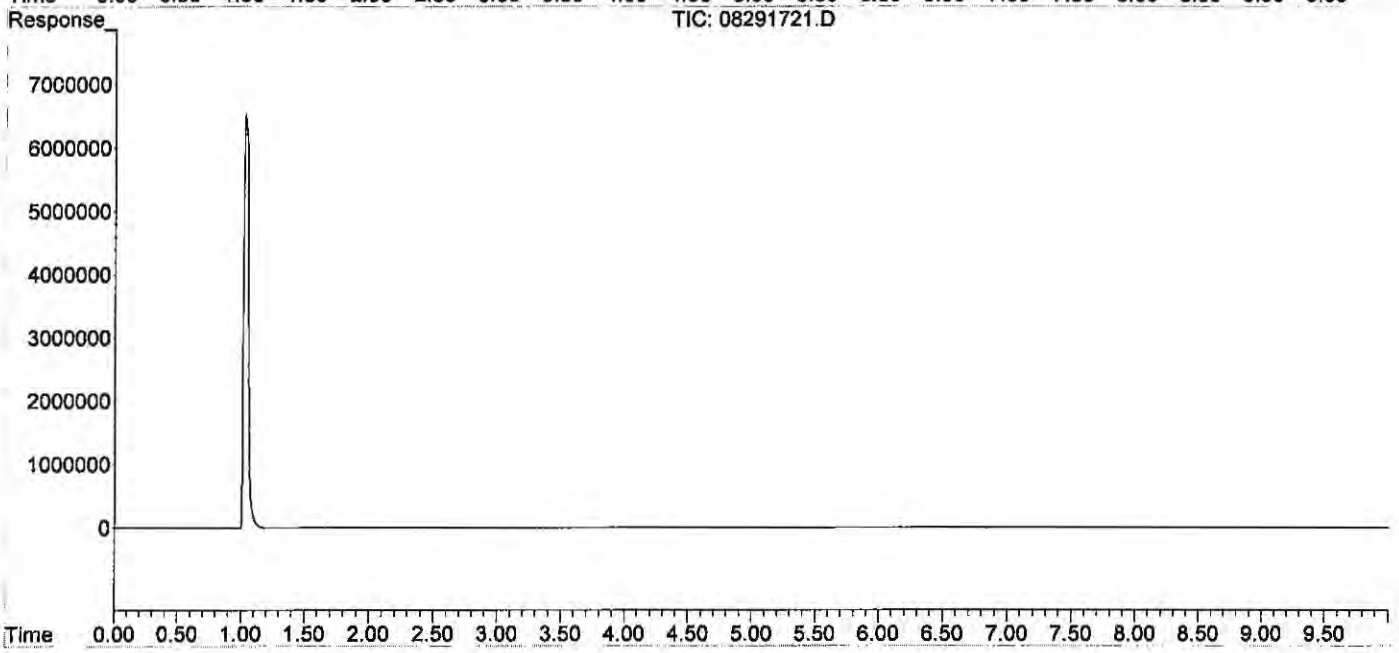
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :





Quantitation Report (QT Reviewed)

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	

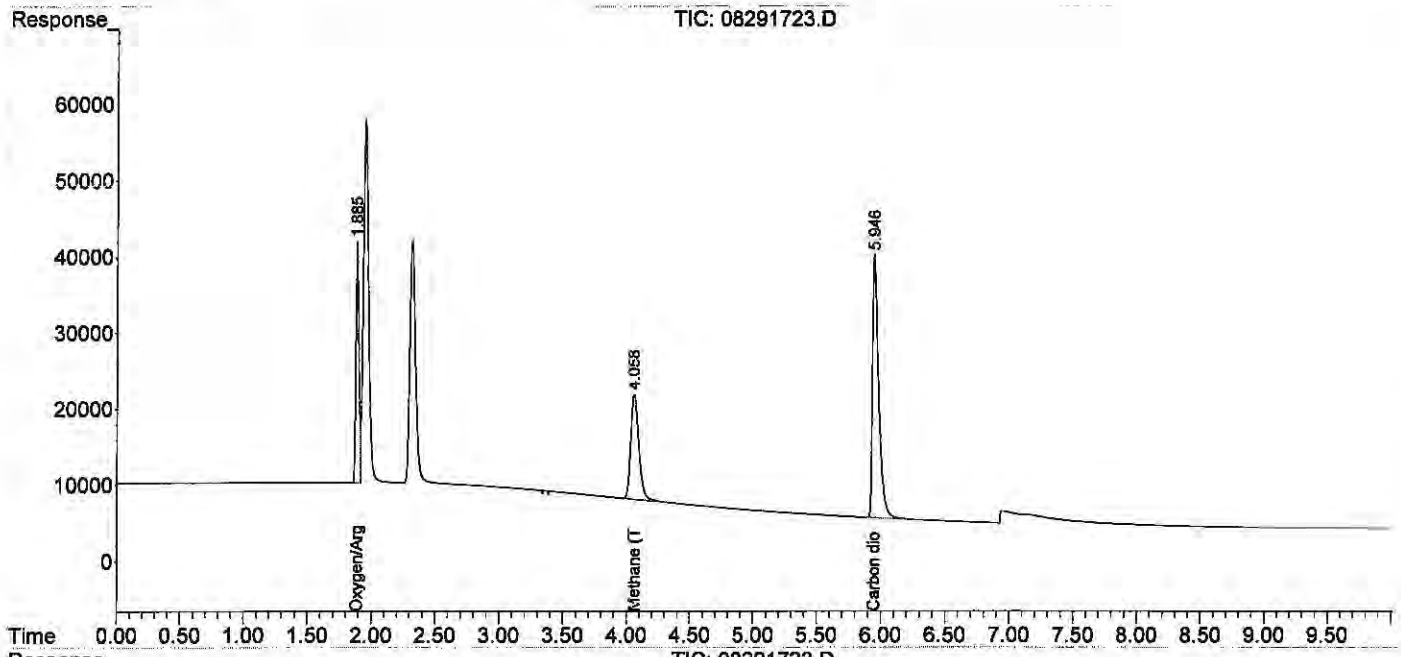
(f)=RT Delta > 1/2 Window (m)=manual int.

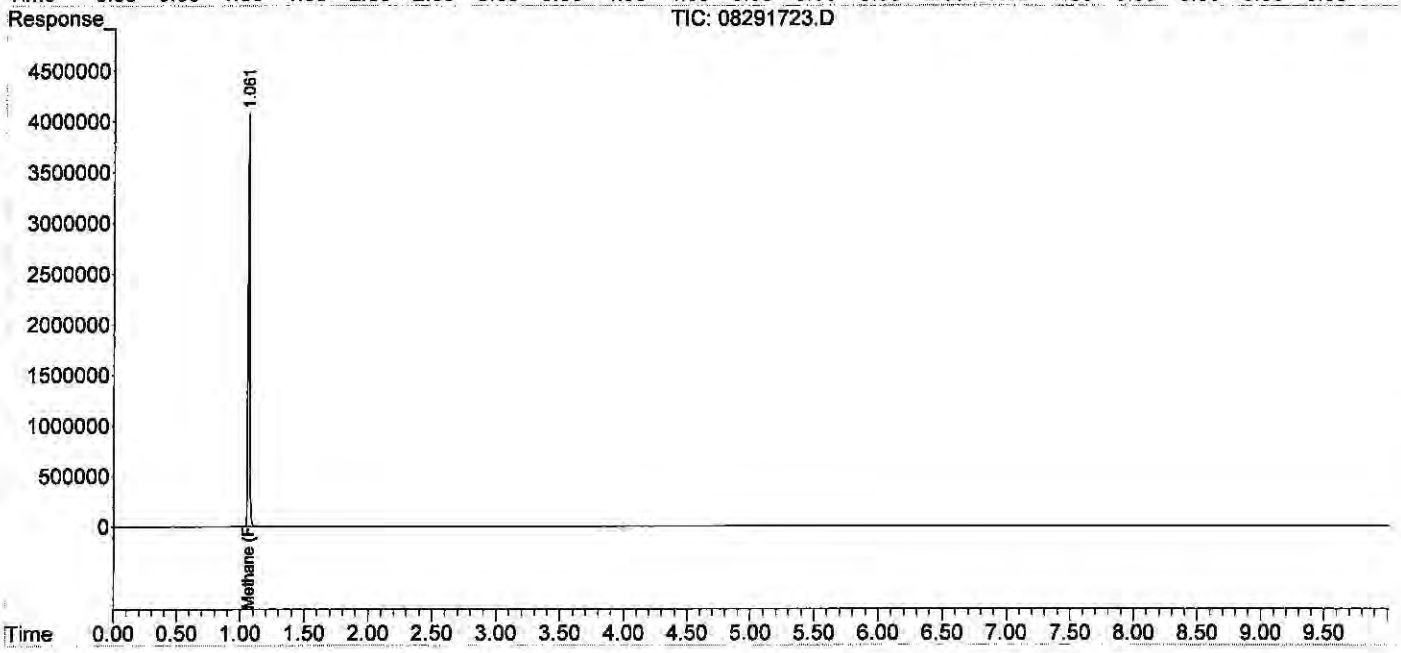
WO 9/4/17

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 :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1907802
Sample Vol. (ml) : 32.00 ml
Analyst : LD
Date Analysis : 12/26/19
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 S32-10291901	0.100	4967.457
ACTUAL		5000.00
%Difference		0.7%
MCS 0.1ml	0.100	0.000
RB 0.1ml	0.100	0.000
LCS S32-08141901	0.100	917.730
LCSD S32-08141901	0.100	888.523
P1907802-001 0.1ml	0.100	9808.111
P1907802-002 0.1ml	0.100	8155.640
P1907802-003 0.1ml	0.100	12478.49
P1907802-004 0.1ml	0.100	12560.00
P1907802-005 0.1ml	0.100	11248.81
STD S32-10291901	0.100	5239.520

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 S32-08141901	9177.300
LCSD S32-08141901	8885.230
P1907802-001 0.1ml	98081.110
P1907802-002 0.1ml	81556.400
P1907802-003 0.1ml	124784.93
P1907802-004 0.1ml	125599.96
P1907802-005 0.1ml	112488.08
STD S32-10291901	52395.200

LP
12/27

STD S32-10291901	5071.627	16:27:10
ACTUAL	5000.00	
%Difference	1.4%	

00997454

00997455

Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 09:10:35
Operator : LD
Sample : STD S32-10291901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 09:22:21 2019
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

LD
12/27

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

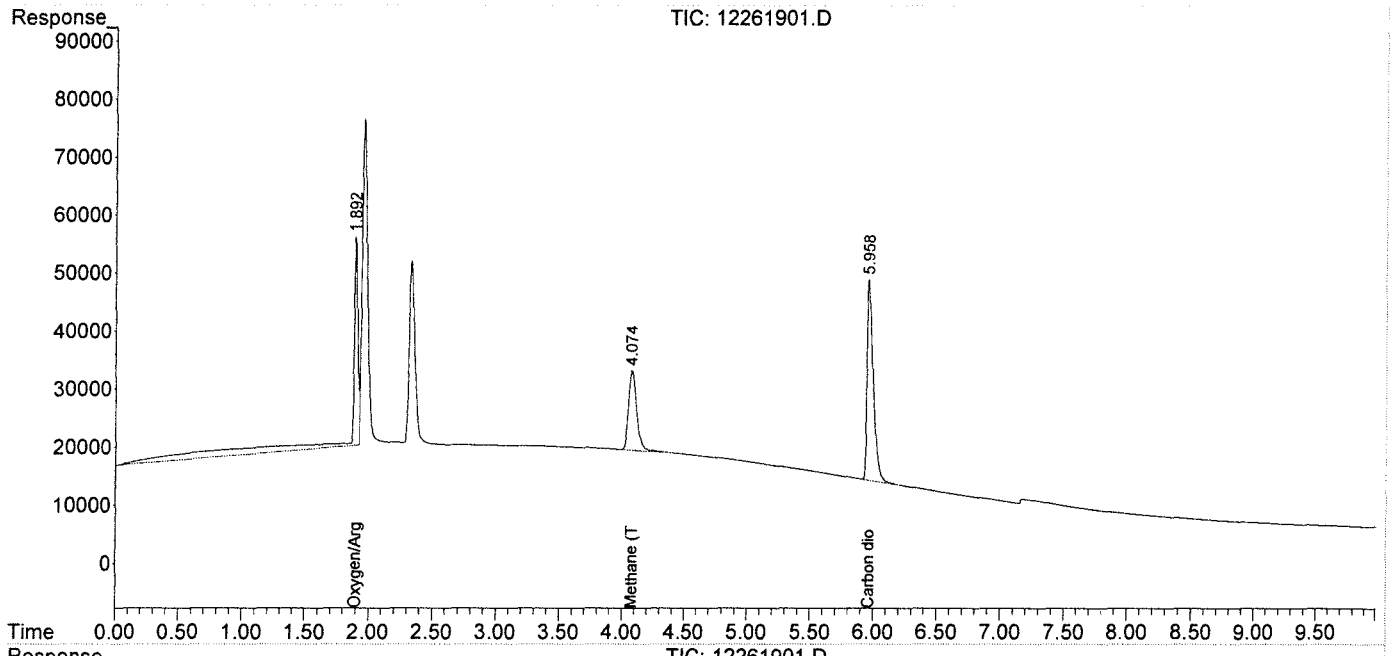
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.893	1510660	0.317	ppm	
2)	Carbon monoxide	1.893	1510660	N.D.	ppm	
3)	Methane (TCD)	4.074f	633311	66964.949	ppm	
4)	Carbon dioxide	5.958	1166007	4967.457	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	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	

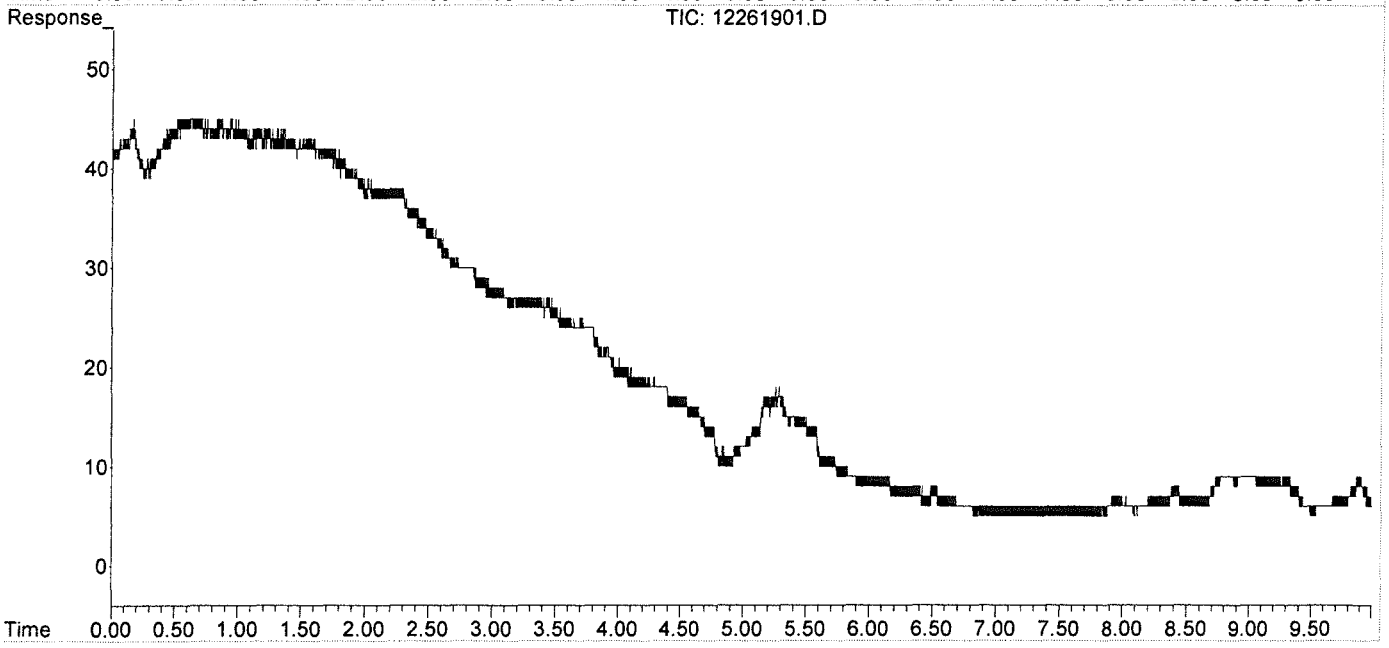
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 09:10:35
Operator : LD
Sample : STD S32-10291901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 09:22:21 2019
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 :

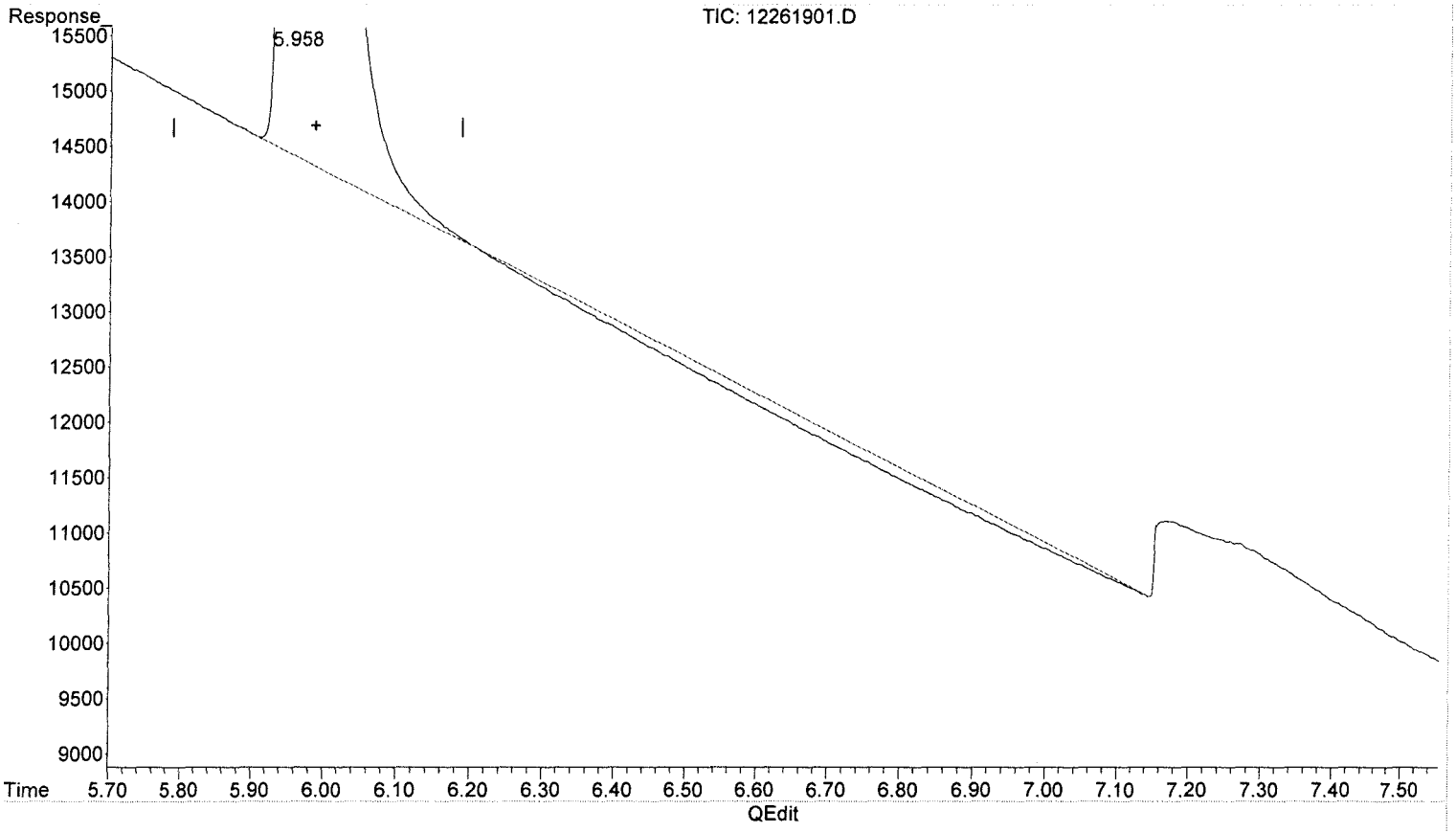




Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 09:10:35
Operator : LD
Sample : STD S32-10291901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 09:22:21 2019
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

5.959min 4796.457 ppm

response 1125868

(+) = Expected Retention Time

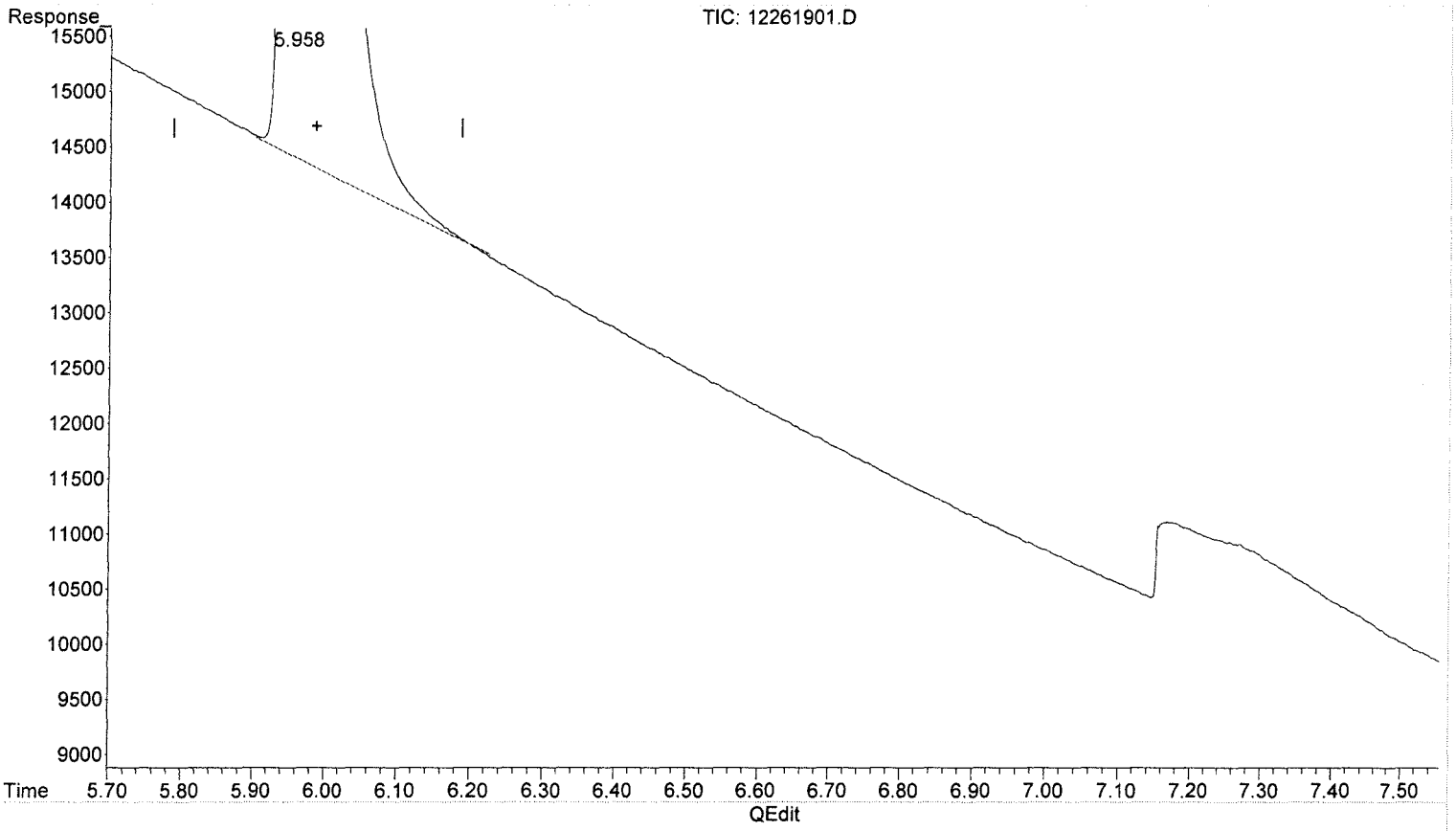
00997458

Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 09:10:35
Operator : LD
Sample : STD S32-10291901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 09:22:21 2019
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

LD
BLC
12/27

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



(4) Carbon dioxide

5.958min 4967.457 ppm m

response 1166007

12/27/2019

(+) = Expected Retention Time

00997459

Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261918.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 14:51:43
Operator : LD
Sample : STD S32-10291901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 15:08:44 2019
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 :

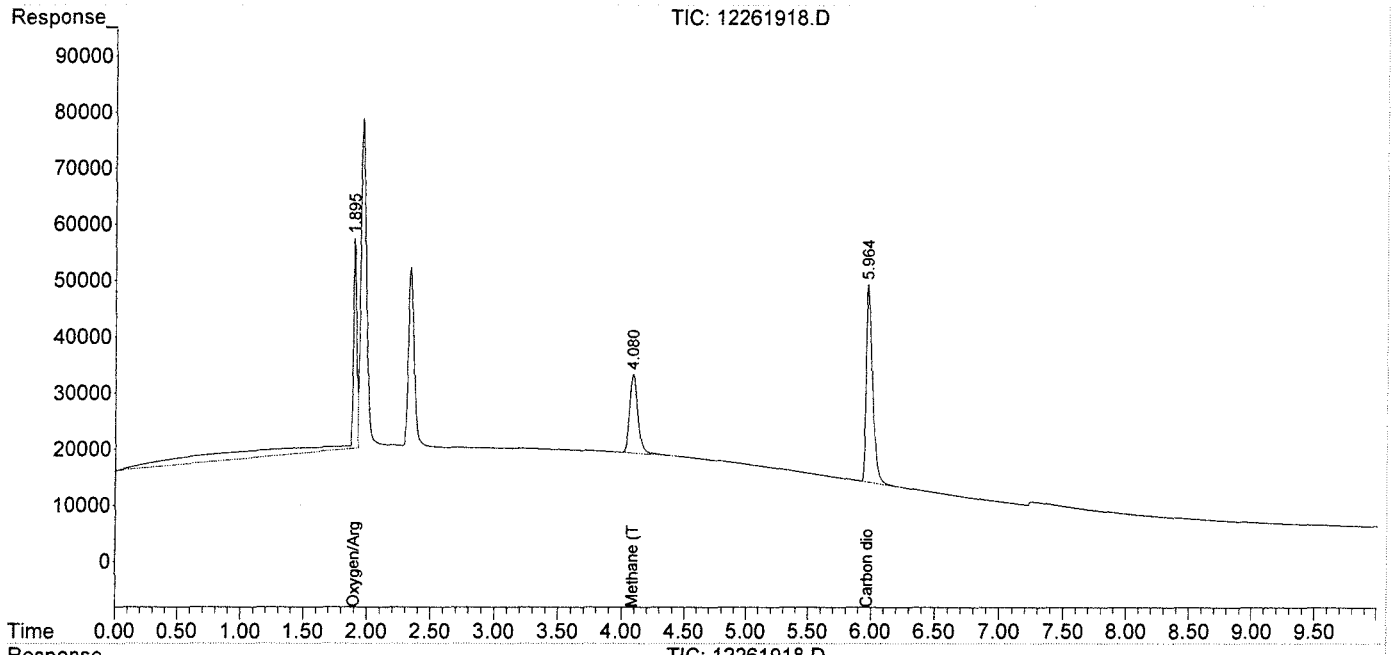
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.896	1726658	0.363	ppm	
2)	Carbon monoxide	1.896	1726658	N.D.	ppm	
3)	Methane (TCD)	4.080f	643404	68032.103	ppm	
4)	Carbon dioxide	5.964	1190459	5071.627	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	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	

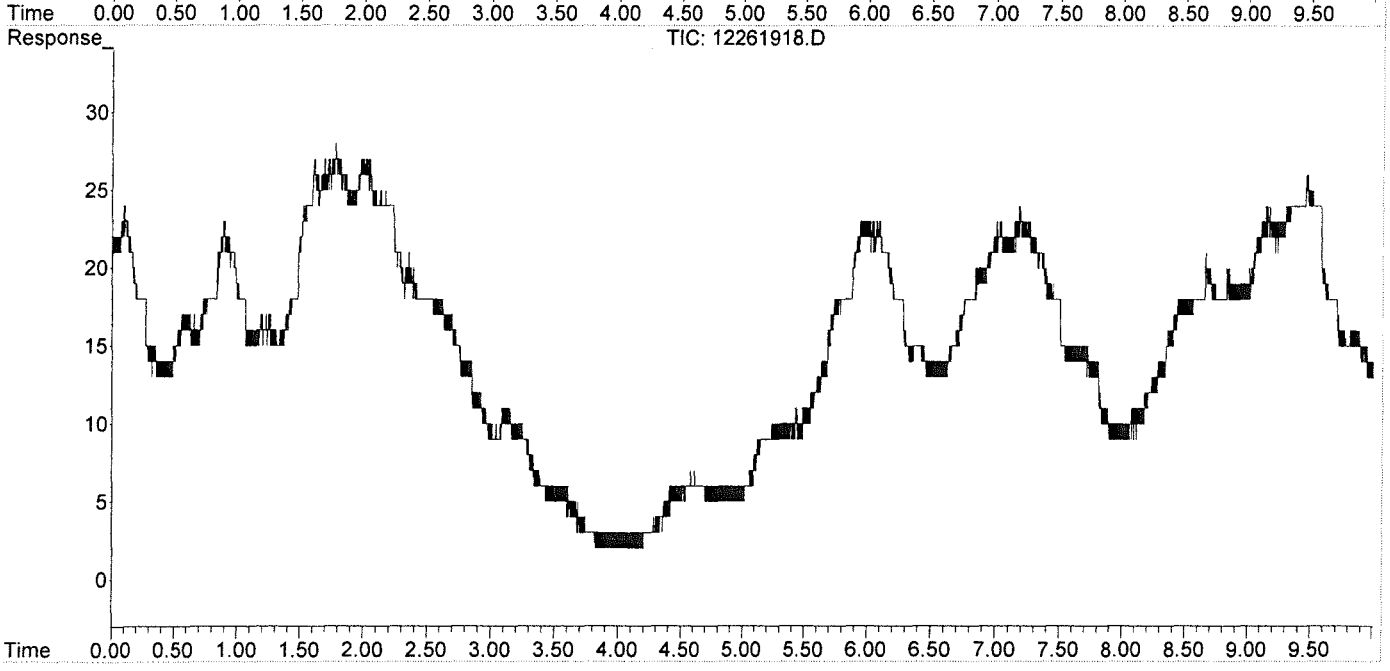
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261918.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 14:51:43
Operator : LD
Sample : STD S32-10291901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 15:08:44 2019
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 :

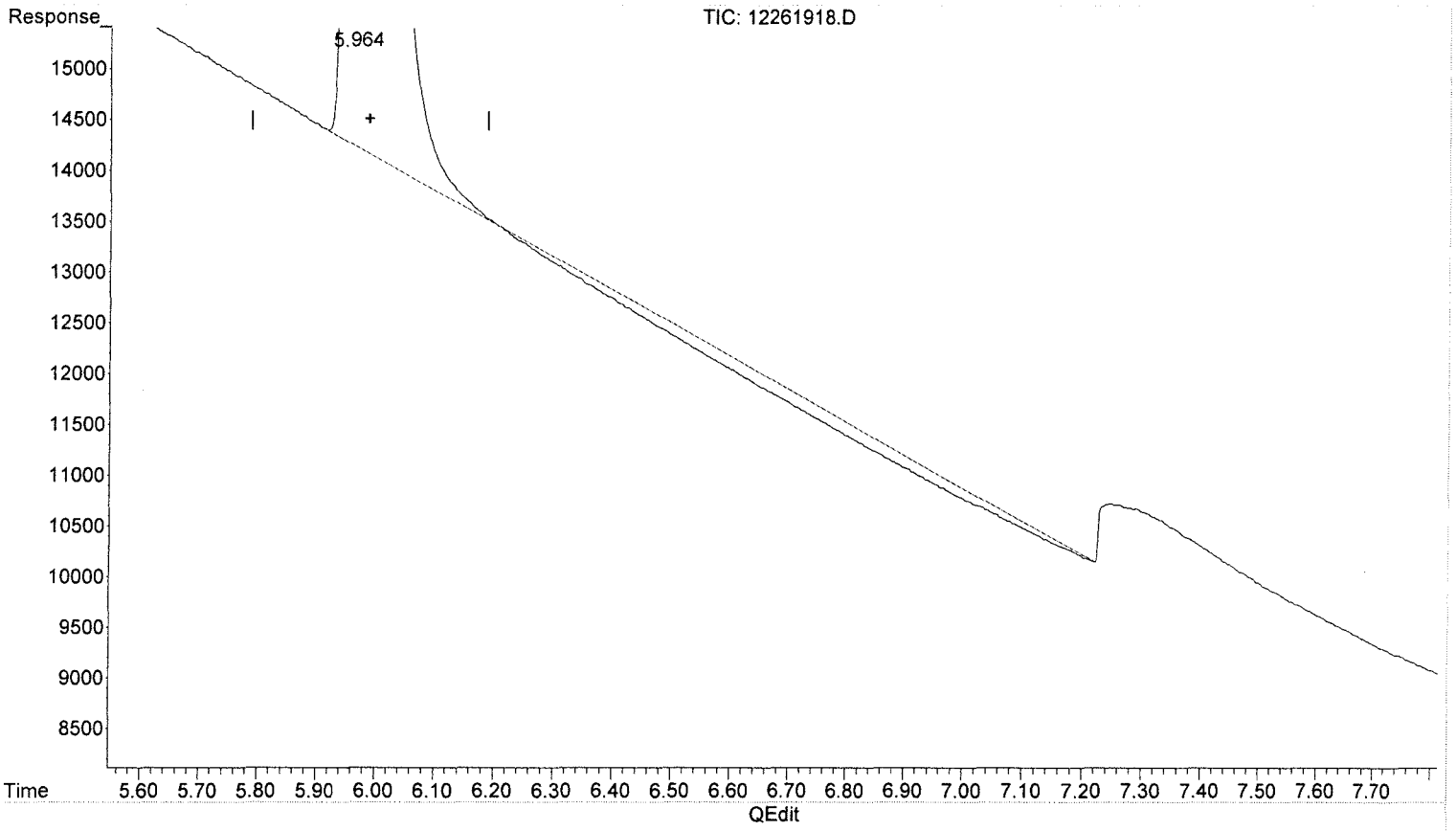




Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261918.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 14:51:43
Operator : LD
Sample : STD S32-10291901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 15:08:44 2019
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

5.965min 4826.613 ppm

response 1132947

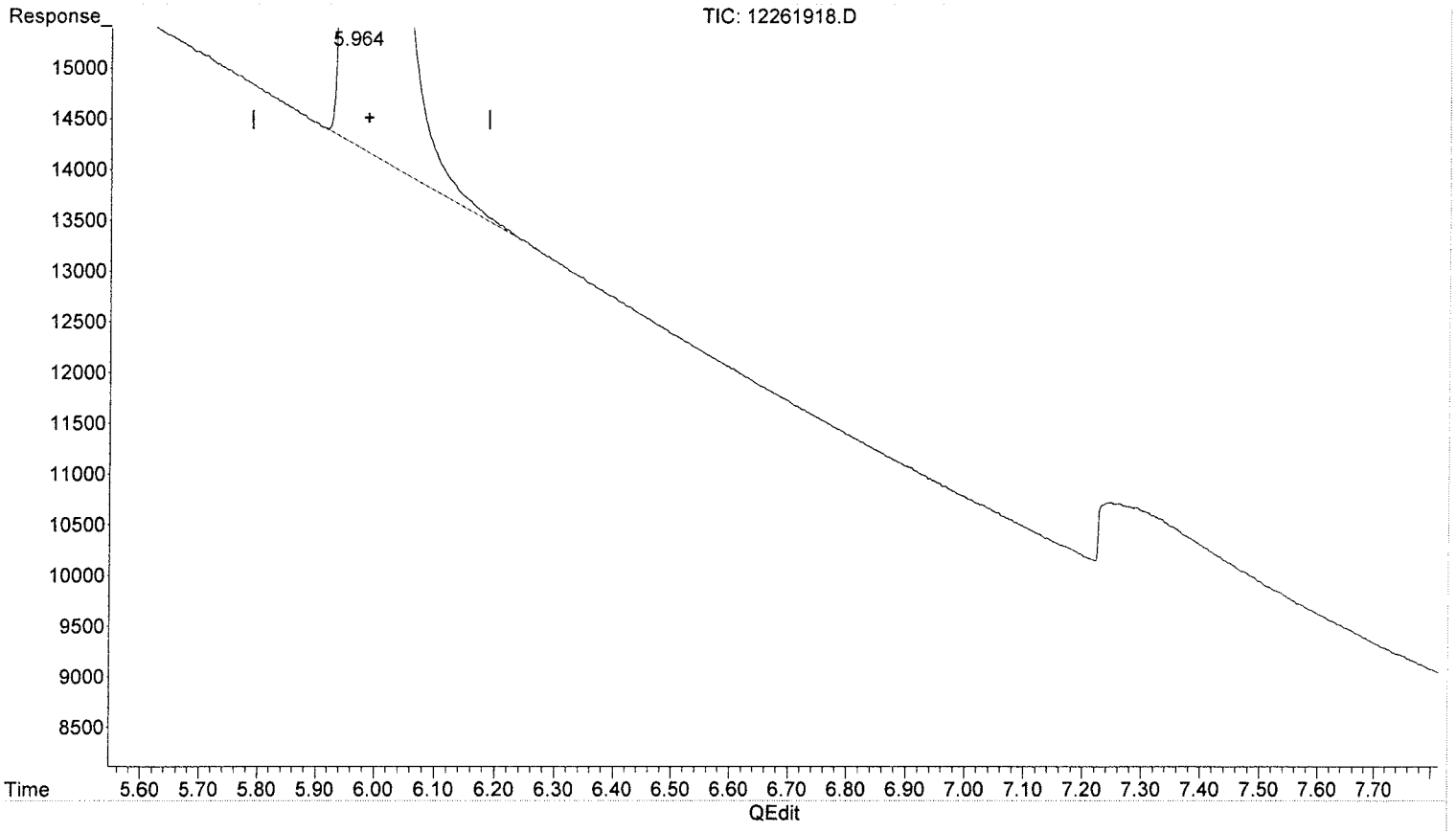
(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261918.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 14:51:43
Operator : LD
Sample : STD S32-10291901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 15:08:44 2019
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

LD
BLC
12/27

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



(4) Carbon dioxide

5.964min 5071.627 ppm m

response 1190459

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261922.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 16:27:10
Operator : LD
Sample : STD S32-10291901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 16:42:43 2019
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	1.919f	563019	0.118	ppm	
2)	Carbon monoxide	1.919f	563019	N.D.	ppm	
3)	Methane (TCD)	4.092f	678747	71769.206	ppm	
4)	Carbon dioxide	5.973	1229868	5239.520	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	

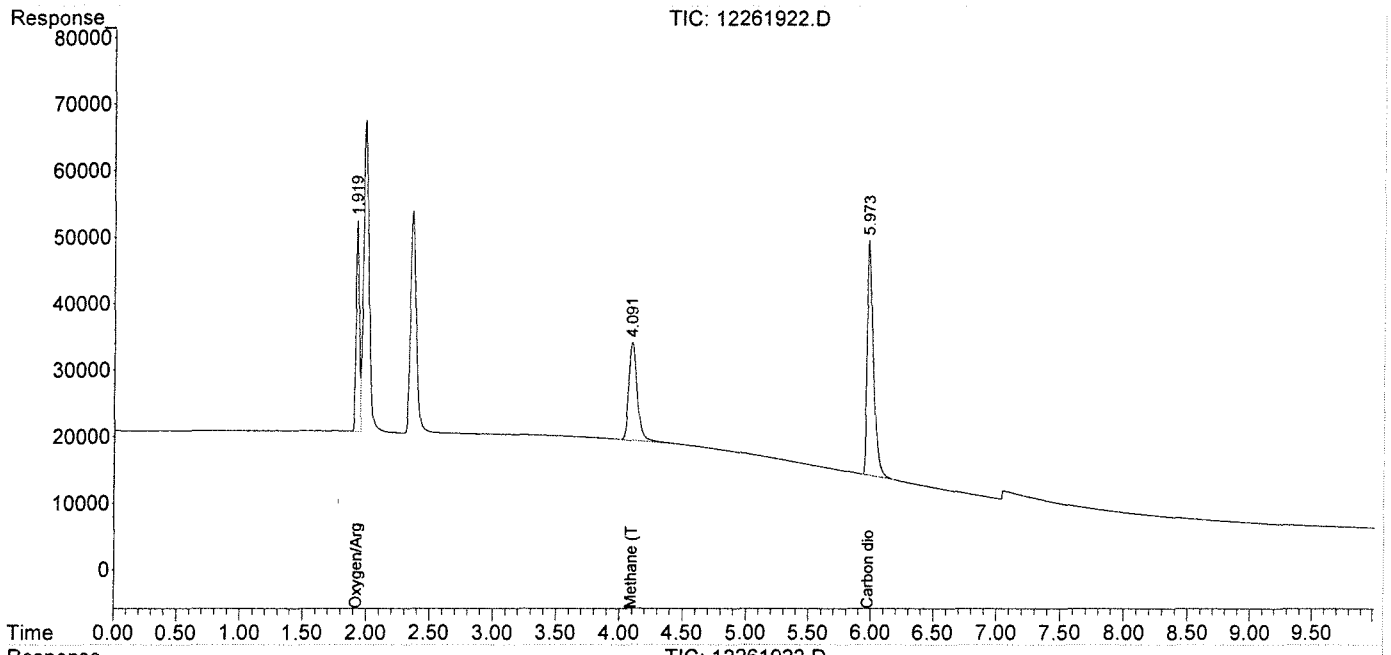
(f)=RT Delta > 1/2 Window (m)=manual int.

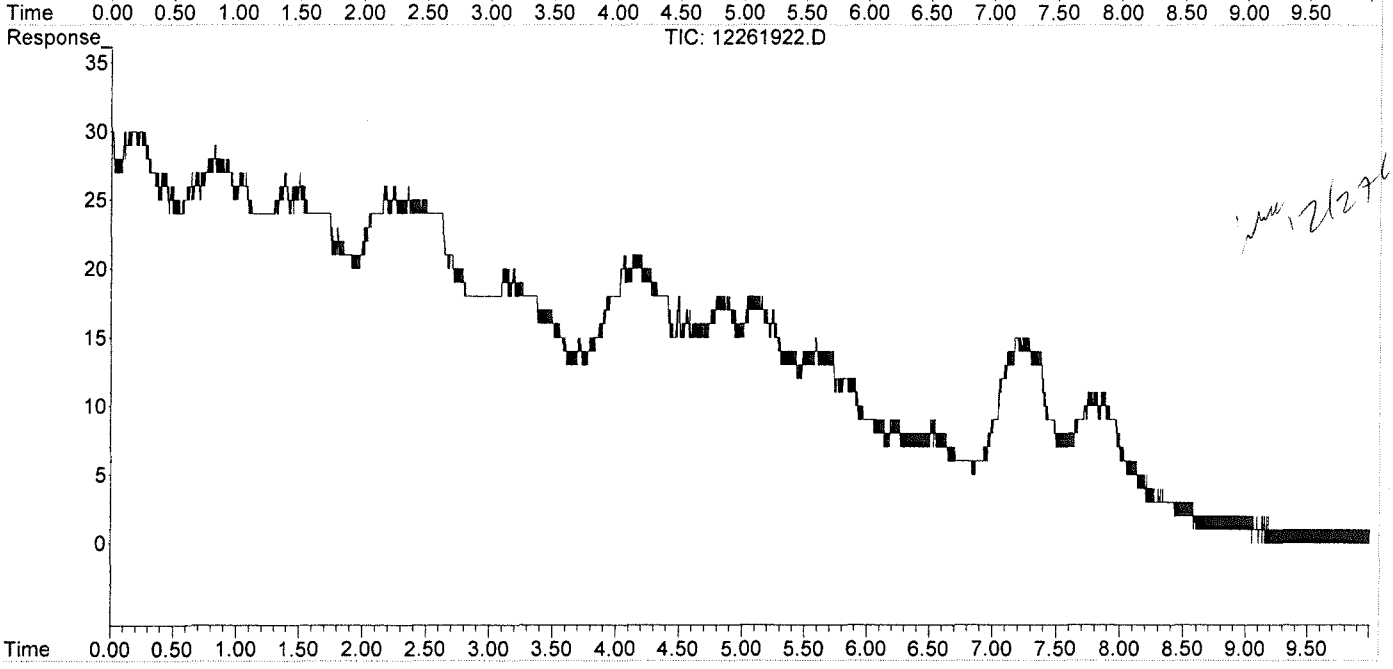
Data Path : J:\GC10\DATA\RSK_TCD\2019_12\26\
Data File : 12261922.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 26-Dec-2019, 16:27:10
Operator : LD
Sample : STD S32-10291901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 26 16:42:43 2019
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

LD
BLC
NO previous
12/27

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





12/27

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	mls 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	lcv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

12/31/19

Directory: I:\GC10\DATA\RSK_TCD\2019_12\26\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	26-Dec-19, 09:10:35	12261901.D	STD S32-10291901		LD	RSKBOTH.M	PASS
2	26-Dec-19, 09:24:53	12261902.D	RB 0.1ml		LD	RSKBOTH.M	PASS
3	26-Dec-19, 11:27:12	12261903.D	MCS 0.1ml		LD	RSKBOTH.M	PASS
4	26-Dec-19, 11:41:15	12261904.D	xxxxLCS S32-08141901		LD	RSKBOTH.M	FAIL
5	26-Dec-19, 11:55:02	12261905.D	xxxxLCS S32-08141901		LD	RSKBOTH.M	FAIL
6	26-Dec-19, 12:08:56	12261906.D	xxxxxLCS S32-08141901		LD	RSKBOTH.M	FAIL
7	26-Dec-19, 12:23:26	12261907.D	xxxxxLCS S32-08141901		LD	RSKBOTH.M	FAIL
8	26-Dec-19, 12:36:53	12261908.D	P1907801-001 0.1ml		LD	RSKBOTH.M	
9	26-Dec-19, 12:50:07	12261909.D	P1907801-002 0.1ml		LD	RSKBOTH.M	
10	26-Dec-19, 13:03:25	12261910.D	P1907801-003 0.1ml		LD	RSKBOTH.M	
11	26-Dec-19, 13:17:04	12261911.D	P1907801-004 0.1ml		LD	RSKBOTH.M	
12	26-Dec-19, 13:30:29	12261912.D	P1907801-005 0.1ml		LD	RSKBOTH.M	
13	26-Dec-19, 13:43:47	12261913.D	P1907801-006 0.1ml		LD	RSKBOTH.M	
14	26-Dec-19, 13:56:40	12261914.D	P1907802-001 0.1ml		LD	RSKBOTH.M	
15	26-Dec-19, 14:09:49	12261915.D	P1907802-002 0.1ml		LD	RSKBOTH.M	
16	26-Dec-19, 14:25:42	12261916.D	P1907802-003 0.1ml		LD	RSKBOTH.M	
17	26-Dec-19, 14:38:40	12261917.D	P1907802-004 0.1ml		LD	RSKBOTH.M	
18	26-Dec-19, 14:51:43	12261918.D	STD S32-10291901		LD	RSKBOTH.M	PASS
19	26-Dec-19, 15:09:48	12261919.D	P1907802-005 0.1ml		LD	RSKBOTH.M	
20	26-Dec-19, 15:58:59	12261920.D	LCS S32-08141901		LD	RSKBOTH.M	PASS
21	26-Dec-19, 16:11:50	12261921.D	LCSD S32-08141901		LD	RSKBOTH.M	PASS
22	26-Dec-19, 16:27:10	12261922.D	STD S32-10291901		LD	RSKBOTH.M	PASS

Data Path : J:\GC10\DATA\RSK_FID\2019_12\27\
Data File : 12271912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 13:26:26
Operator : LD
Sample : P1907802-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 27 14:37:06 2019
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 :

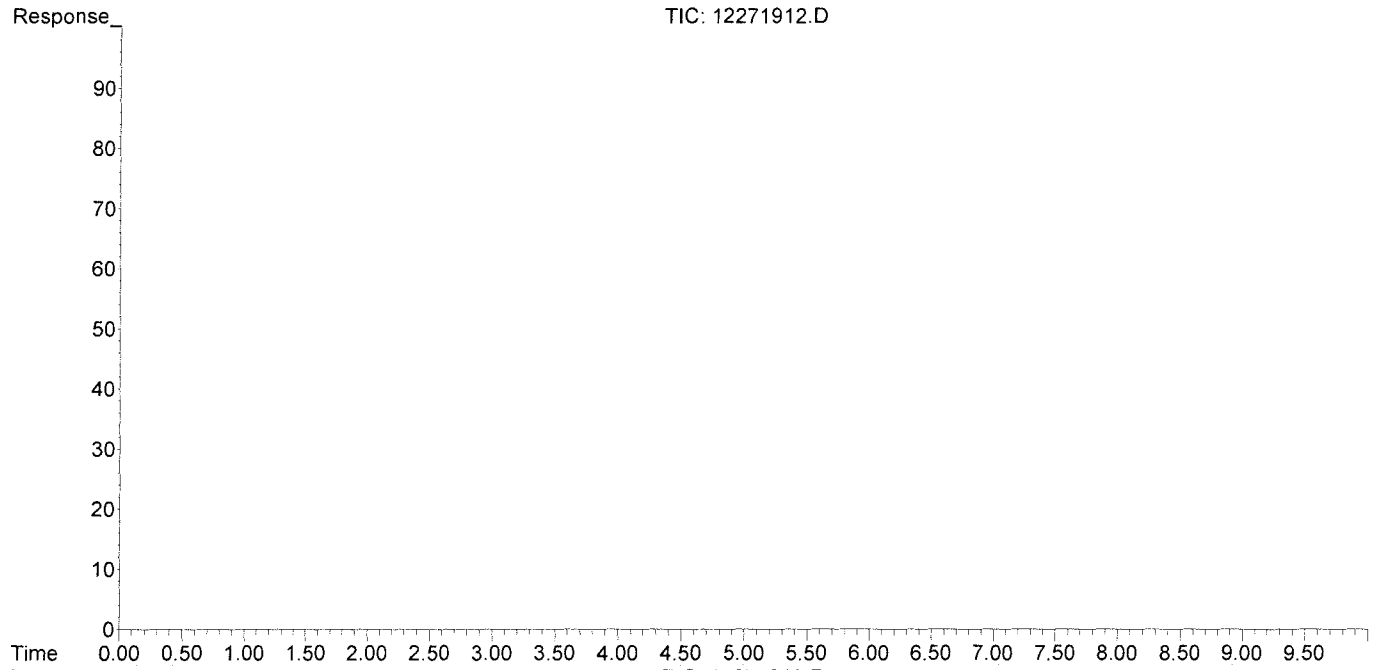
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000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

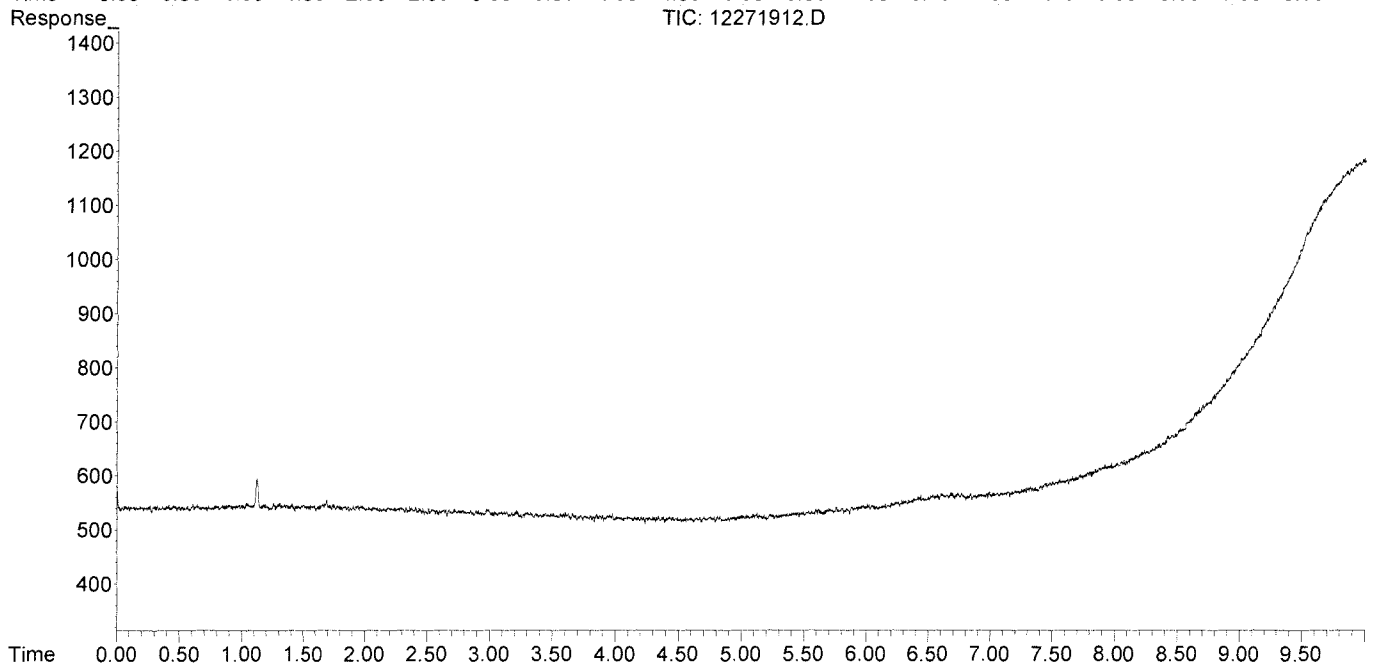
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_12\27\
Data File : 12271912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 13:26:26
Operator : LD
Sample : P1907802-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 27 14:37:06 2019
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\2019_12\27\
Data File : 12271913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 13:40:35
Operator : LD
Sample : P1907802-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 27 14:37:21 2019
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 :

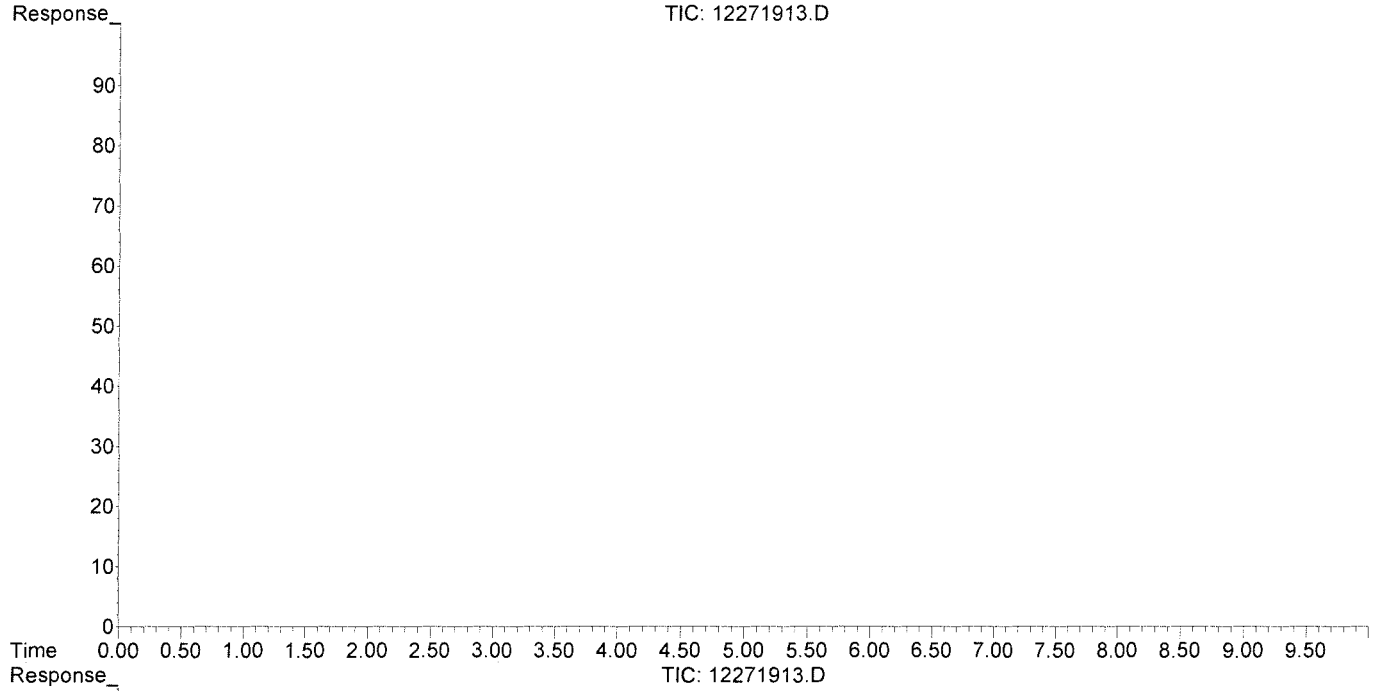
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000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

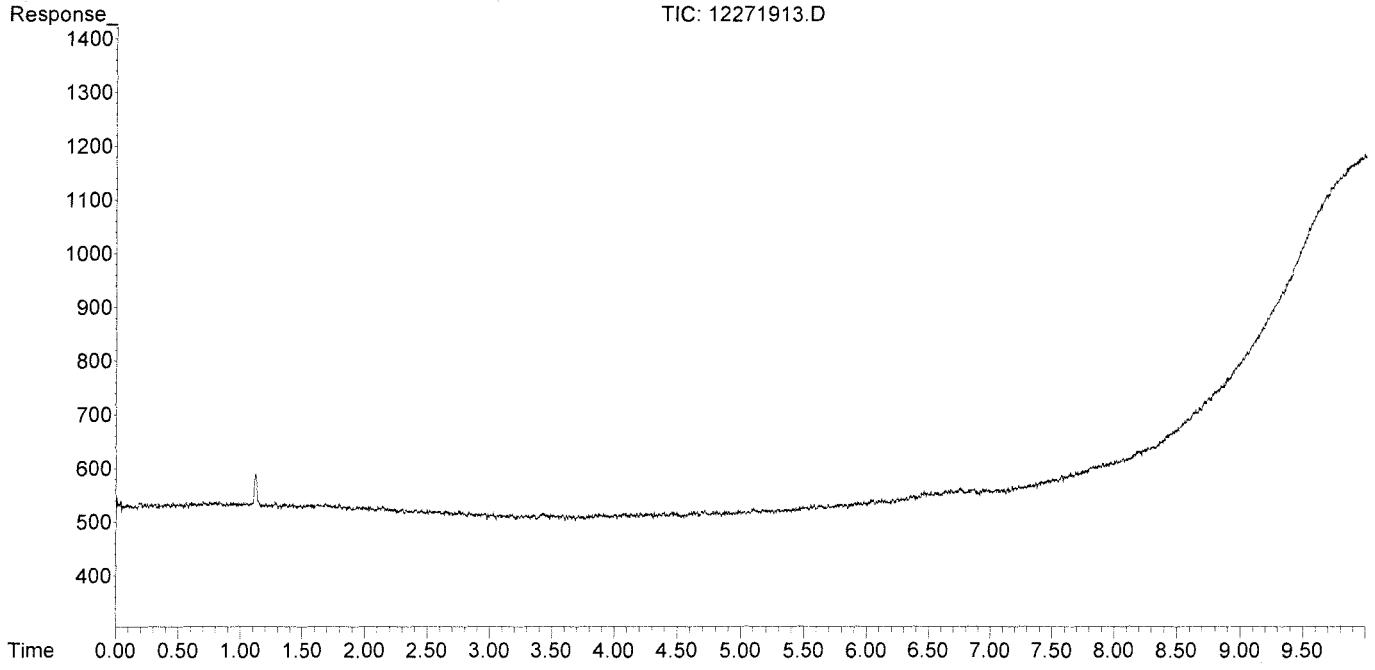
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_12\27\
Data File : 12271913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 13:40:35
Operator : LD
Sample : P1907802-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 27 14:37:21 2019
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\2019_12\27\
Data File : 12271914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 13:54:12
Operator : LD
Sample : P1907802-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 27 14:37:29 2019
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 :

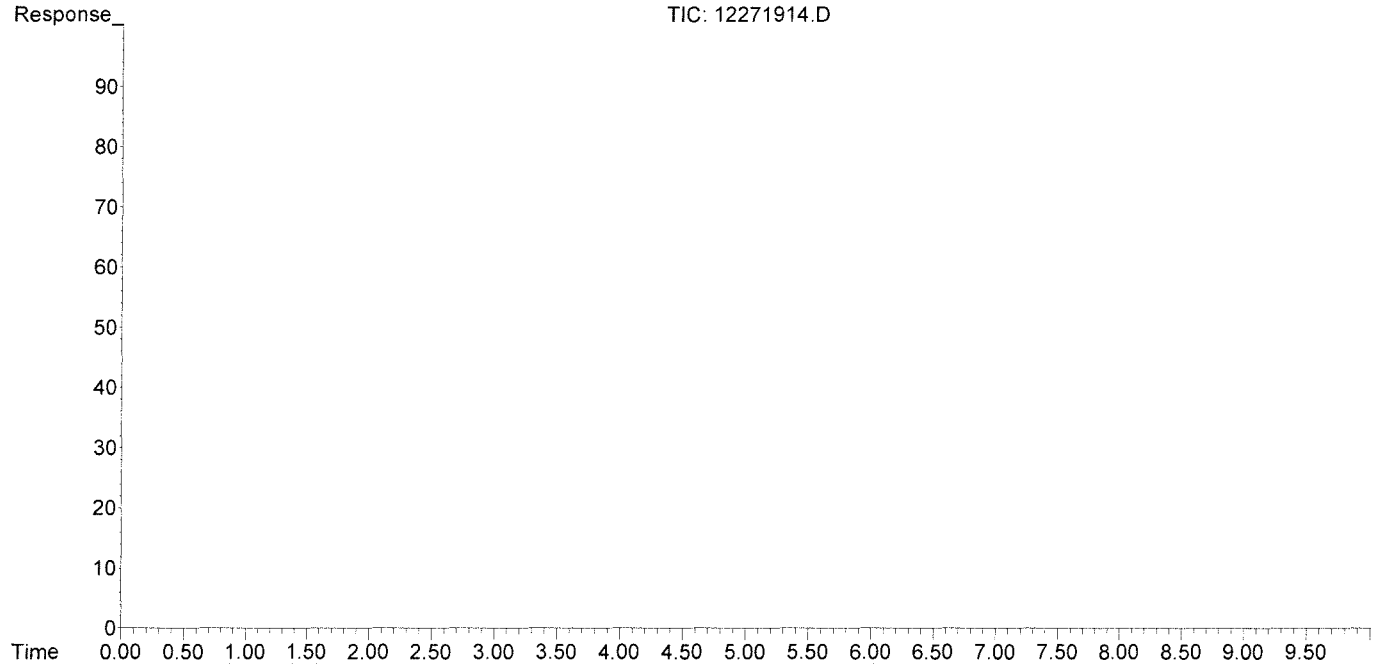
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.113	1461354	161.108	ppm
7)	Ethylene	1.684	23865	1.426	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	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	6.659	14555	0.547	ppm
13)	n-Butane	6.659	14555	0.547	ppm

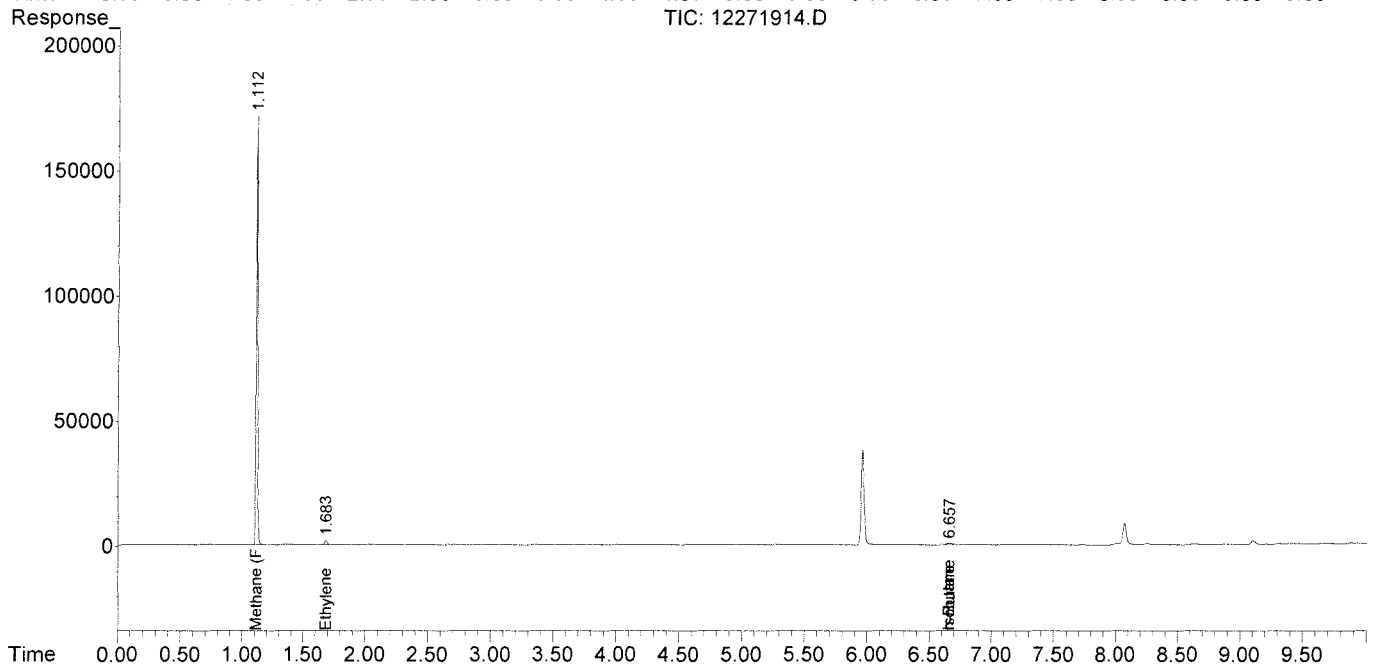
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_12\27\
Data File : 12271914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 13:54:12
Operator : LD
Sample : P1907802-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 27 14:37:29 2019
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\2019_12\27\
Data File : 12271915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 14:07:18
Operator : LD
Sample : P1907802-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 27 14:37:46 2019
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 :

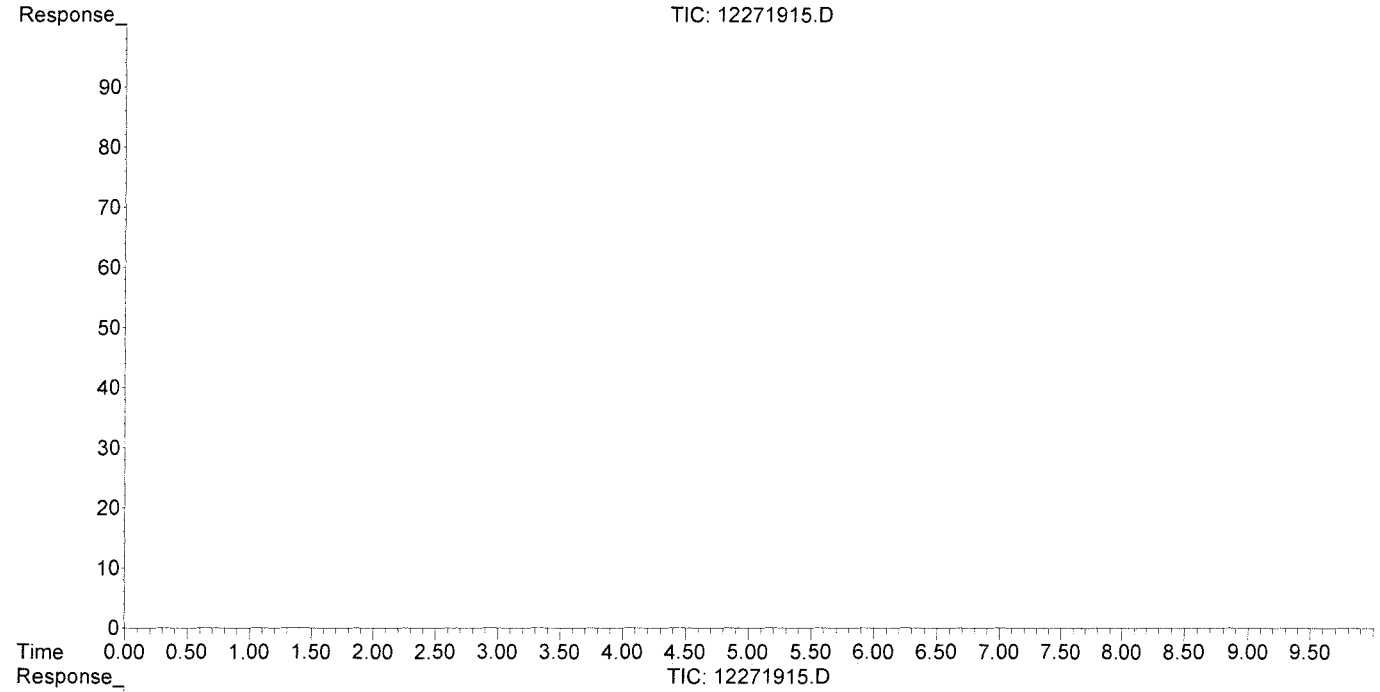
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.113	7028066	774.815	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	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

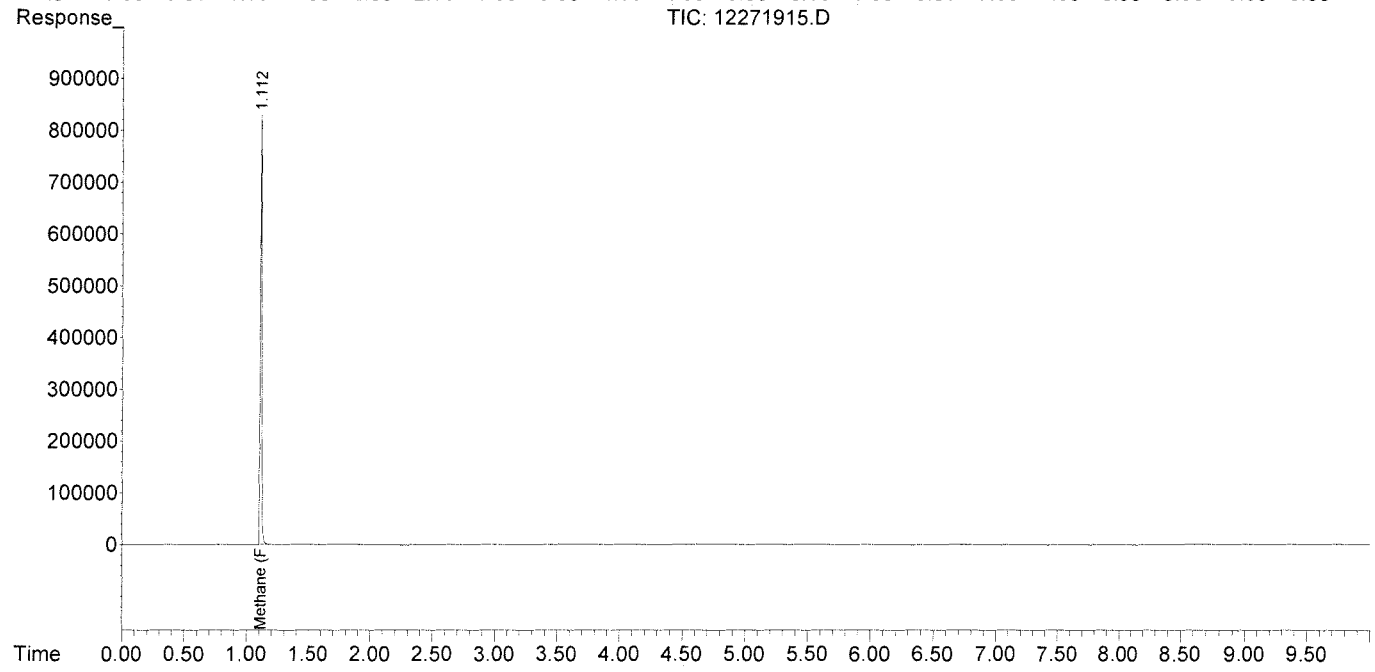
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_12\27\
Data File : 12271915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 14:07:18
Operator : LD
Sample : P1907802-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 27 14:37:46 2019
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\2019_12\27\
Data File : 12271917.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 14:33:31
Operator : LD
Sample : P1907802-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 27 15:00:32 2019
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 :

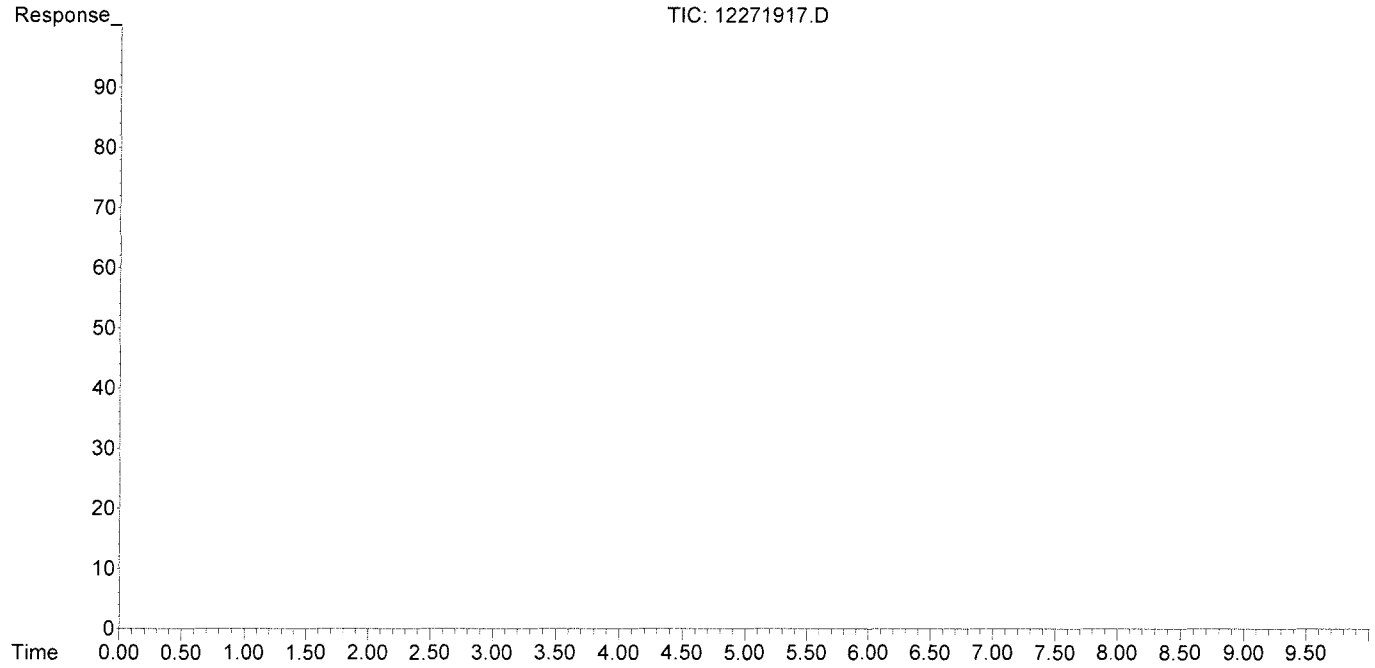
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.110	482609	53.206	ppm
7)	Ethylene	1.680	10486	0.627	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.661	14272	0.536	ppm
13)	n-Butane	6.661	14272	0.536	ppm

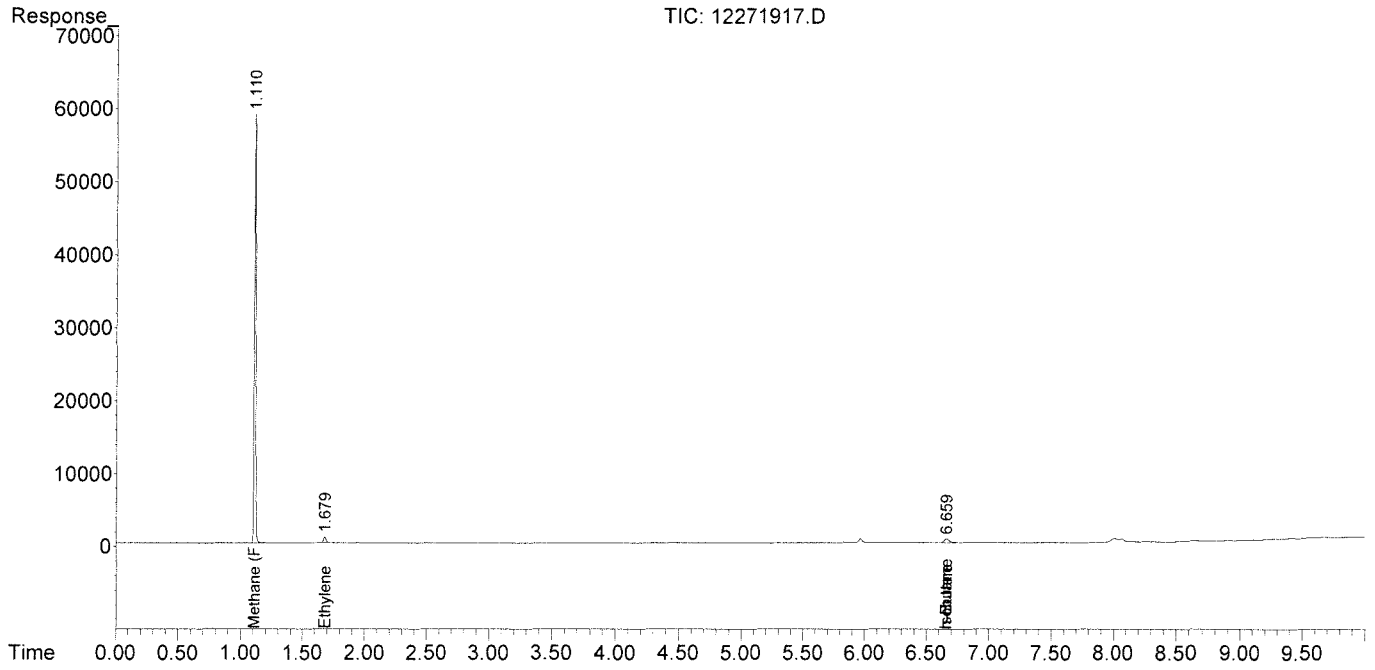
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_12\27\
Data File : 12271917.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 14:33:31
Operator : LD
Sample : P1907802-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 27 15:00:32 2019
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\2019_12\27\
Data File : 12271903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 11:17:39
Operator : LD
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: Dec 27 11:35:58 2019
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 :

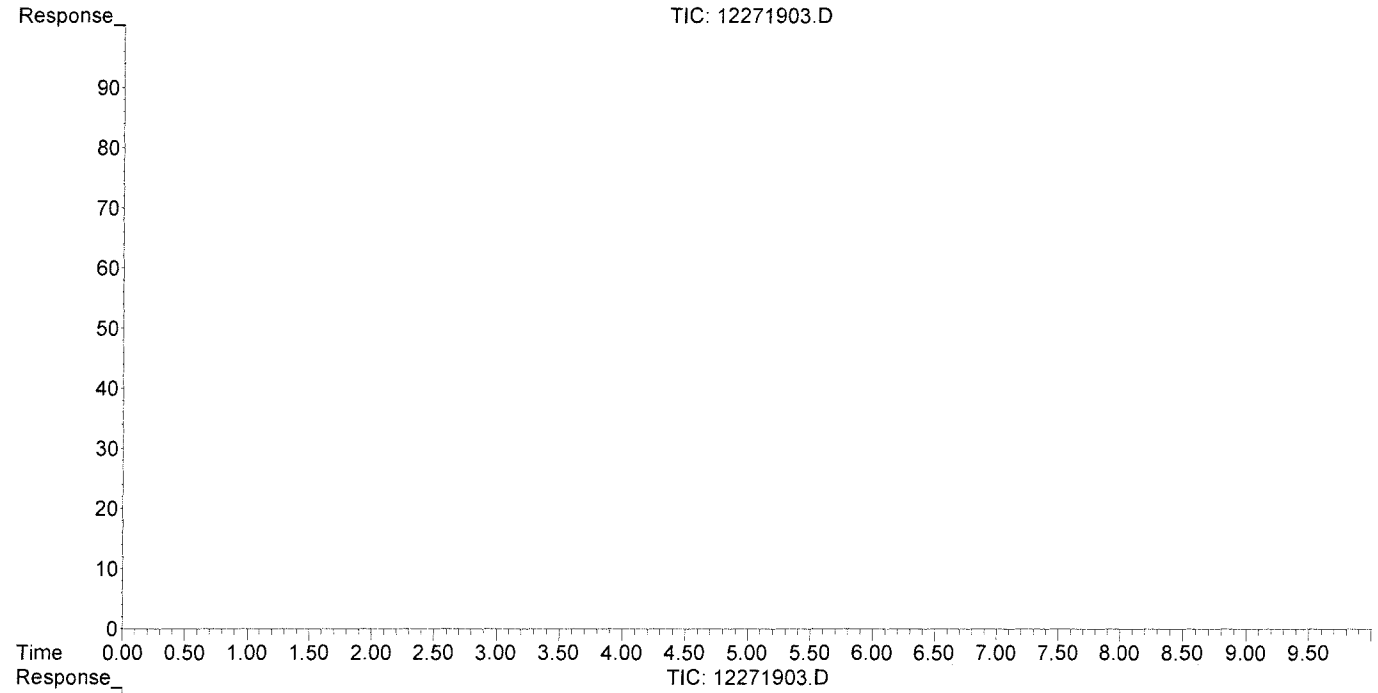
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.120	1191	0.131	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.713	7250	0.272	ppm
13)	n-Butane	6.713	7250	0.272	ppm

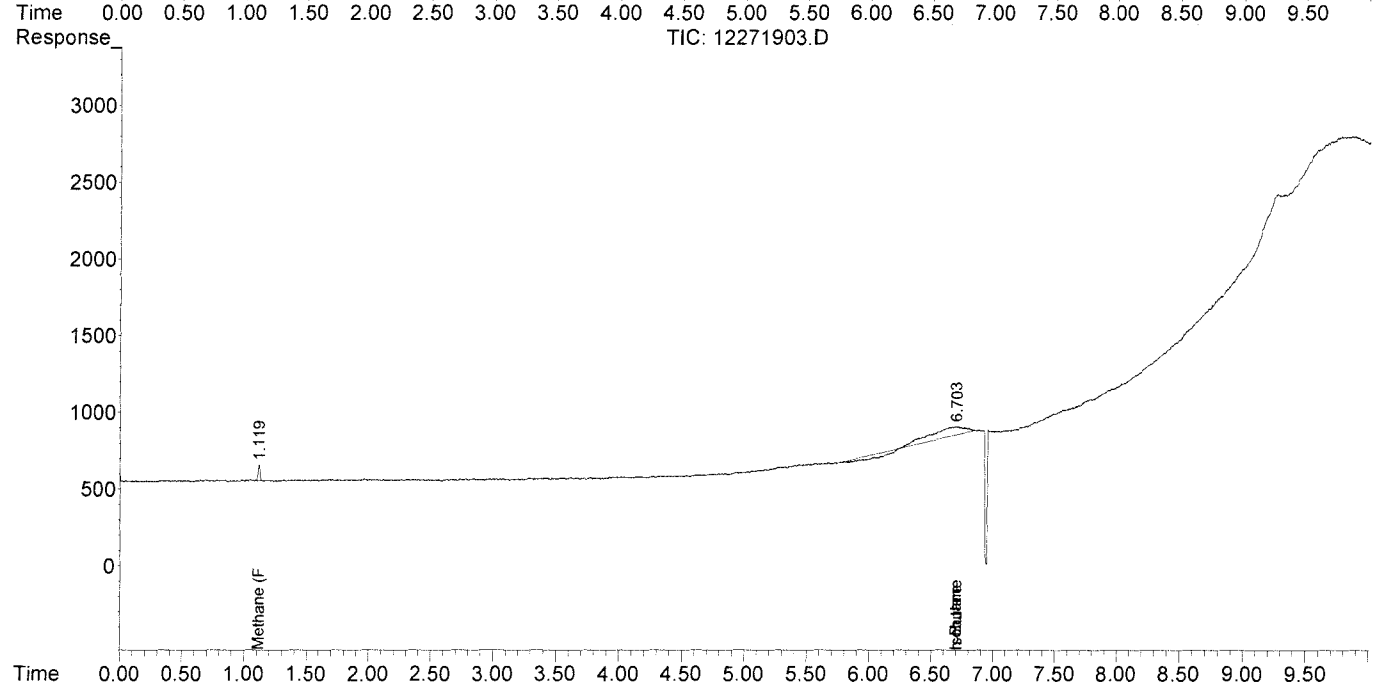
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_12\27\
Data File : 12271903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 11:17:39
Operator : LD
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: Dec 27 11:35:58 2019
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\2019_12\27\
Data File : 12271904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 11:32:18
Operator : LD
Sample : LCS S32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 27 12:26:59 2019
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 :

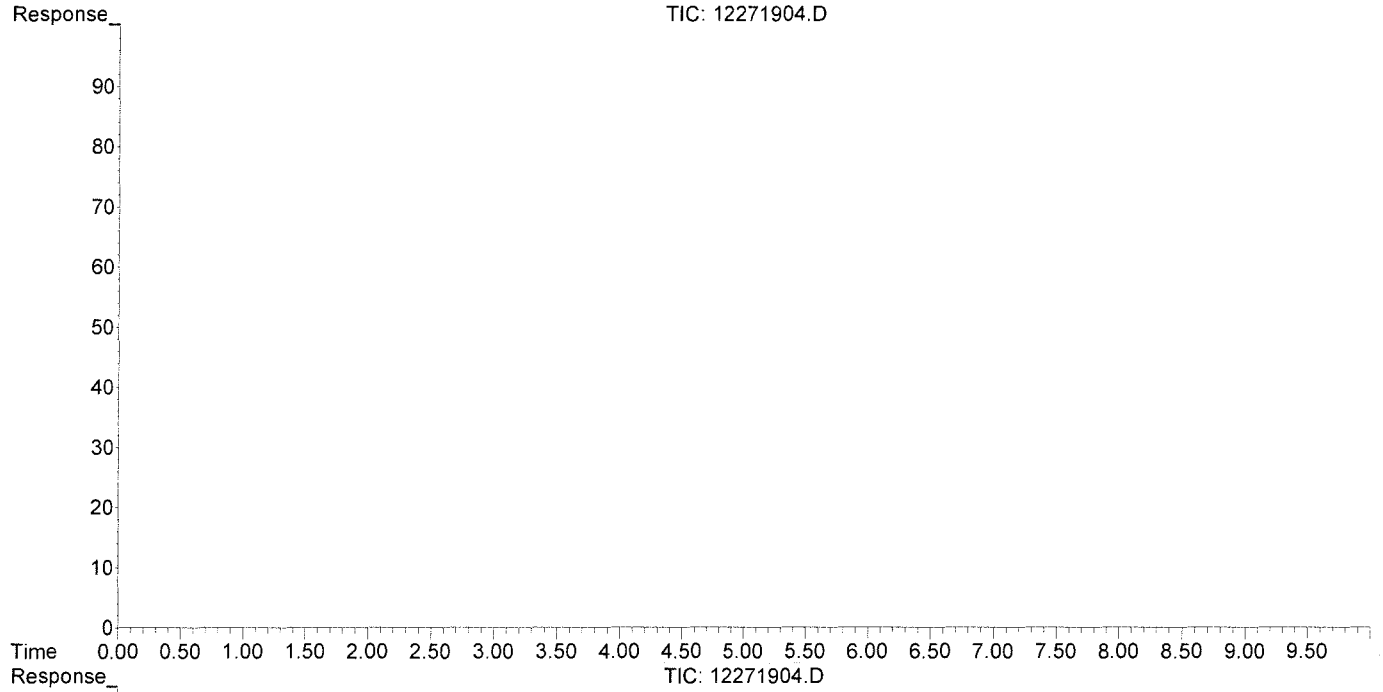
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.118	12636	1.393	ppm
7)	Ethylene	1.695	16931	1.012	ppm
8)	Ethane	1.964	21308	1.257	ppm
9)	Propylene	4.347	22646	0.966	ppm
10)	Propane	4.469	32754	1.316	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.668	263402	9.896	ppm
13)	n-Butane	6.668	263402	9.896	ppm

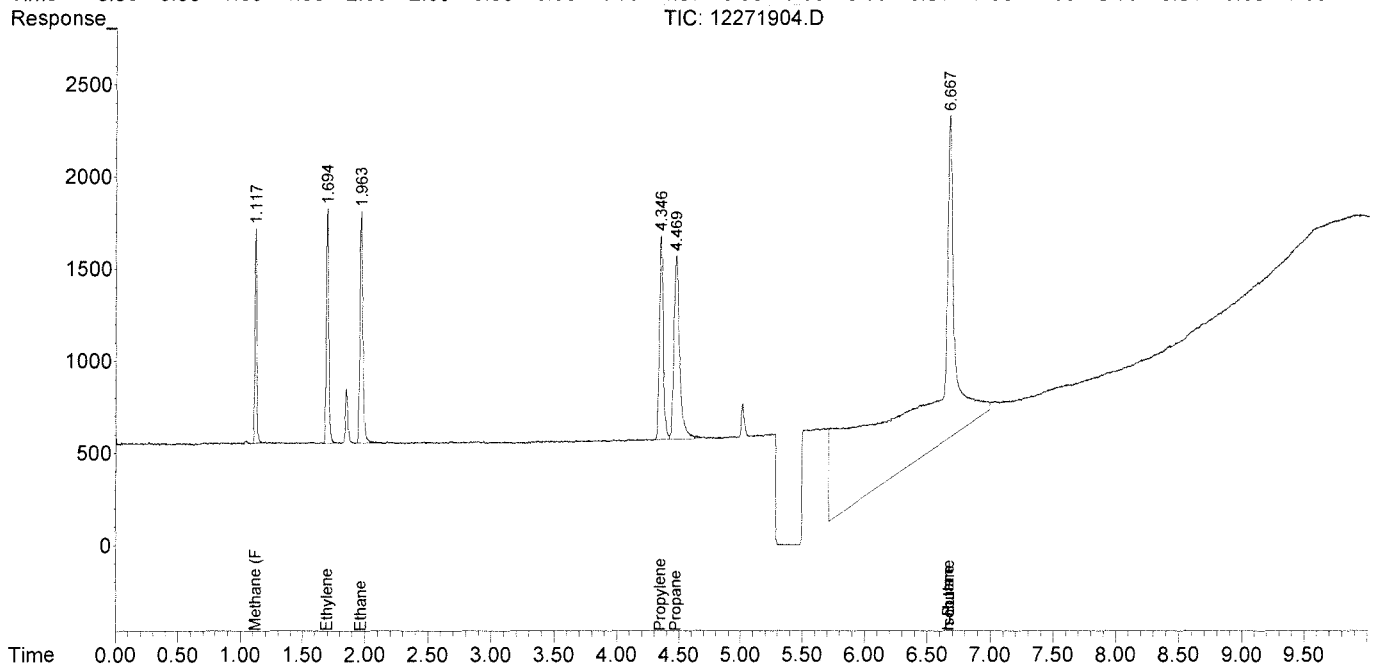
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_12\27\
Data File : 12271904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 11:32:18
Operator : LD
Sample : LCS S32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 27 12:26:59 2019
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\2019_12\27\
Data File : 12271905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 11:45:51
Operator : LD
Sample : LCSD S32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 27 12:27:32 2019
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 :

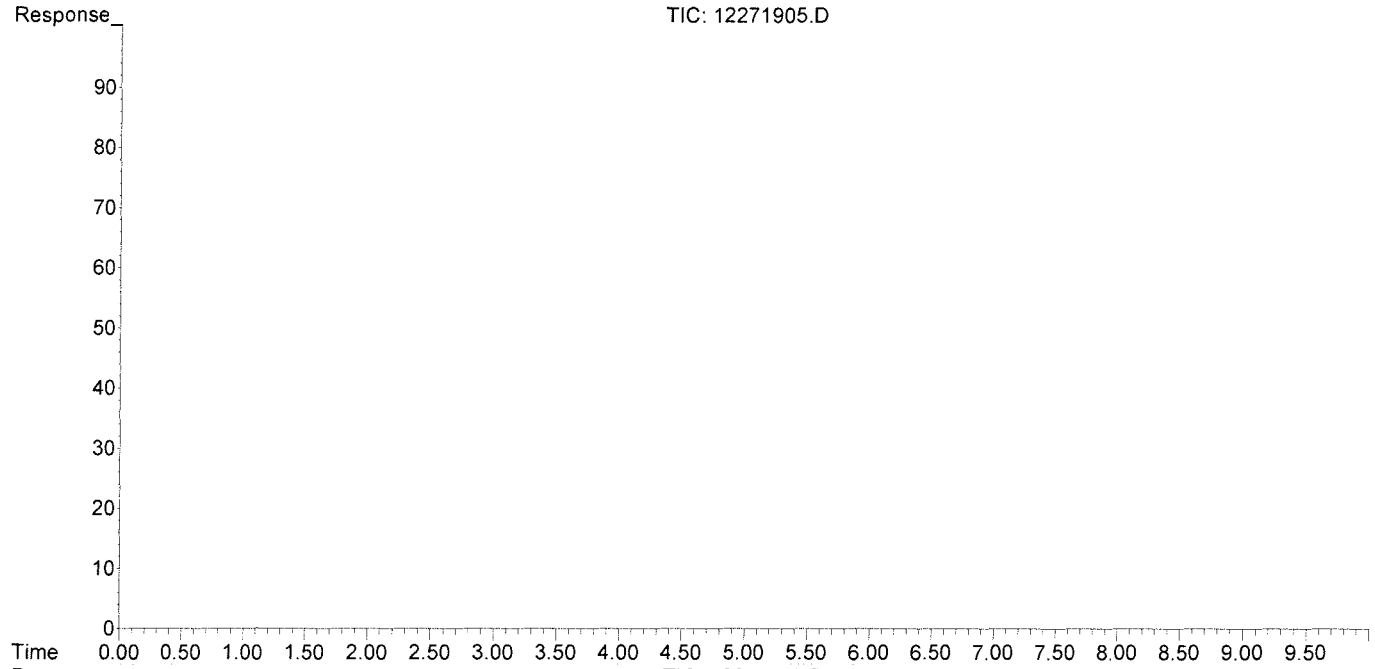
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.115	12814	1.413	ppm
7)	Ethylene	1.690	16812	1.005	ppm
8)	Ethane	1.958	21419	1.264	ppm
9)	Propylene	4.344	22887	0.977	ppm
10)	Propane	4.467	32984	1.326	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.668	44613	1.676	ppm
13)	n-Butane	6.668	44613	1.676	ppm

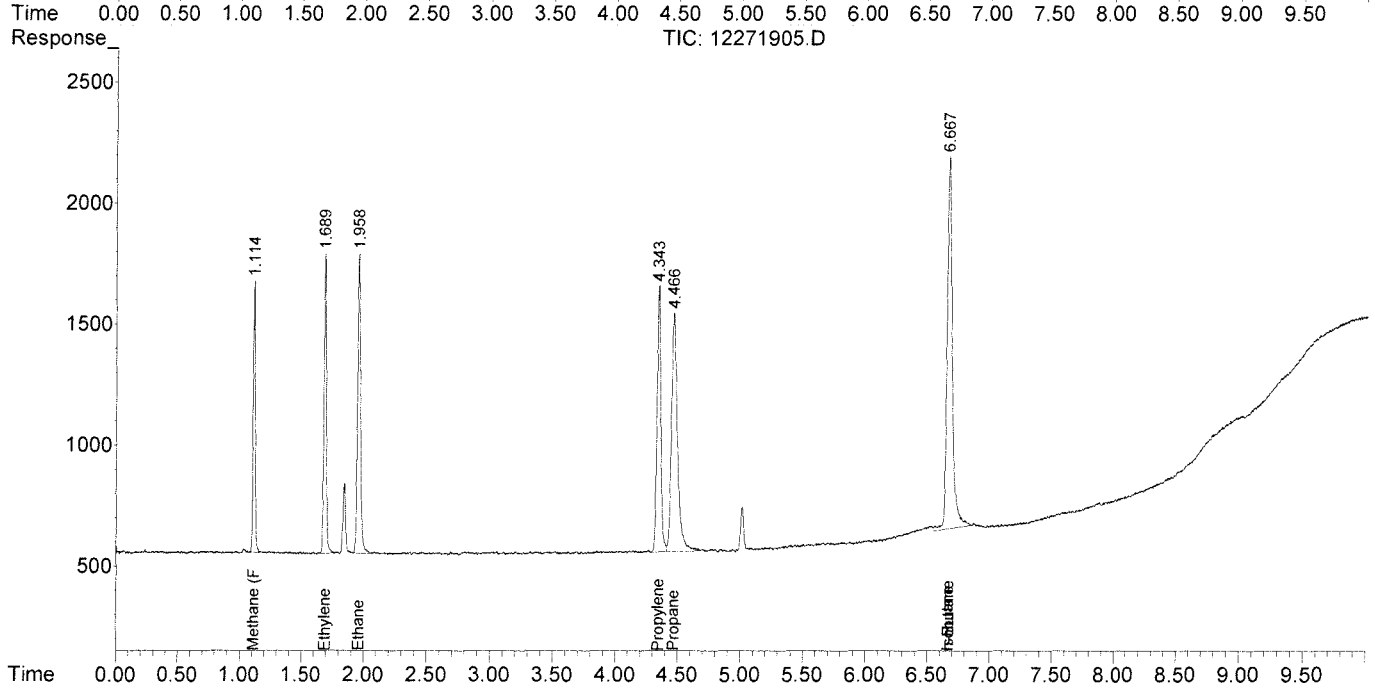
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_12\27\
Data File : 12271905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 11:45:51
Operator : LD
Sample : LCSD S32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 27 12:27:32 2019
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 :





Response Factor Report HP5890

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

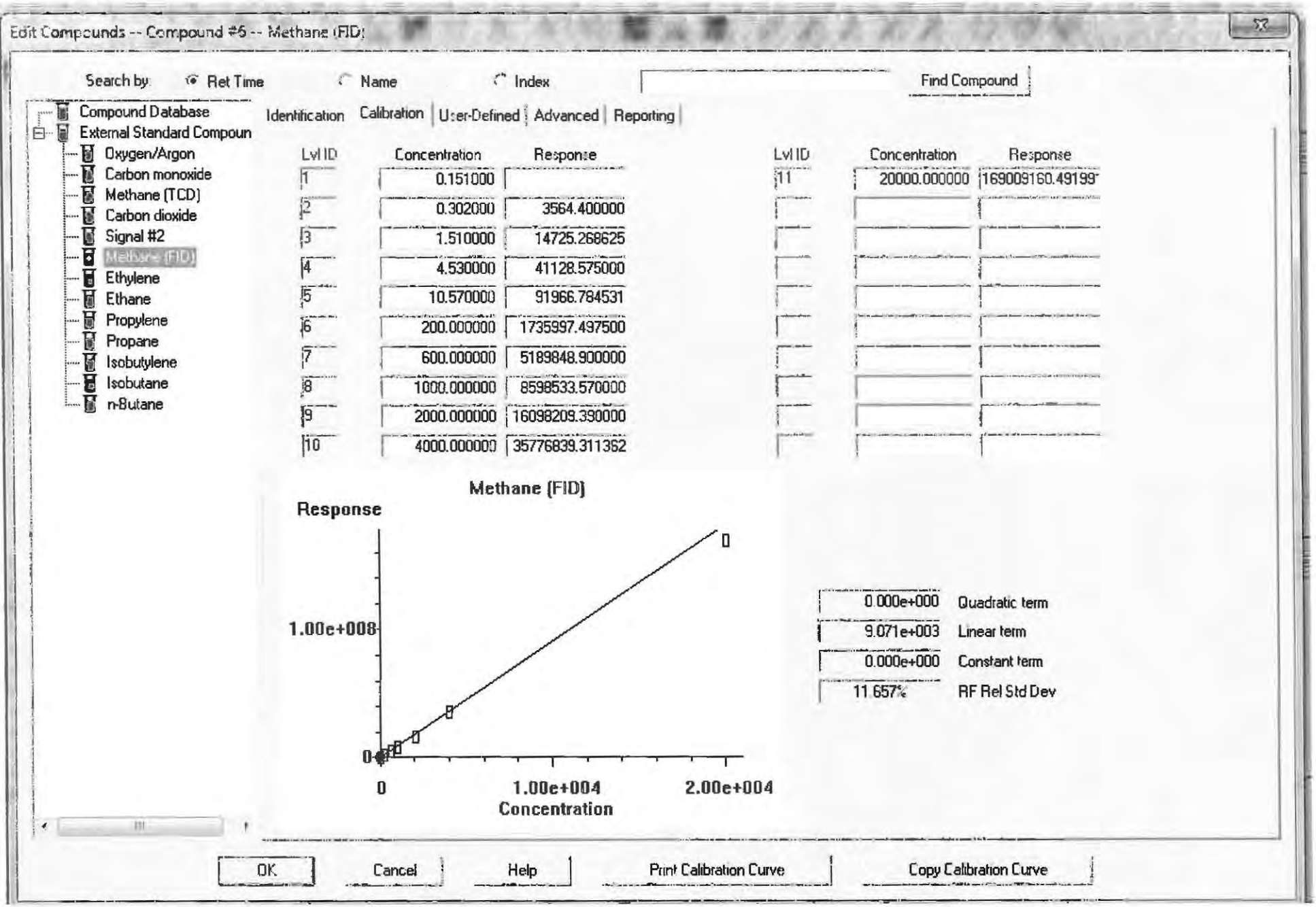
	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793	E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594	E6	221.92
3)	Methane (TCD)						2.161	0.951	E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438	E2	4.44

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)
Response
1.00e+008
0
0
1.00e+004
2.00e+004
Concentration
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

00997484

Edit Compounds -- Compound #7 -- Ethylene

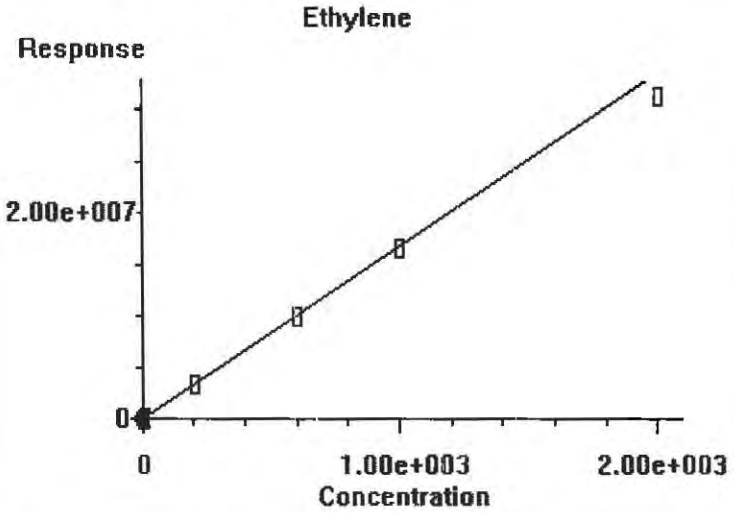
Search by: Ret Time | Name | Index | Find Compound

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

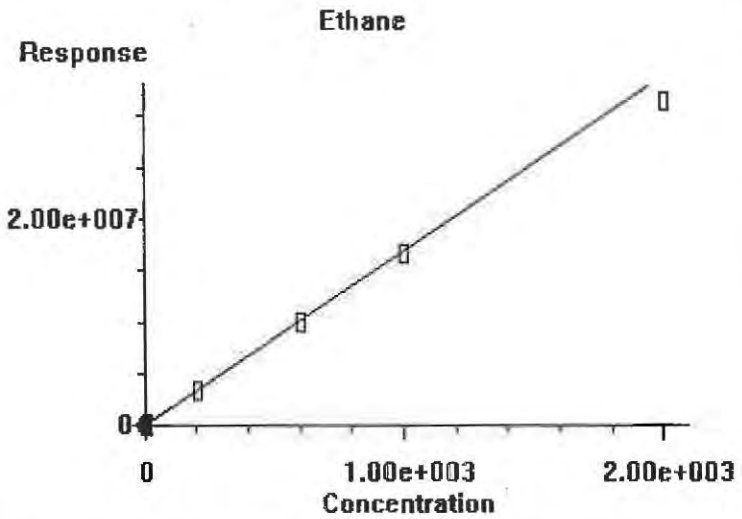
Search by: Ret Time | Name | Index — Find Compound

- 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	16703164.879012
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

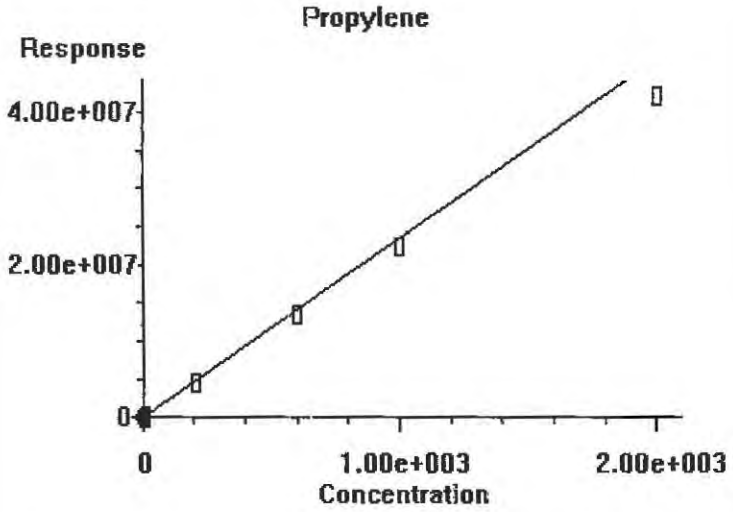
Search by: Ret Time | Name | Index | Find Compound

- 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

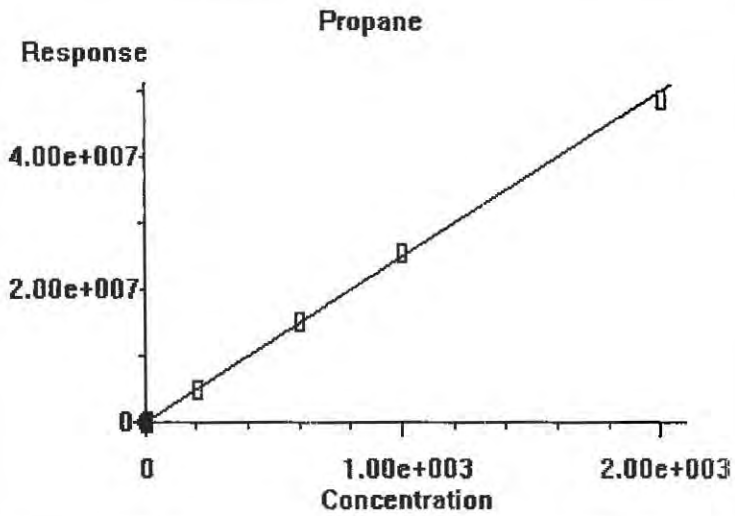
Search by: Ret Time | Name | Index — Find Compound

- 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	5043035.663316
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

Calibration Status Report HP5890

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

Quantitation Report (QT Reviewed)

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	

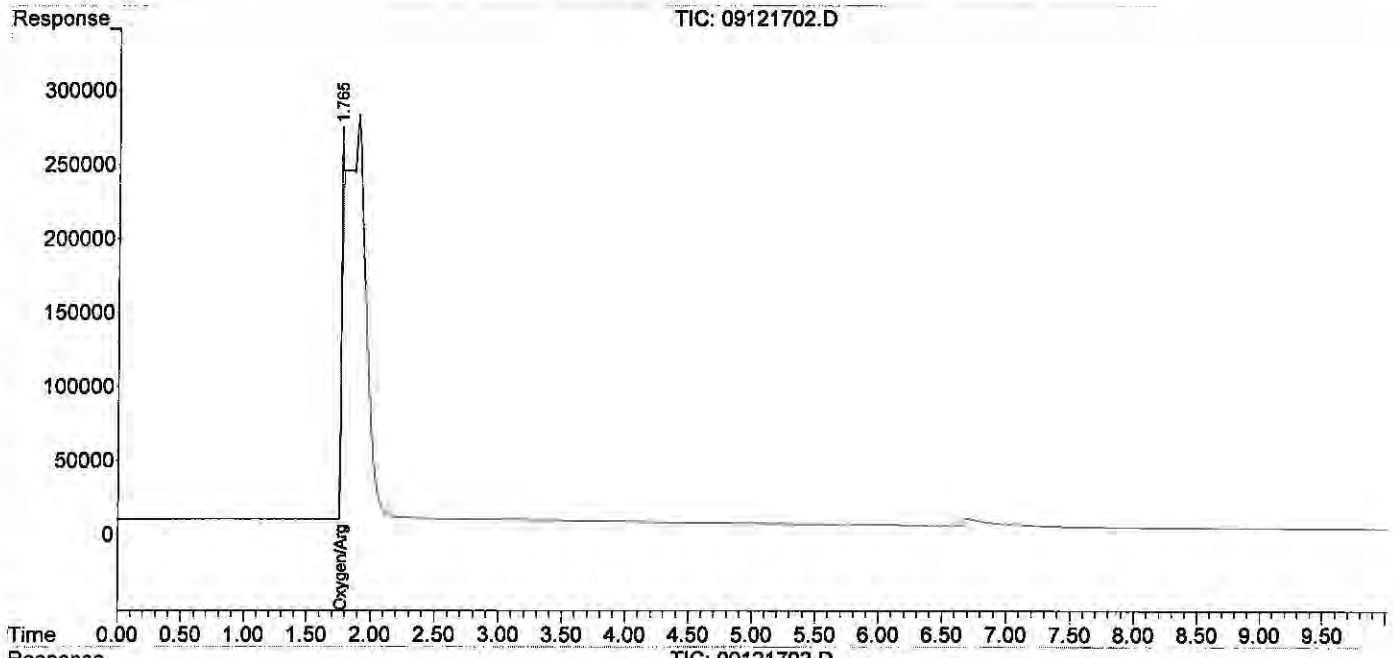
(f)=RT Delta > 1/2 Window (m)=manual int.

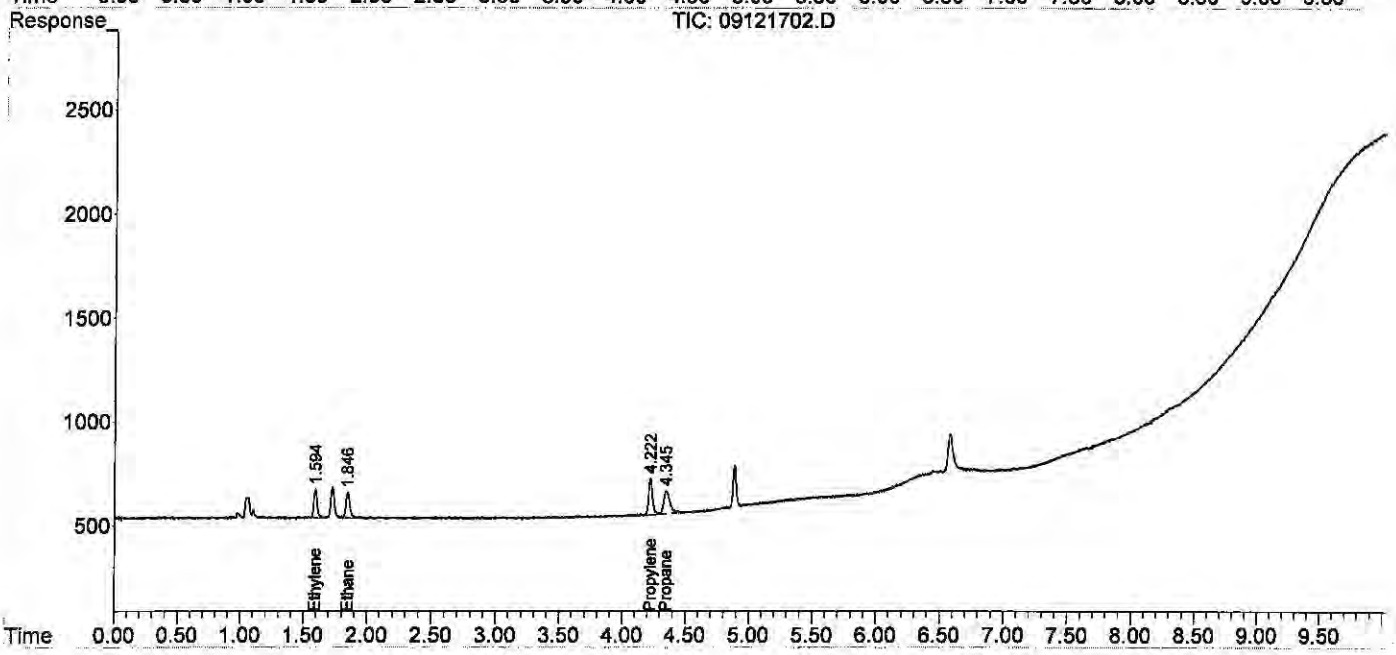
9/13/17

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 :





Quantitation Report (QT Reviewed)

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	

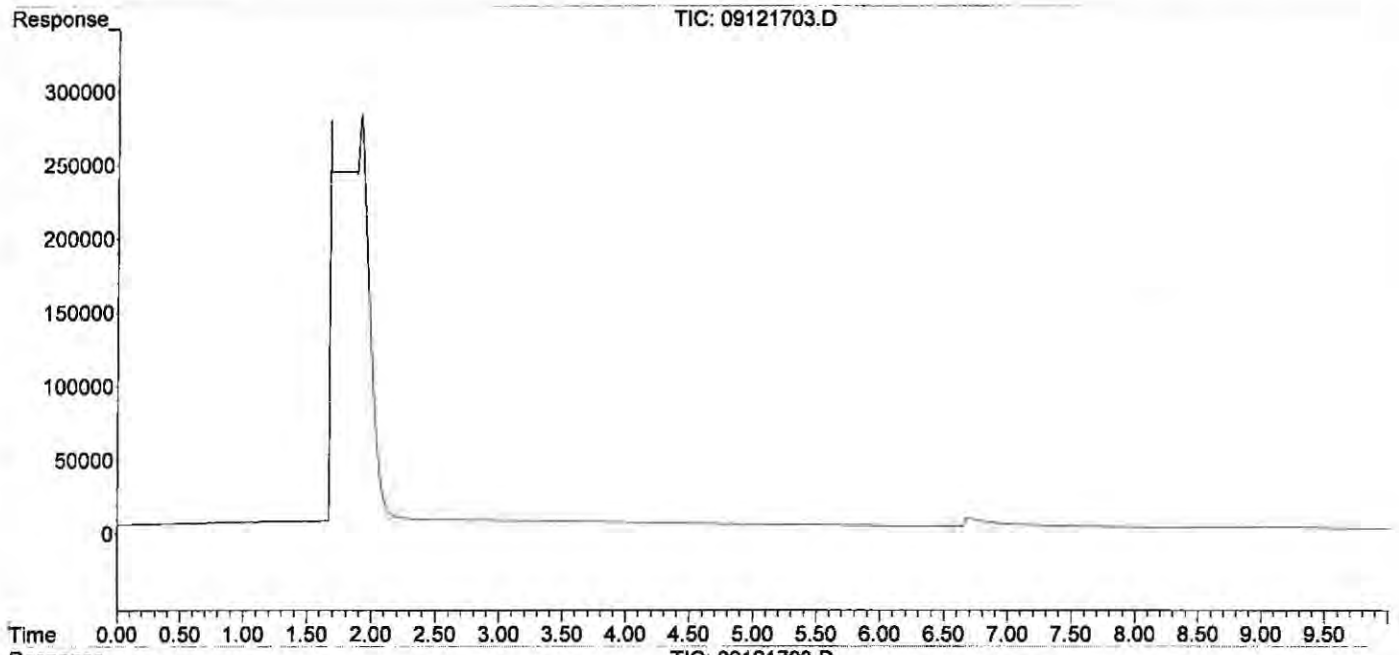
(f)=RT Delta > 1/2 Window (m)=manual int.

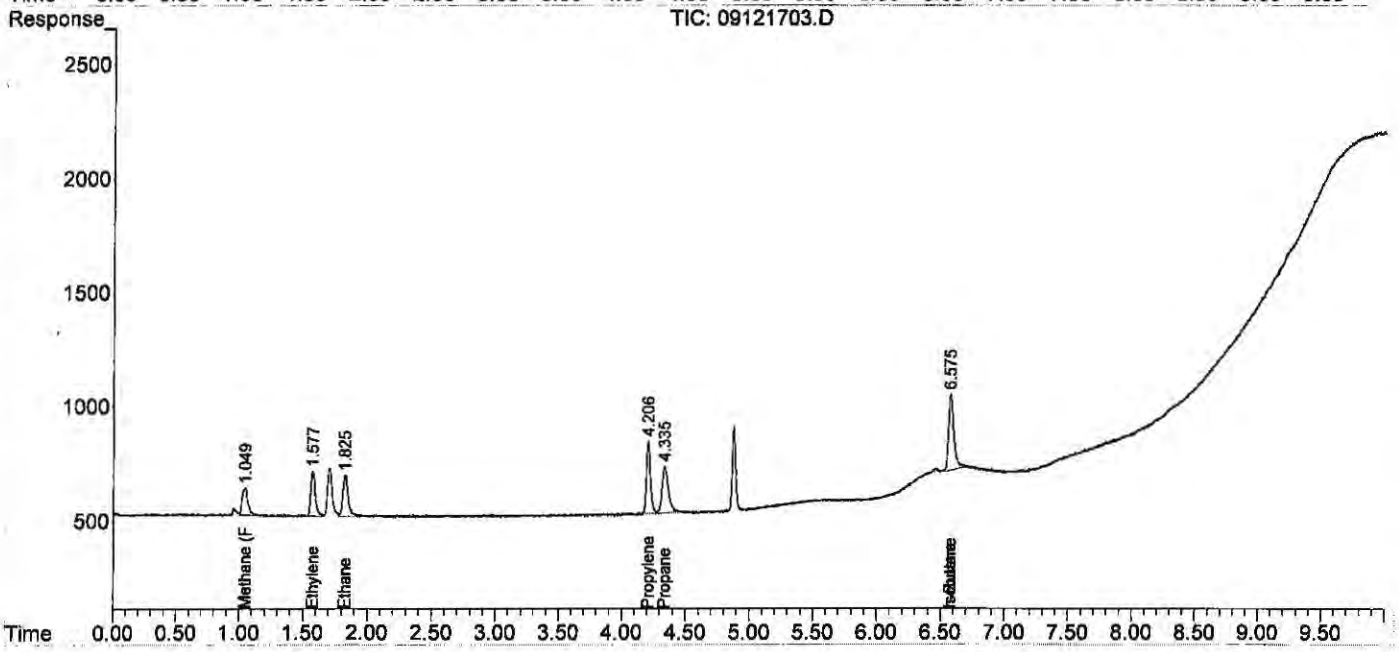
Quantitation Report (QT Reviewed)

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 :



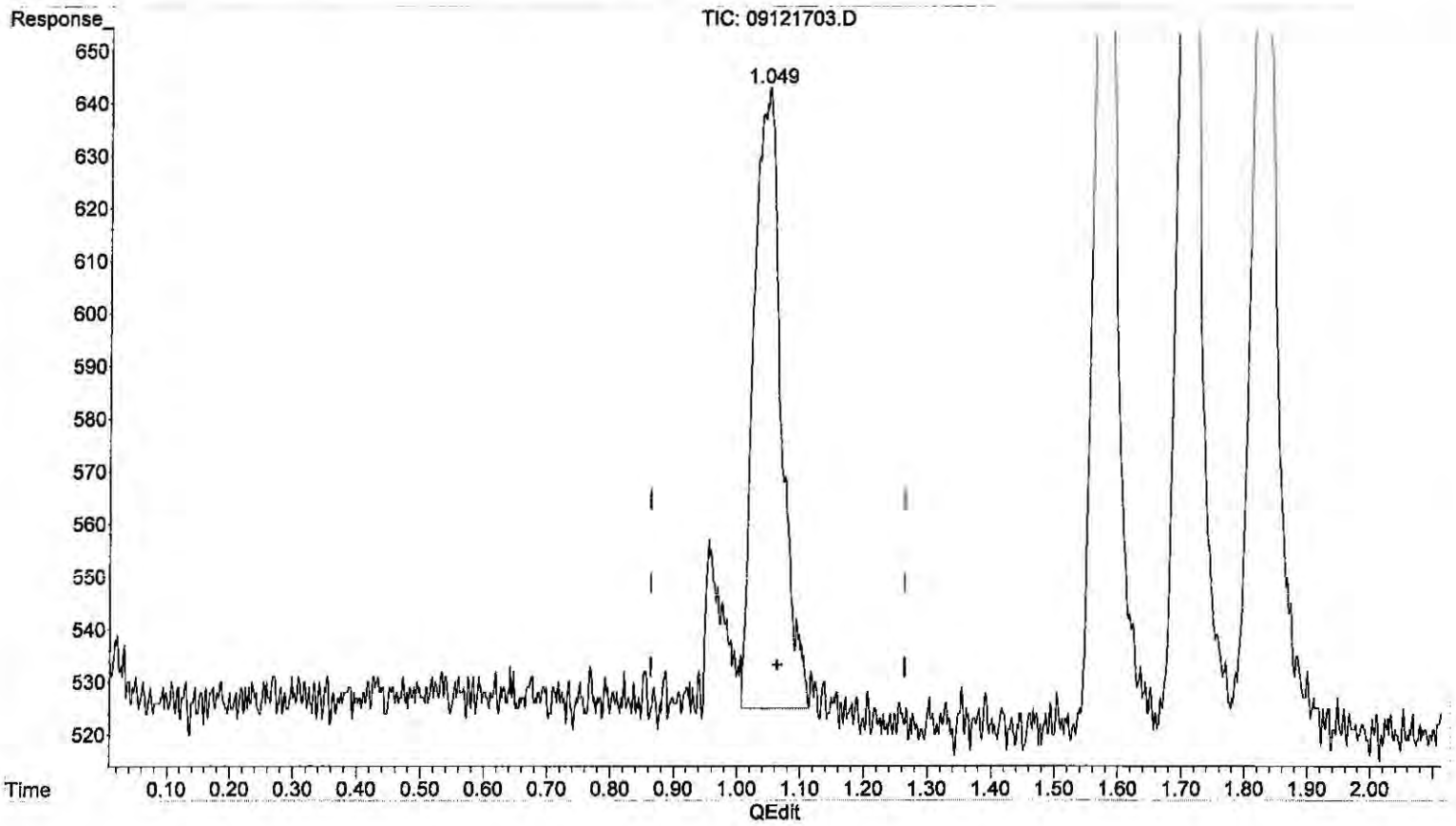


Quantitation Report (Qedit)

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

Quantitation Report (QT Reviewed)

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

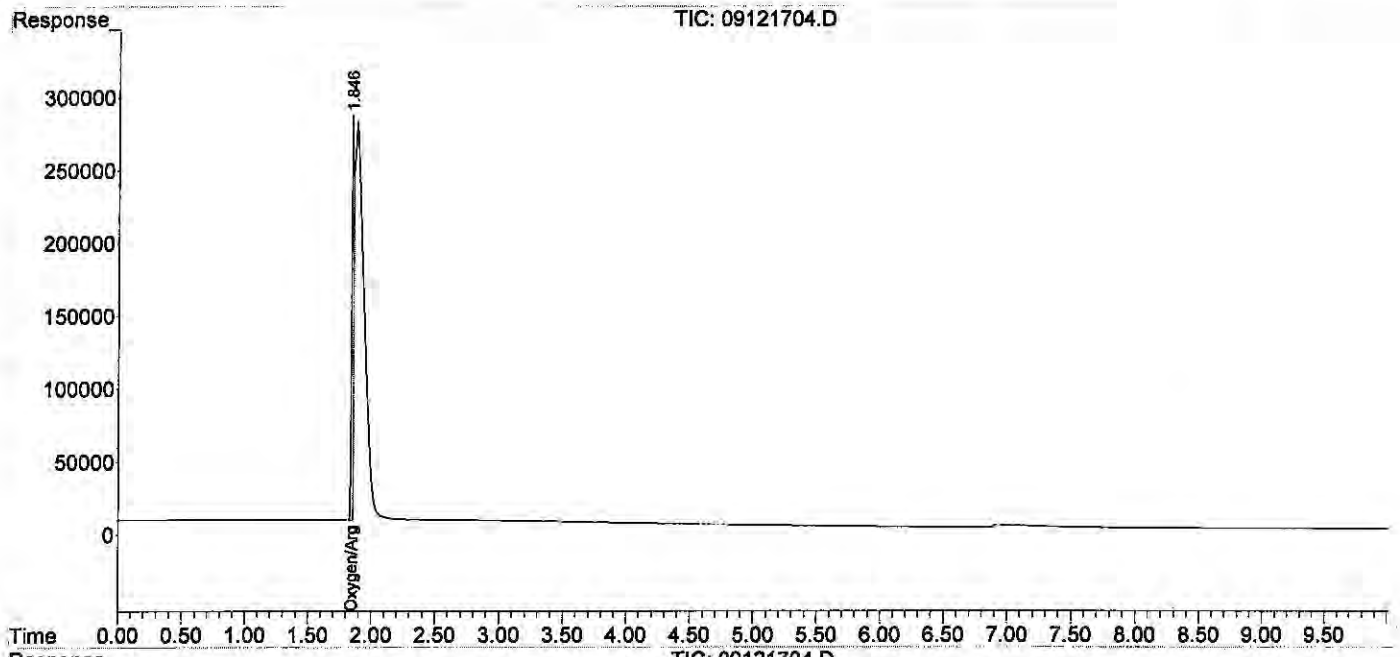
(f)=RT Delta > 1/2 Window (m)=manual int.

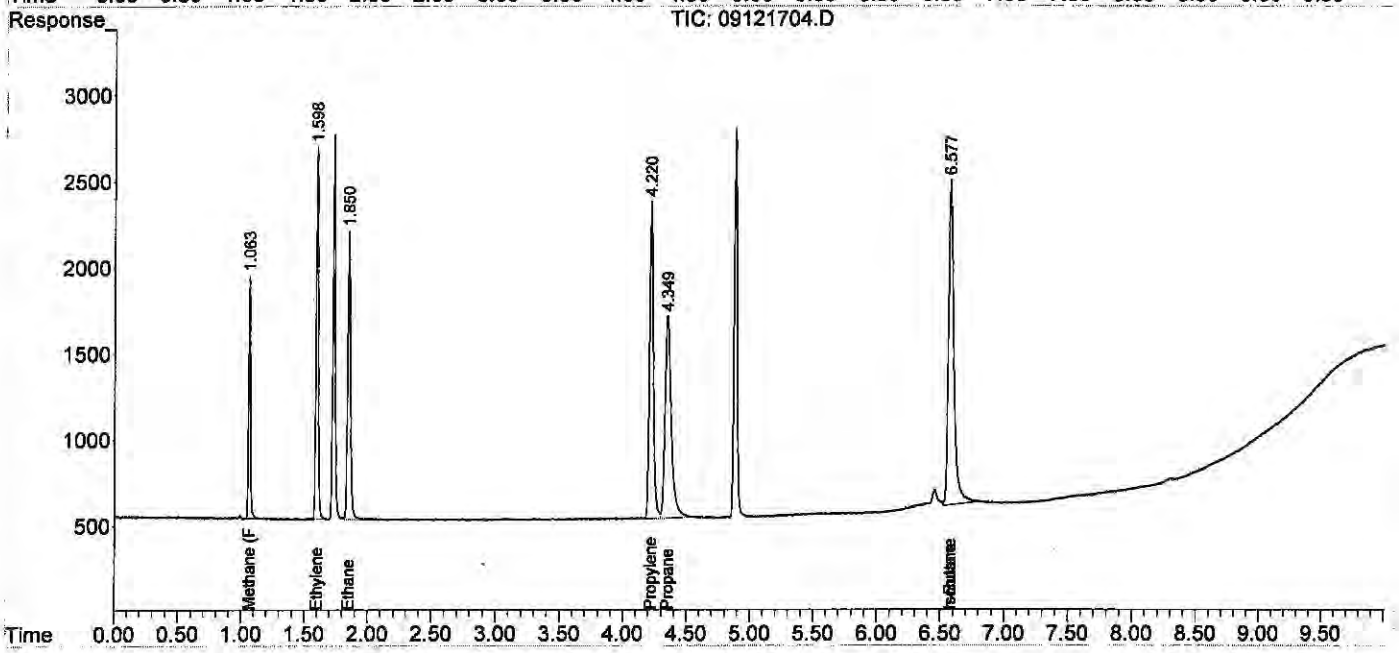
Quantitation Report (QT Reviewed)

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 :





Quantitation Report (QT Reviewed)

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 :

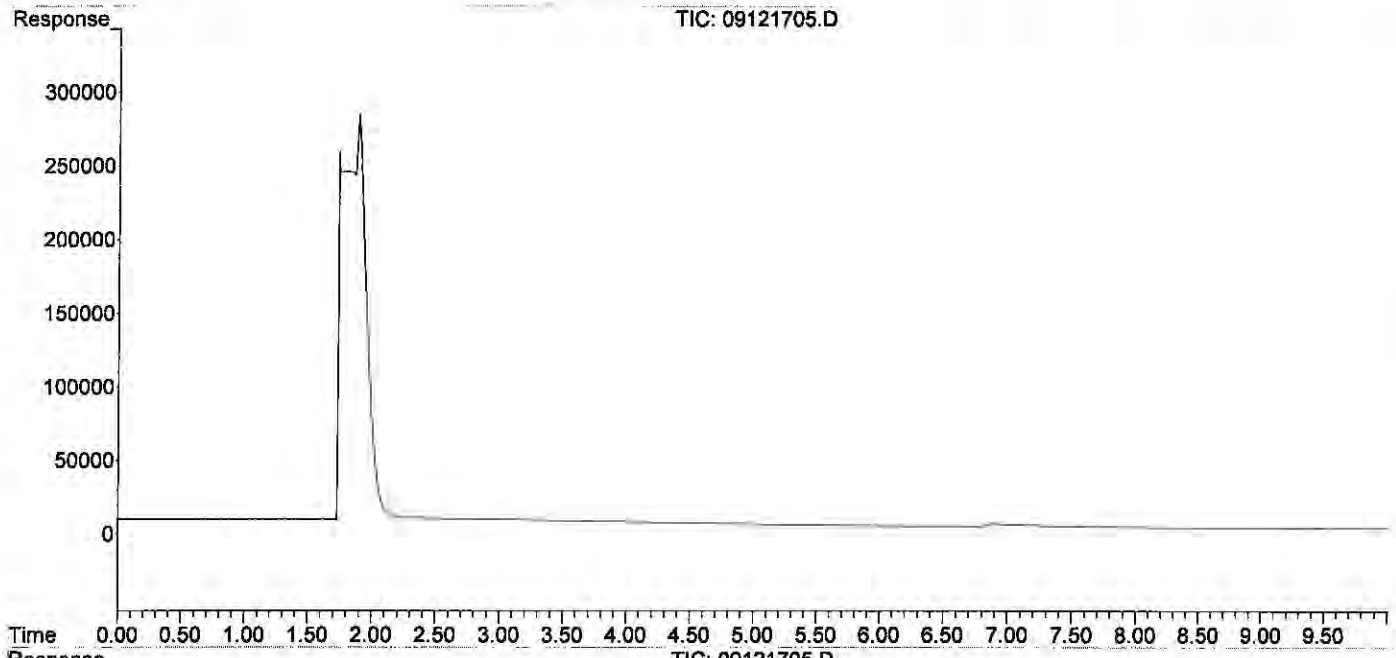
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	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

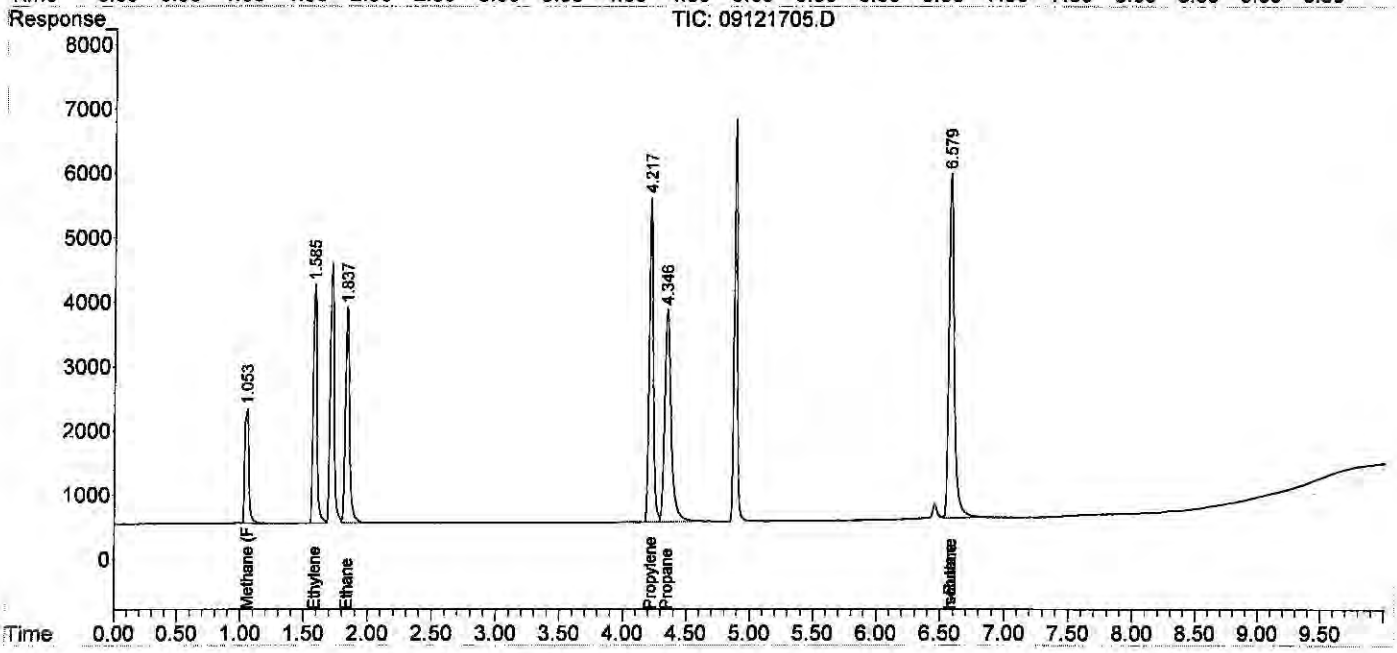
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :





Quantitation Report (QT Reviewed)

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

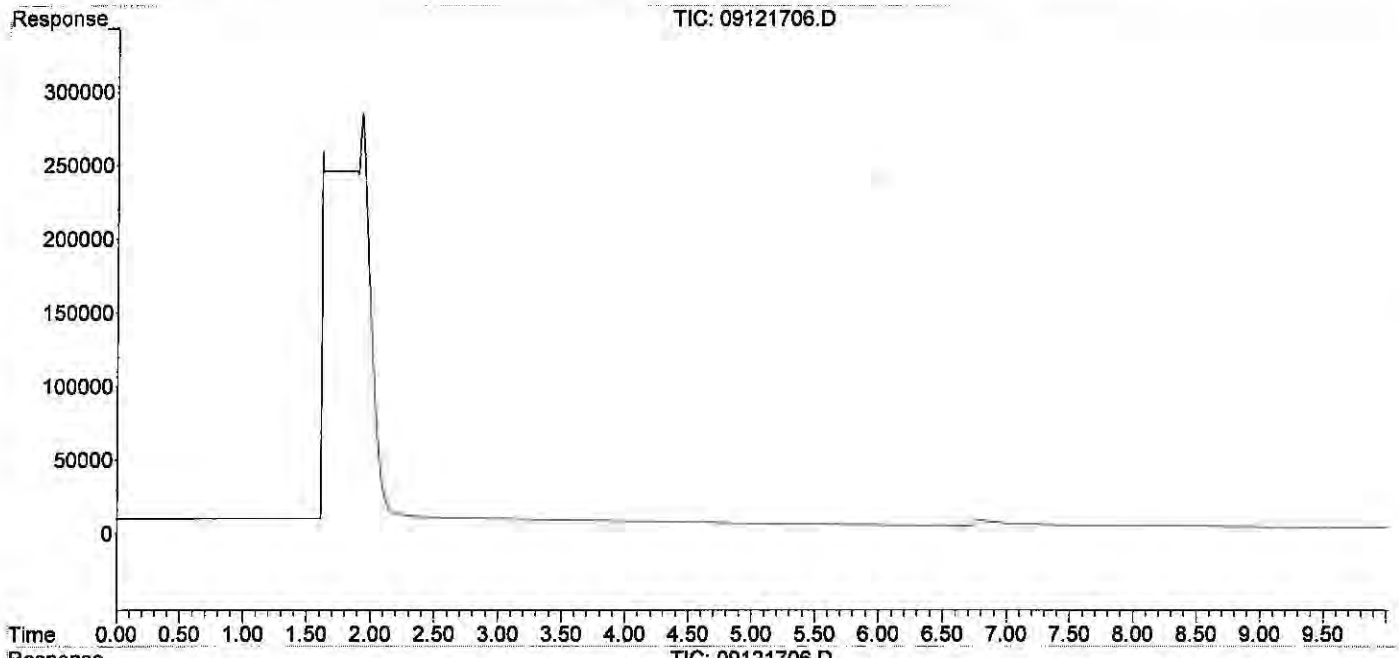
(f)=RT Delta > 1/2 Window (m)=manual int.

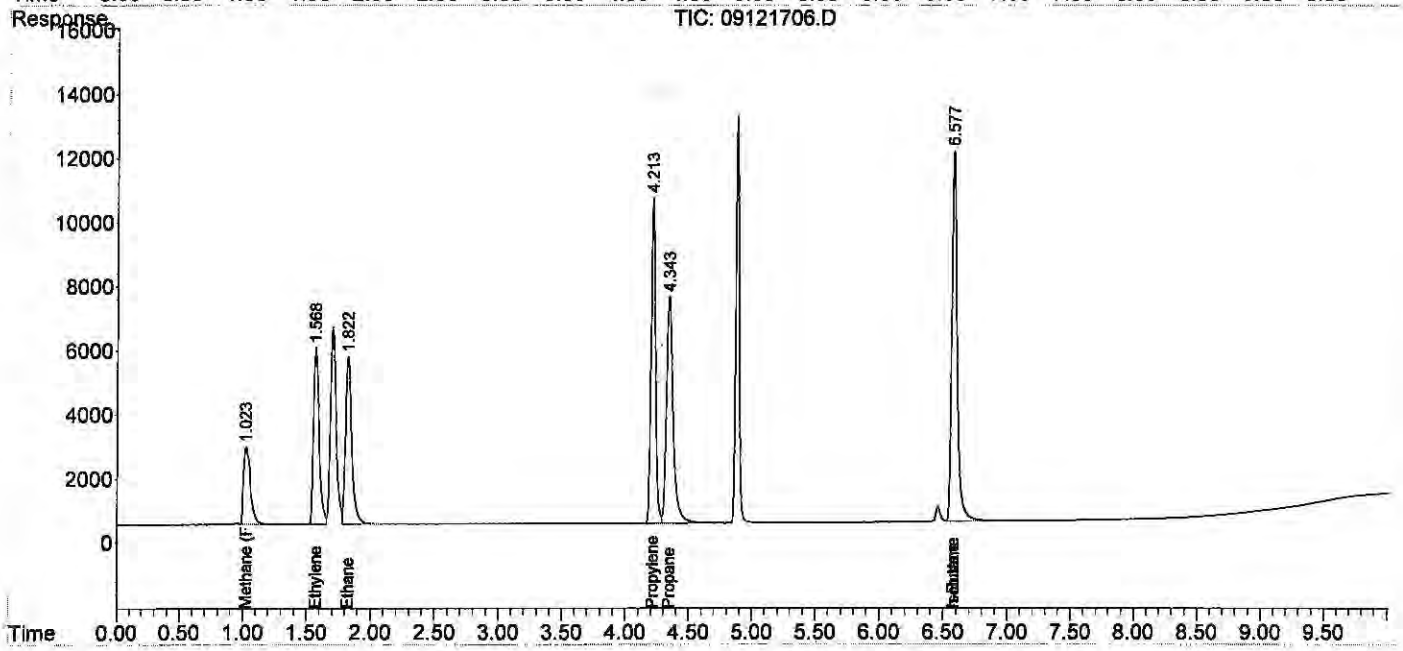
Quantitation Report (QT Reviewed)

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 :





Quantitation Report (QT Reviewed)

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 :

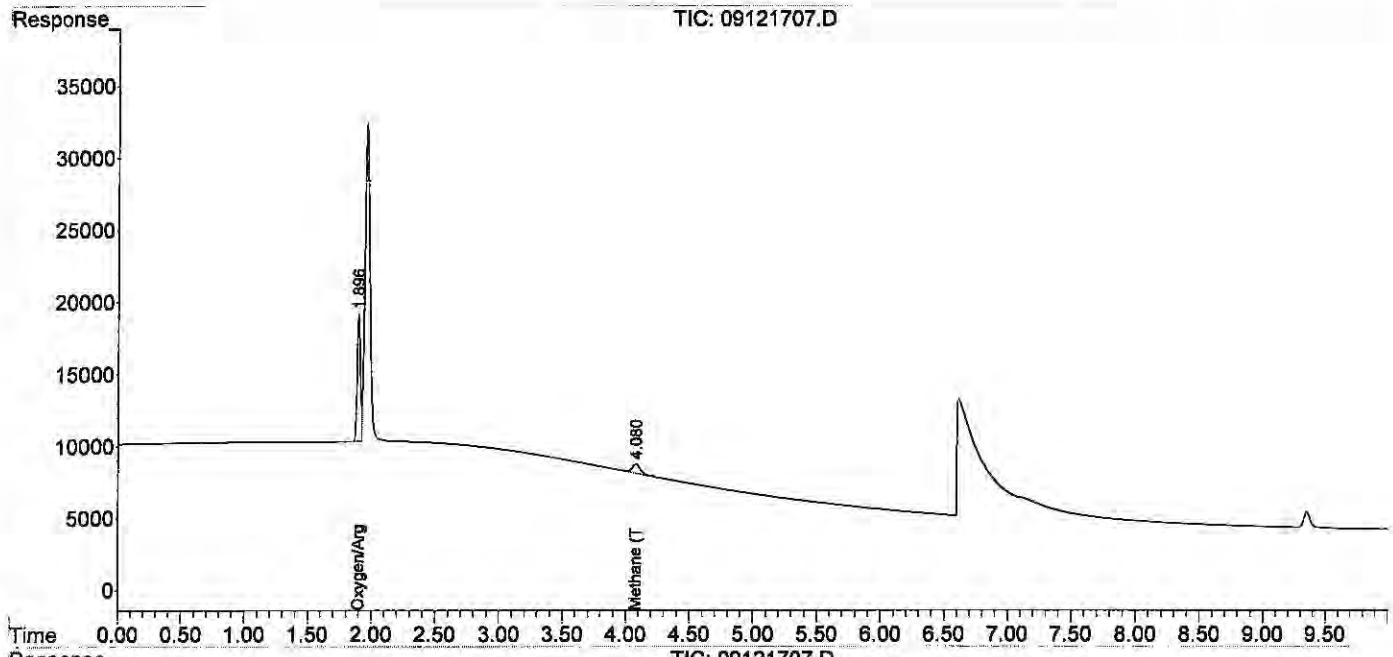
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	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

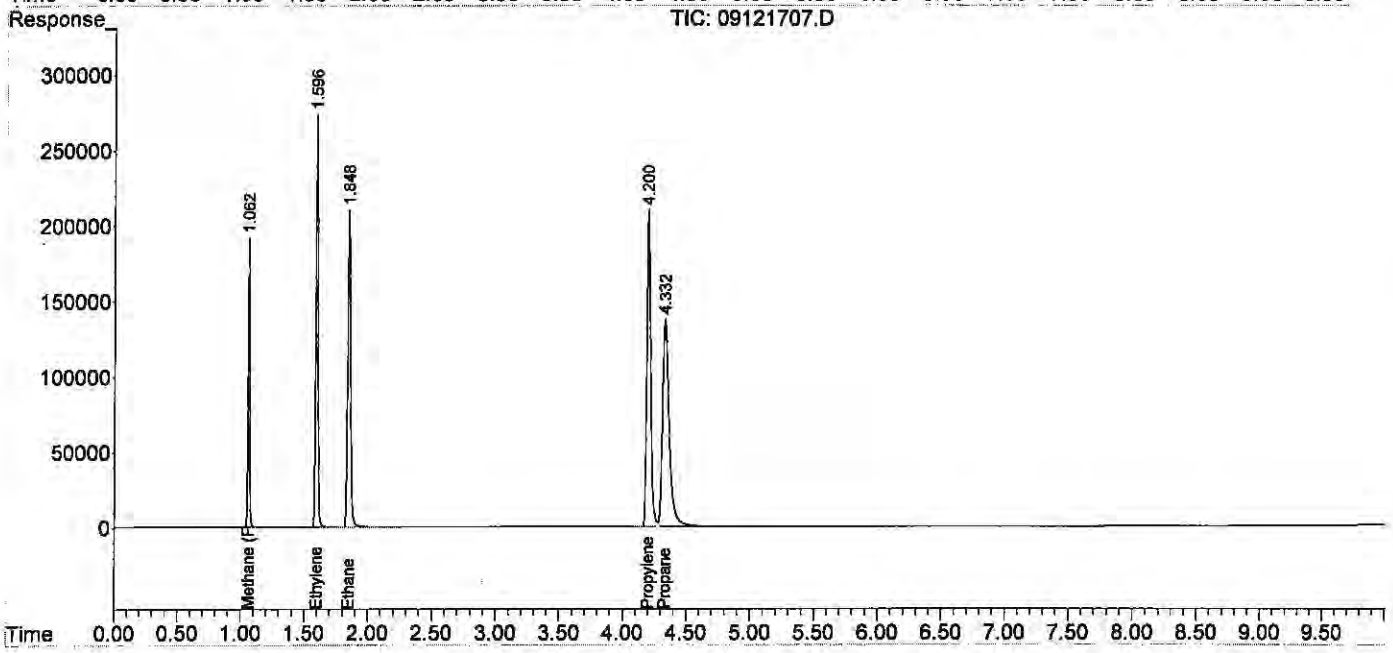
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :





Quantitation Report (QT Reviewed)

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

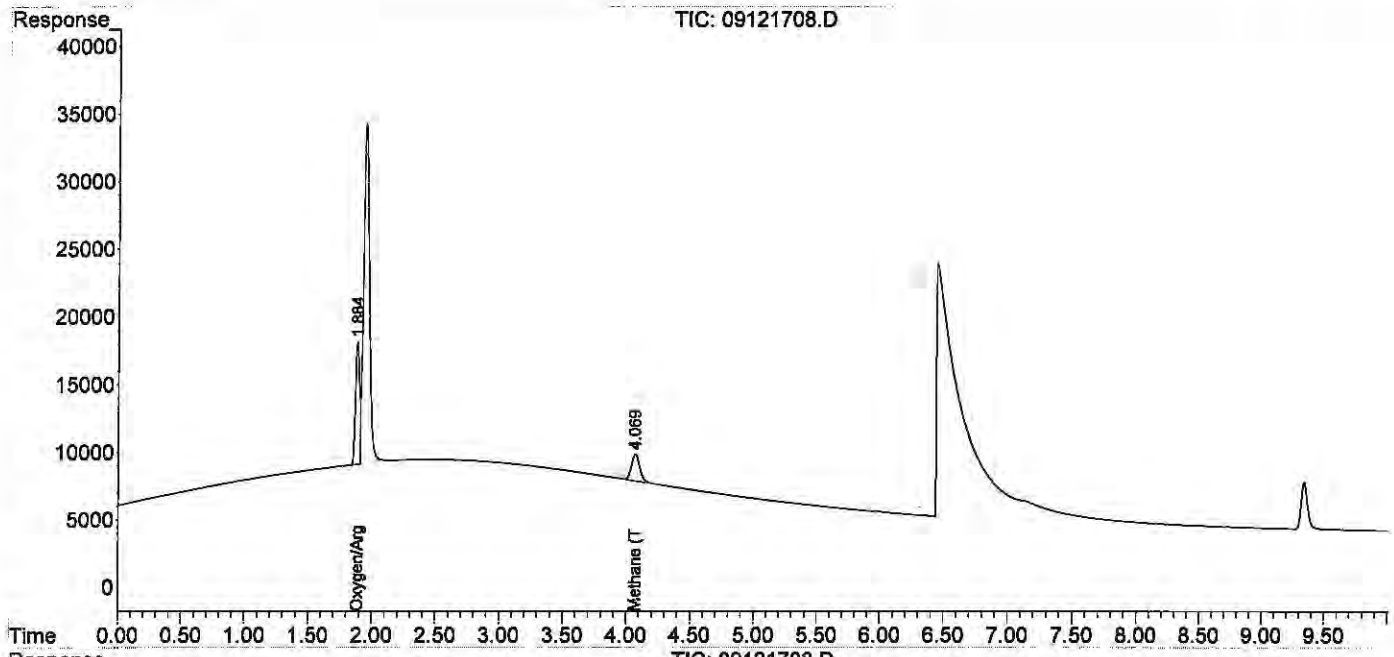
(f)=RT Delta > 1/2 Window (m)=manual int.

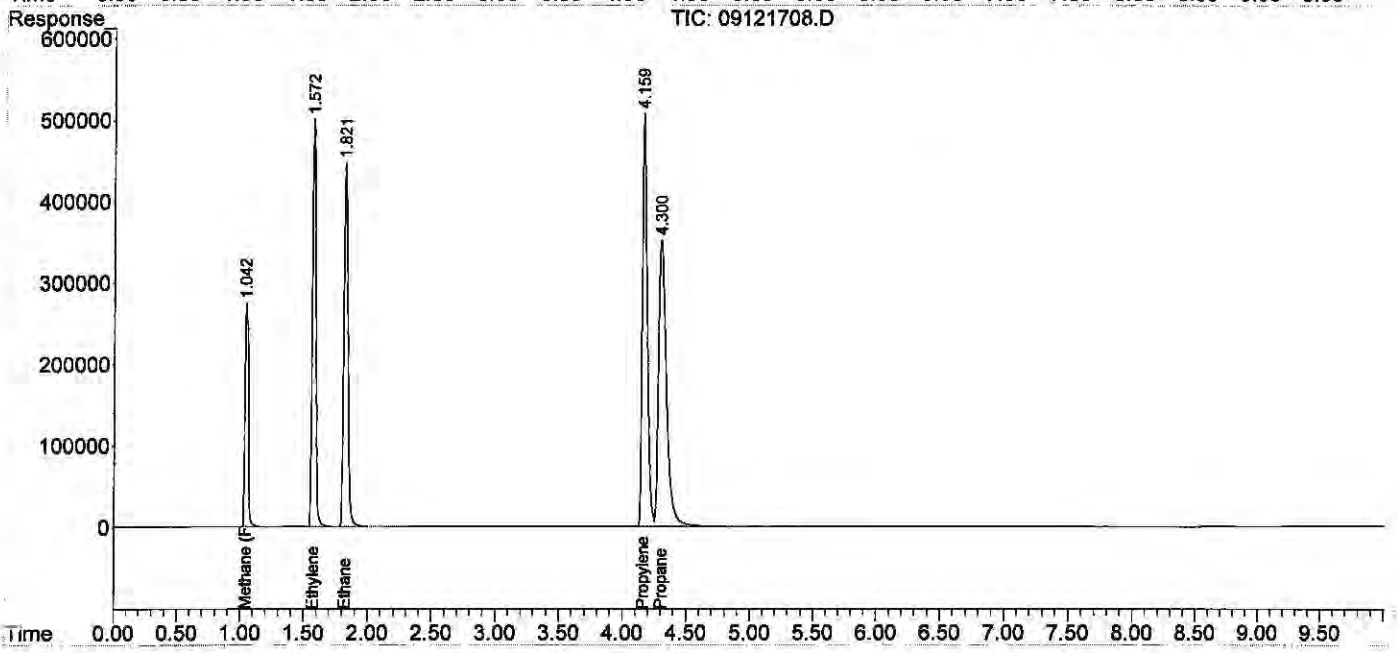
Quantitation Report (QT Reviewed)

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 :





Quantitation Report (QT Reviewed)

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 :

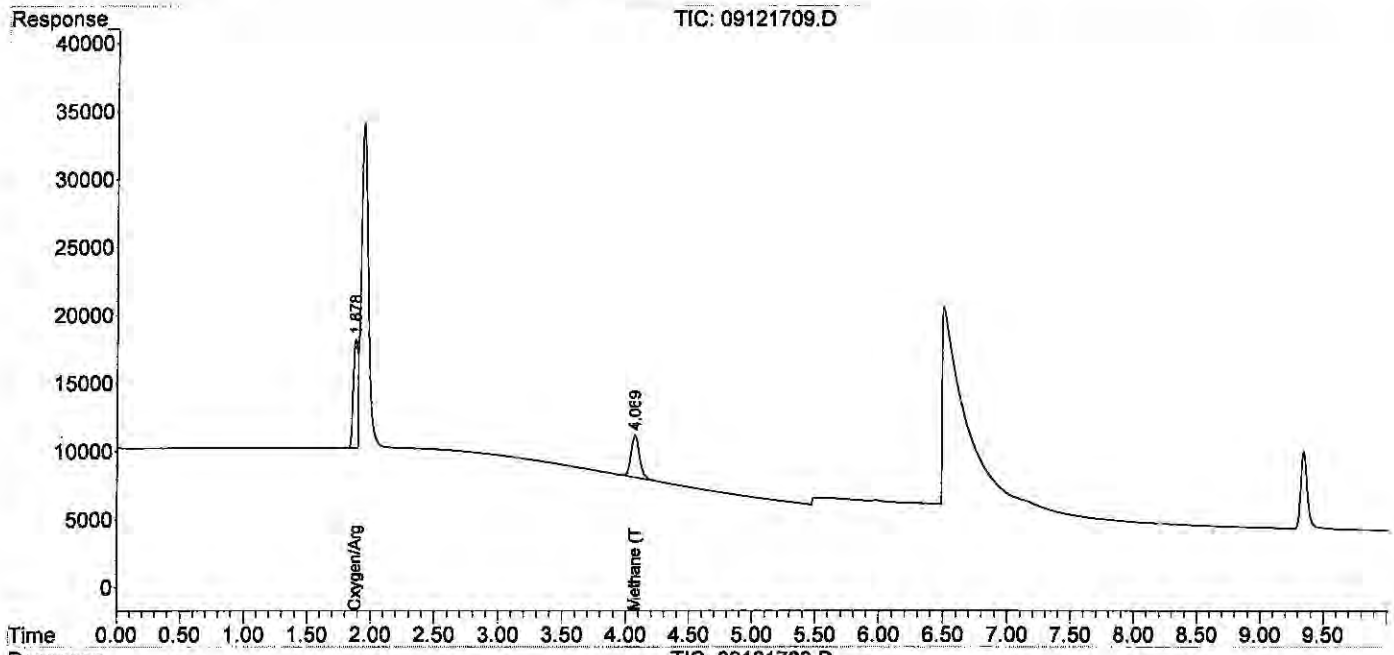
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	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

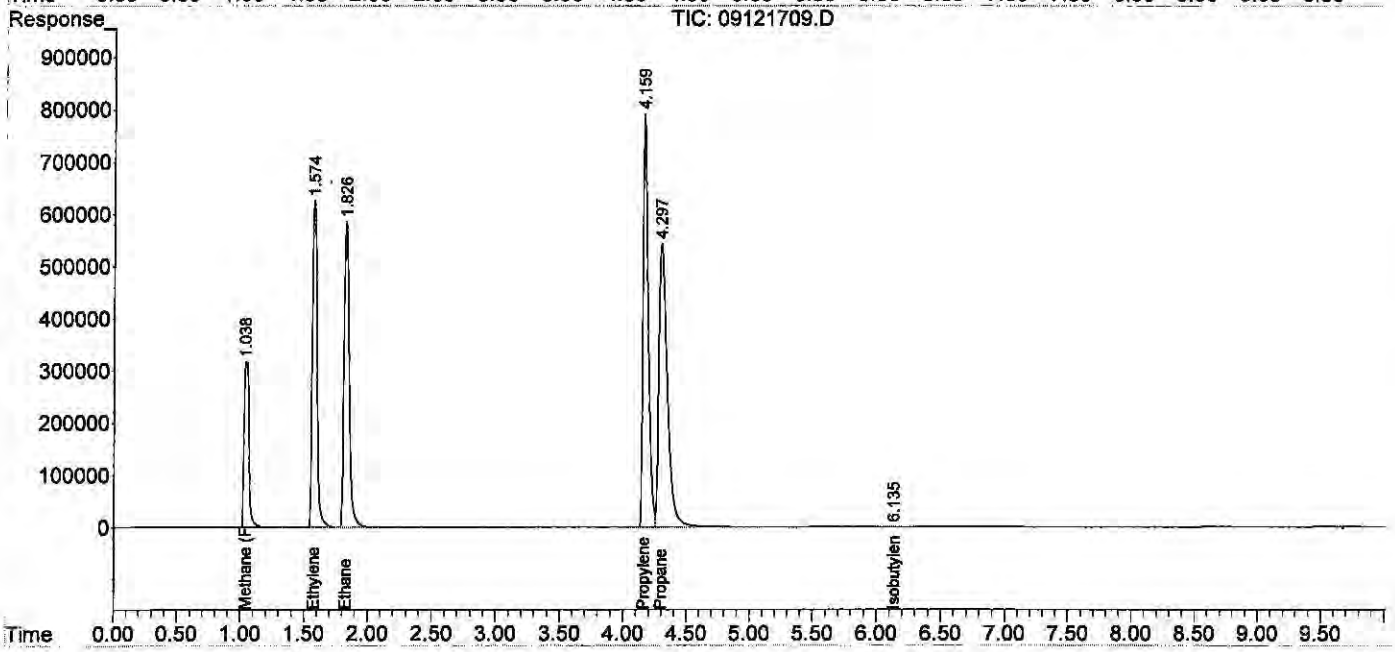
(f)=RT Delta > 1/2 Window (m)=manual int.

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 #1 Info :
Signal #2 Phase:
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 :

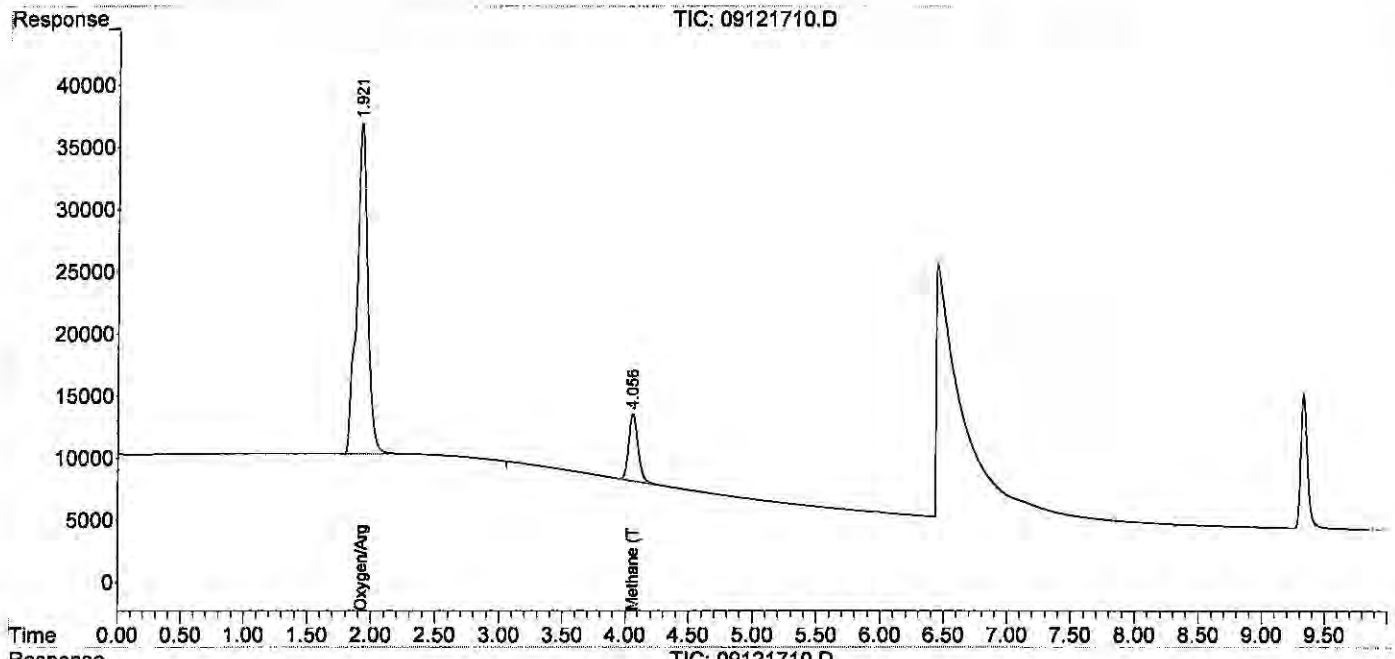
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	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	

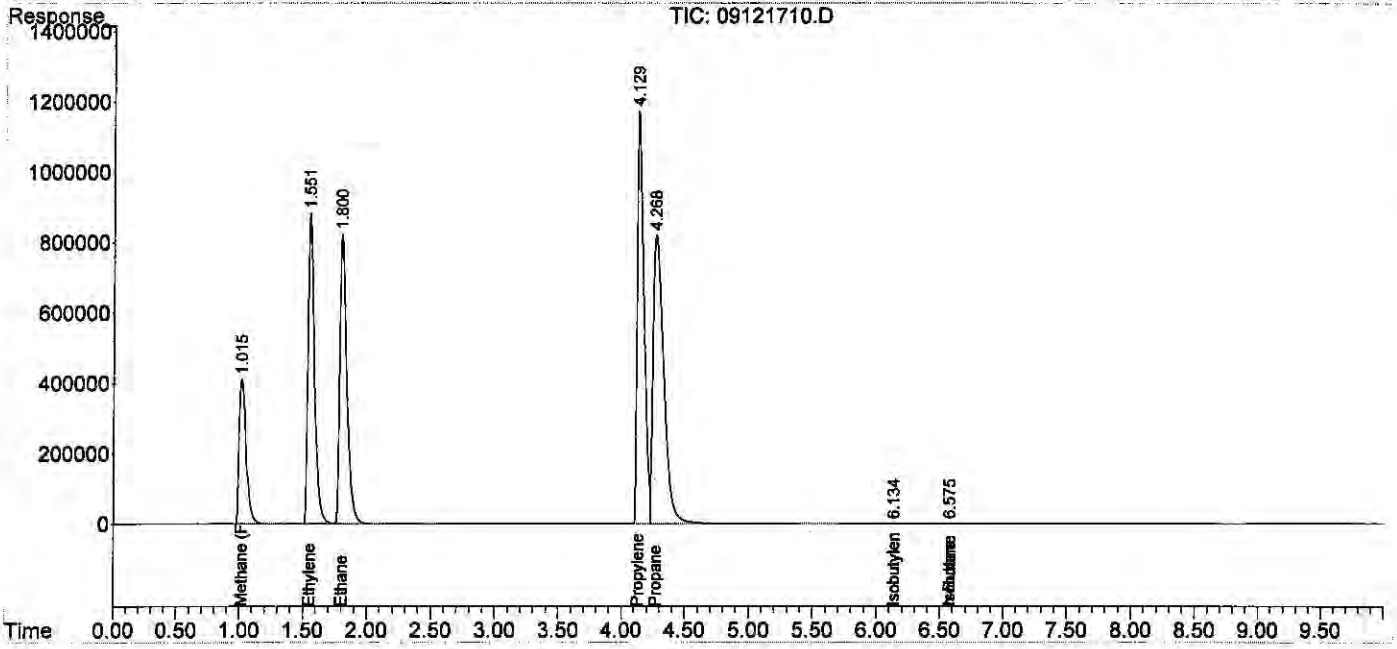
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



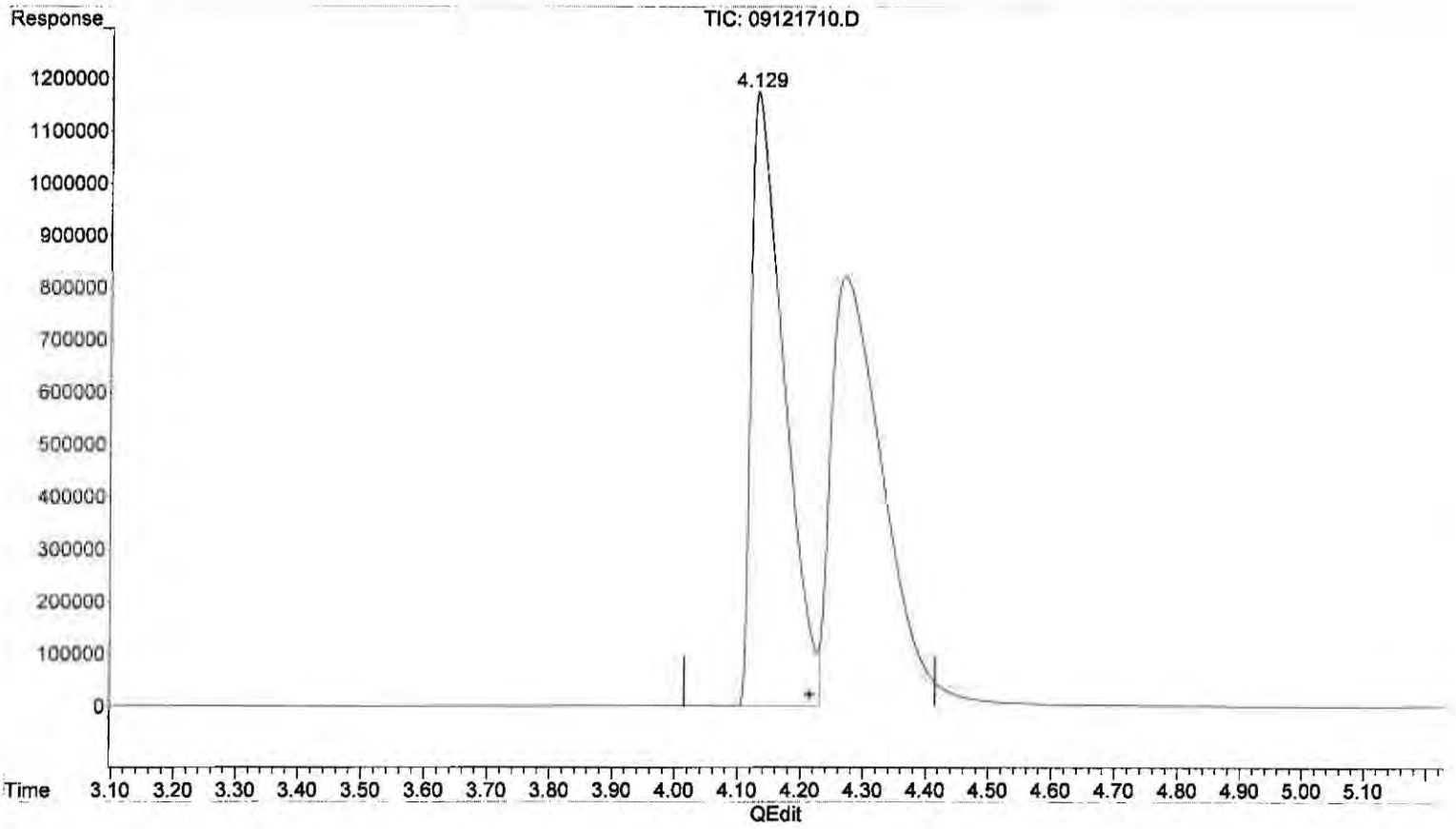


Quantitation Report (Qedit)

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
RS091217_R.M Wed Sep 13 15:08:03 2017

Quantitation Report (QT Reviewed)

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 :

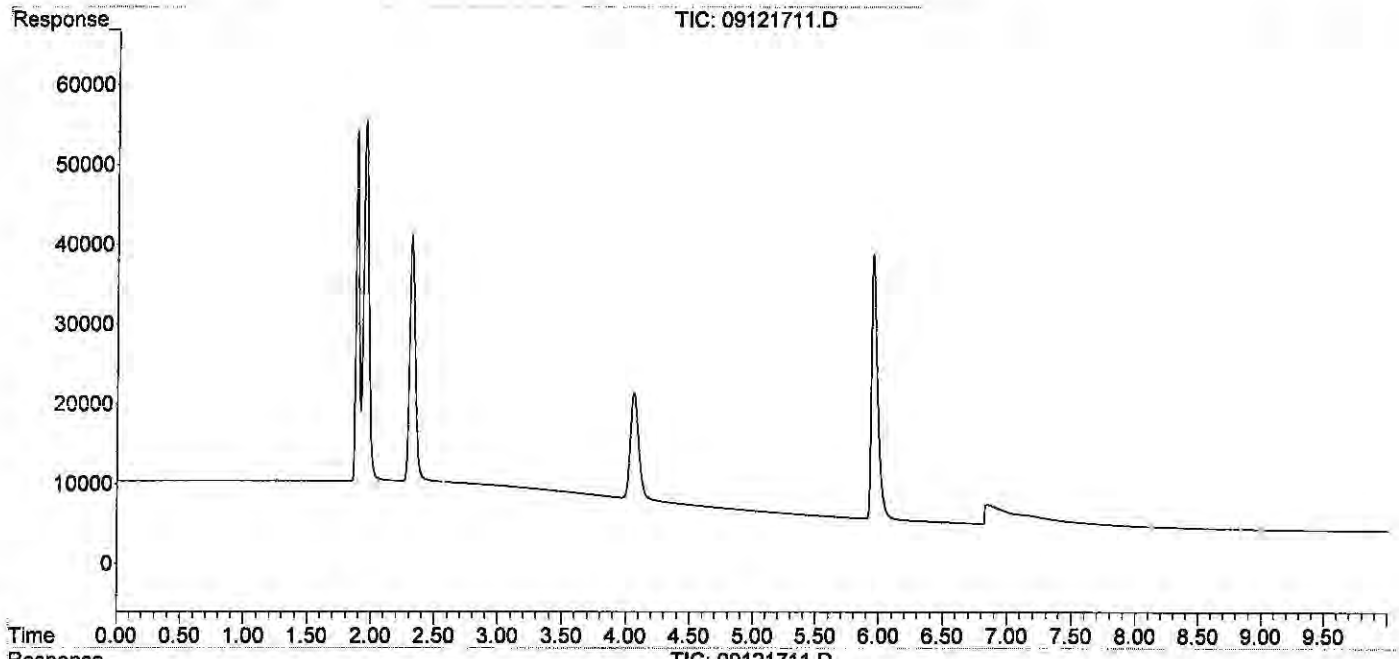
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	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	

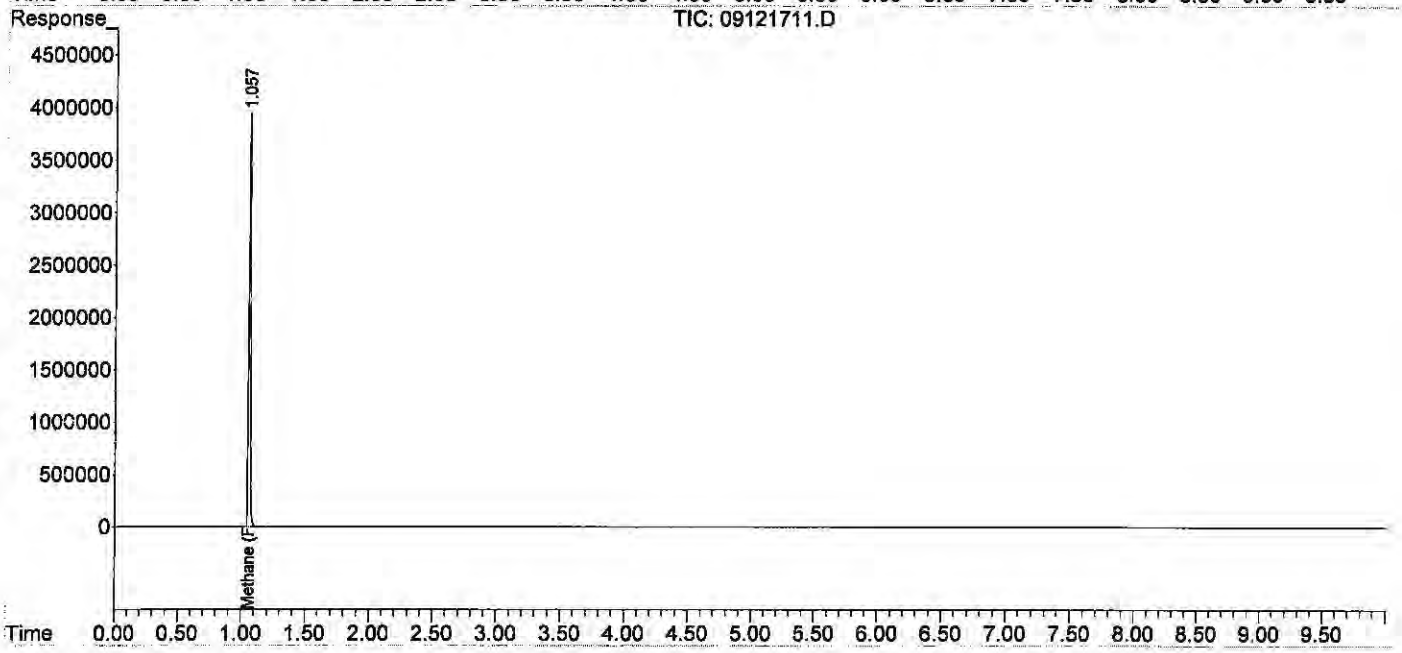
(f)=RT Delta > 1/2 Window (m)=manual int.

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 #1 Info :
Signal #2 Phase:
Signal #2 Info :





Quantitation Report (QT Reviewed)

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 :

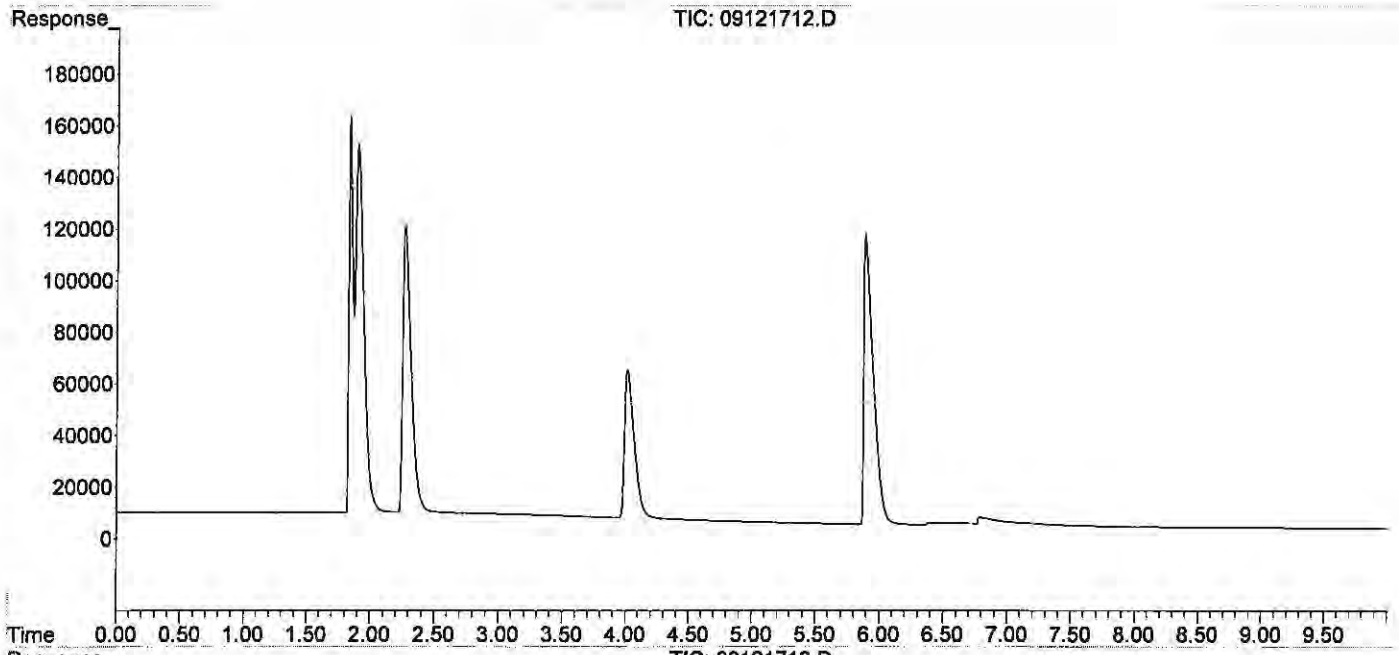
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	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	

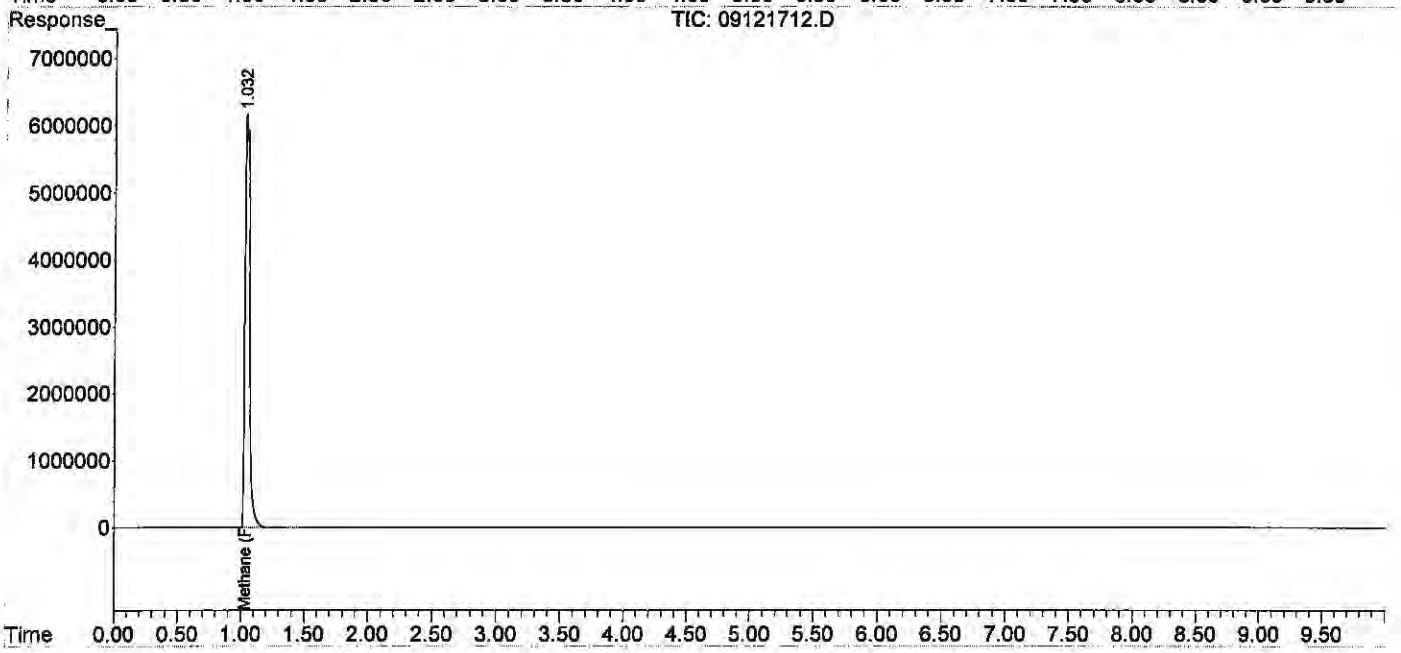
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :





Quantitation Report (QT Reviewed)

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	1.50 101.1
7)	Ethylene	1.598	24153	1.443	ppm	1.50 96.2
8)	Ethane	1.850	24488	1.445	ppm	1.50 96.3
9)	Propylene	4.221	36004	1.537	ppm	1.50 102.5
10)	Propane	4.350	37738	1.517	ppm	1.51 100.5
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	48019	1.804	ppm	9/14/2
13)	n-Butane	6.579f	48019	1.804	ppm	

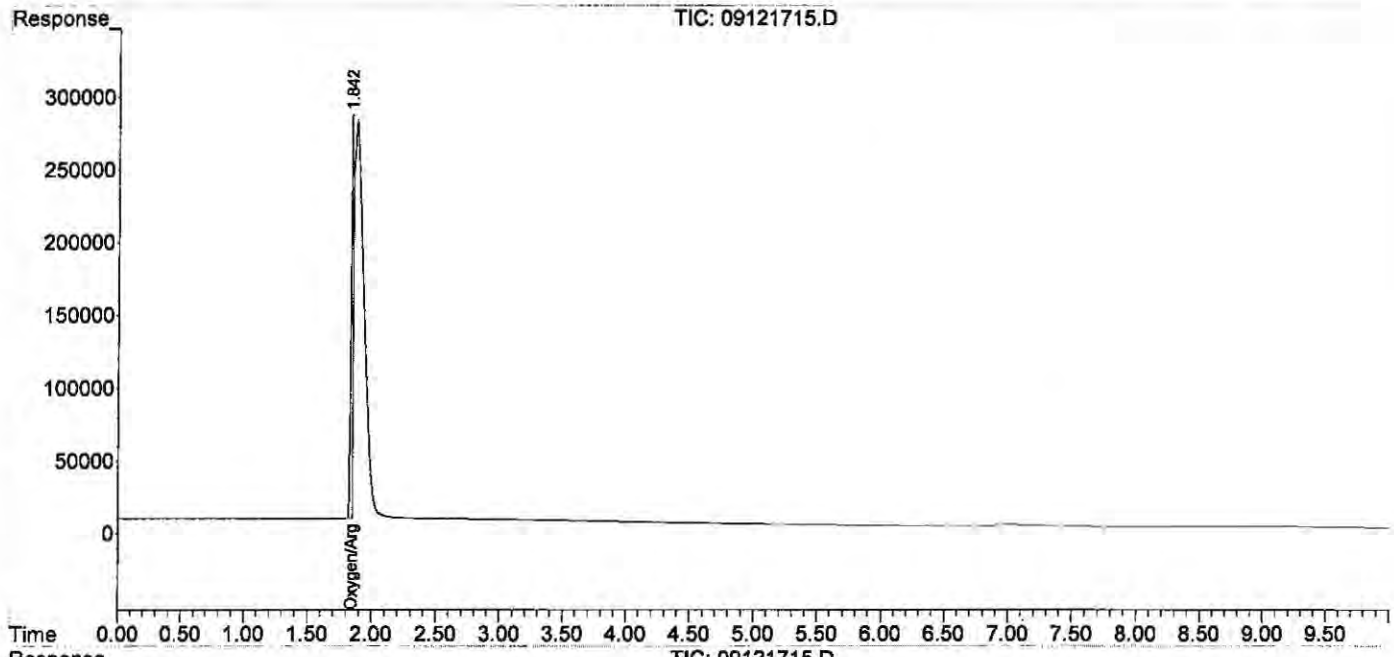
(f)=RT Delta > 1/2 Window (m)=manual int.

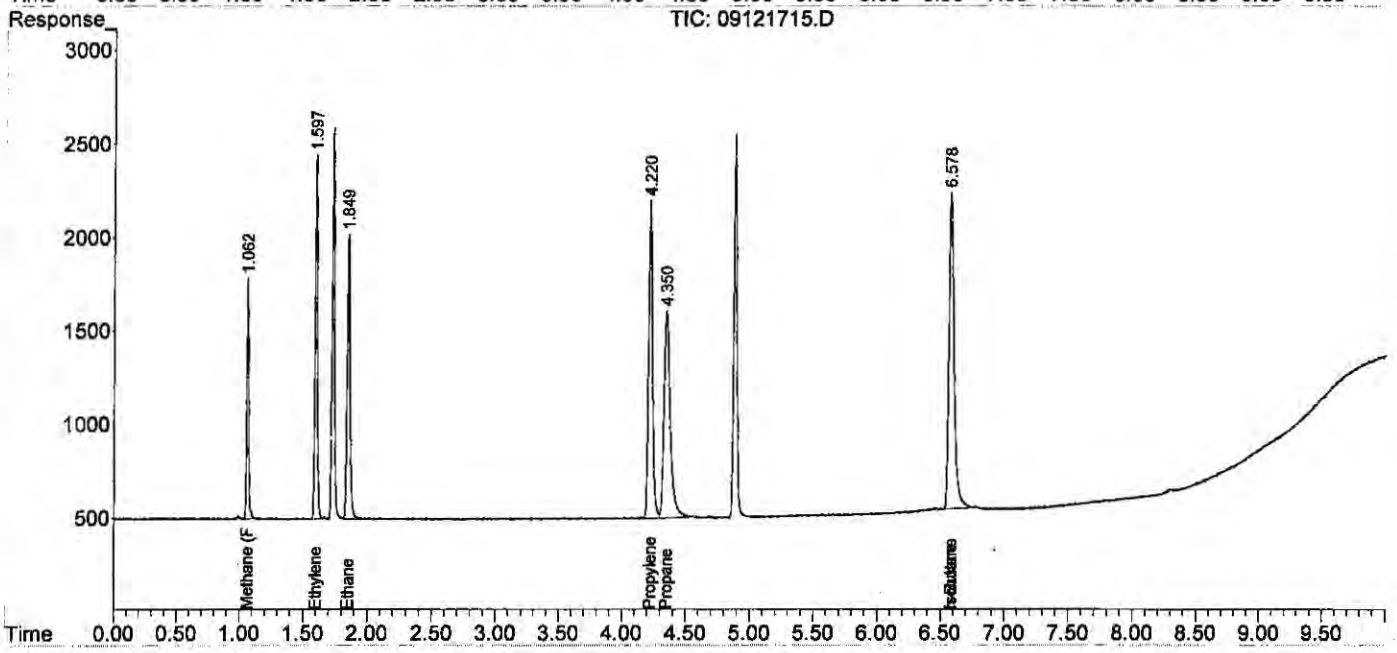
9/14/2017

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 :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1907802
Sample Vol. (ml) : 32.00 ml
Analyst : LD
Date Analysis : 12/27/19
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	93.081	98.801	97.915
ACTUAL		101.50	100.90	101.40
%Difference		8.3%	2.1%	3.4%
MCS 0.1ml	0.100	0.131	0.000	0.000
RB 0.1ml	0.100	0.000	0.000	0.000
LCS S32-07231801	0.100	1.393	1.012	1.257
LCSD S32-07231801	0.100	1.413	1.005	1.264
P1907802-001 0.1ml	0.100	0.000	0.000	0.000
P1907802-002 0.1ml	0.100	0.000	0.000	0.000
P1907802-003 0.1ml	0.100	161.108	1.426	0.000
P1907802-004 0.1ml	0.100	774.815	0.000	0.000
P1907802-005 0.1ml	0.100	53.206	0.627	0.000
STD S32-05221901	0.100	90.836	96.419	95.642

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 S32-07231801	13.930	10.120	12.570
LCSD S32-07231801	14.130	10.050	12.640
P1907802-001 0.1ml	0.000	0.000	0.000
P1907802-002 0.1ml	0.000	0.000	0.000
P1907802-003 0.1ml	1611.080	14.260	0.000
P1907802-004 0.1ml	7748.150	0.000	0.000
P1907802-005 0.1ml	532.060	6.270	0.000
STD S32-05221901	908.360	964.190	956.420

LD
12/27

STD S32-05221901	89.407	95.301	95.003	15:04:44	90.84	96.42	95.64
ACTUAL	101.50	100.90	101.40				
%Difference	11.9%	5.5%	6.3%				

00997516

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_12\27\
Data File : 12271901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 09:48:42
Operator : LD
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: Dec 27 10:00:50 2019
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

LD
12/27

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

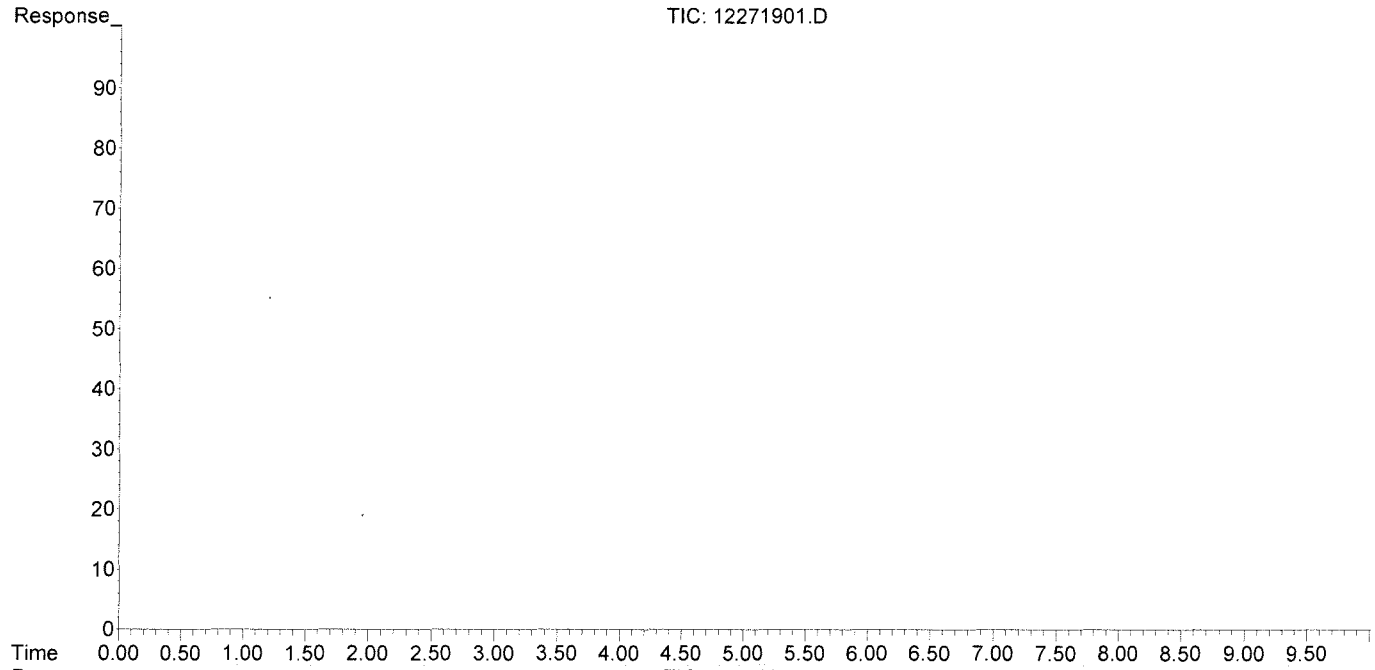
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.115	844300	93.081	ppm
7)	Ethylene	1.688	1653369	98.801	ppm
8)	Ethane	1.954	1659675	97.915	ppm
9)	Propylene	4.328	2406501	102.704	ppm
10)	Propane	4.451	2462578	98.977	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

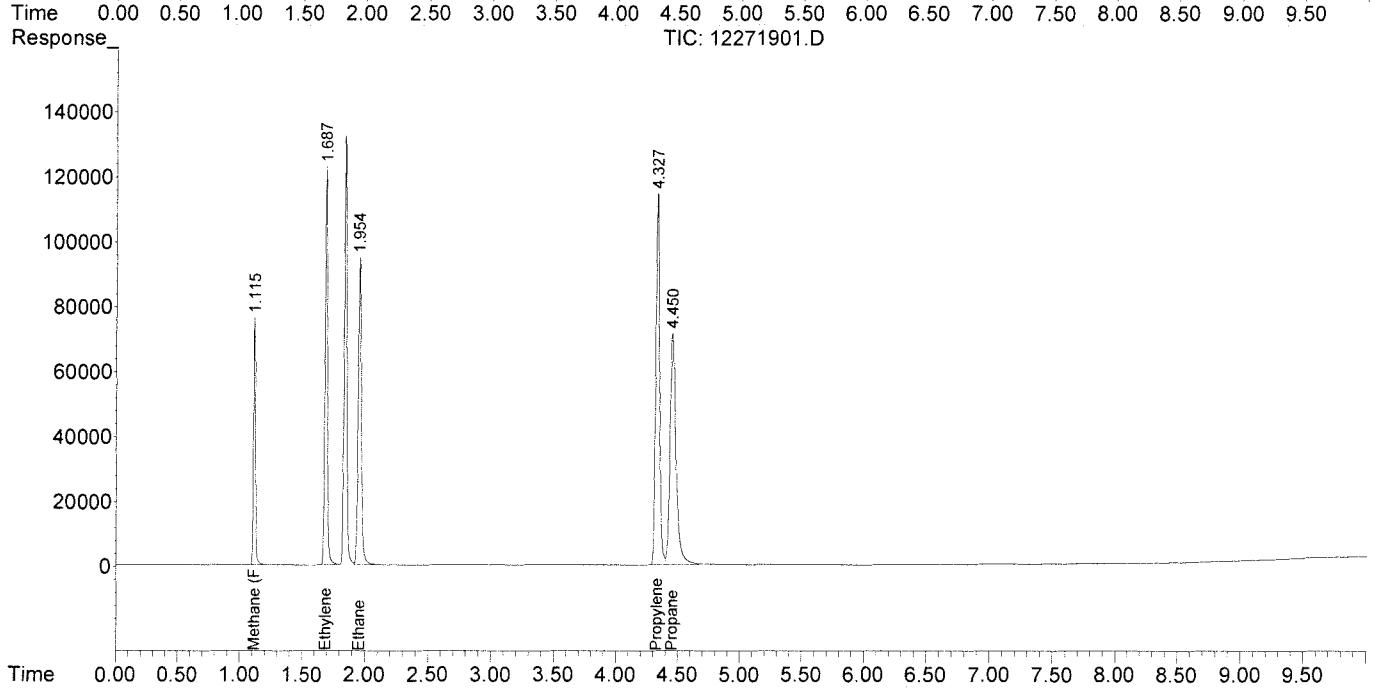
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_12\27\
Data File : 12271901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 09:48:42
Operator : LD
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: Dec 27 10:00:50 2019
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\2019_12\27\
Data File : 12271916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 14:20:24
Operator : LD
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: Dec 27 14:42:13 2019
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 :

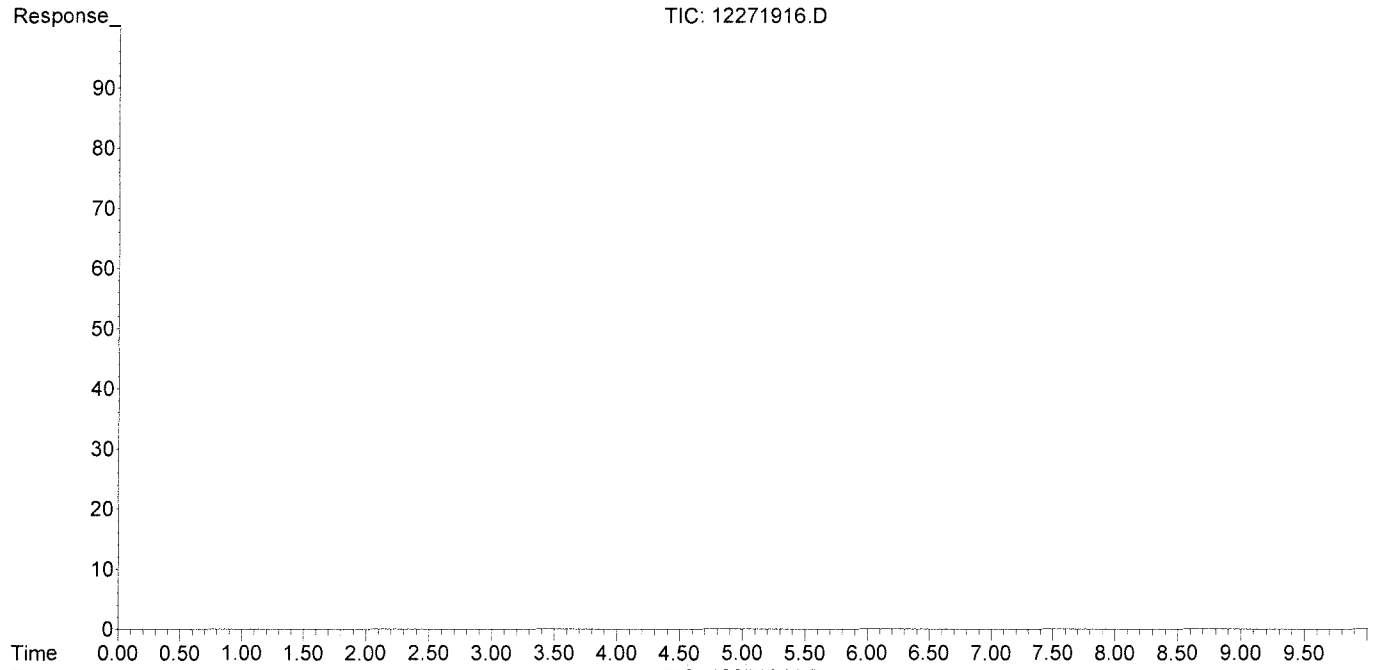
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.108	810977	89.407	ppm
7)	Ethylene	1.677	1594791	95.301	ppm
8)	Ethane	1.944	1610319	95.003	ppm
9)	Propylene	4.330	2329836	99.432	ppm
10)	Propane	4.454	2396821	96.334	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

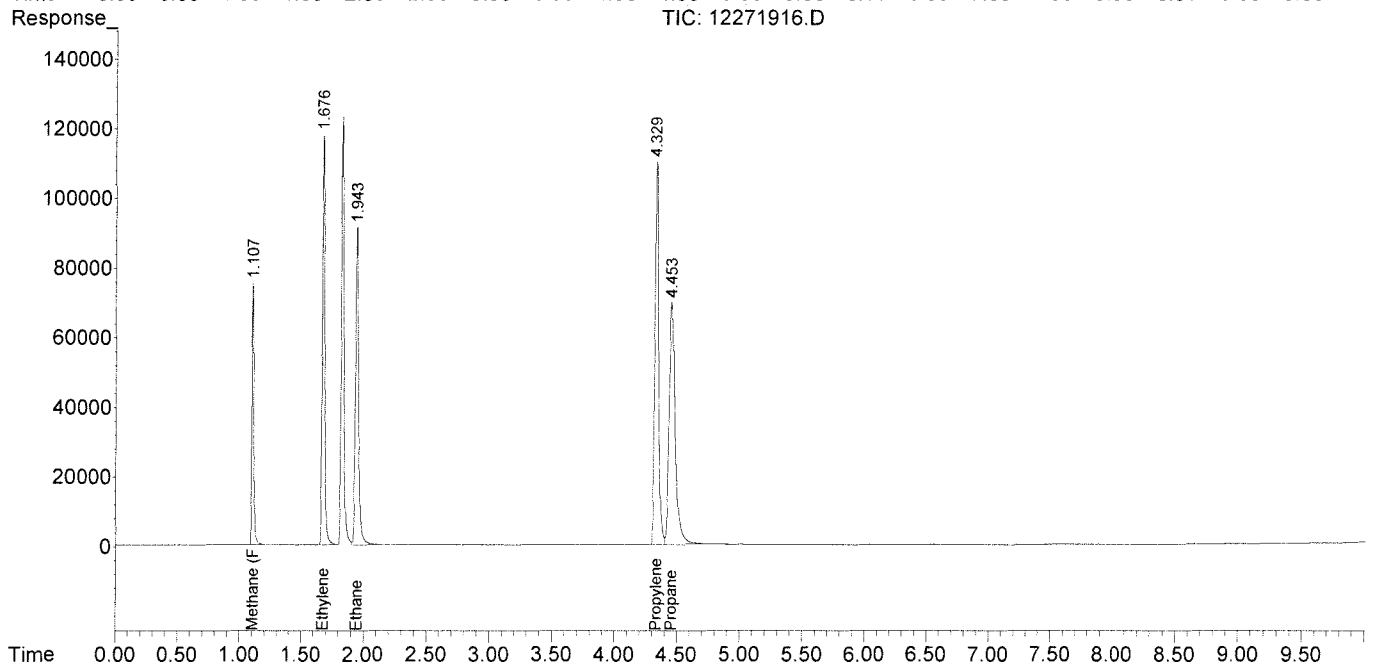
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2019_12\27\
Data File : 12271916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 14:20:24
Operator : LD
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: Dec 27 14:42:13 2019
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\2019_12\27\
Data File : 12271919.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 15:04:44
Operator : LD
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: Dec 27 15:16:17 2019
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 :

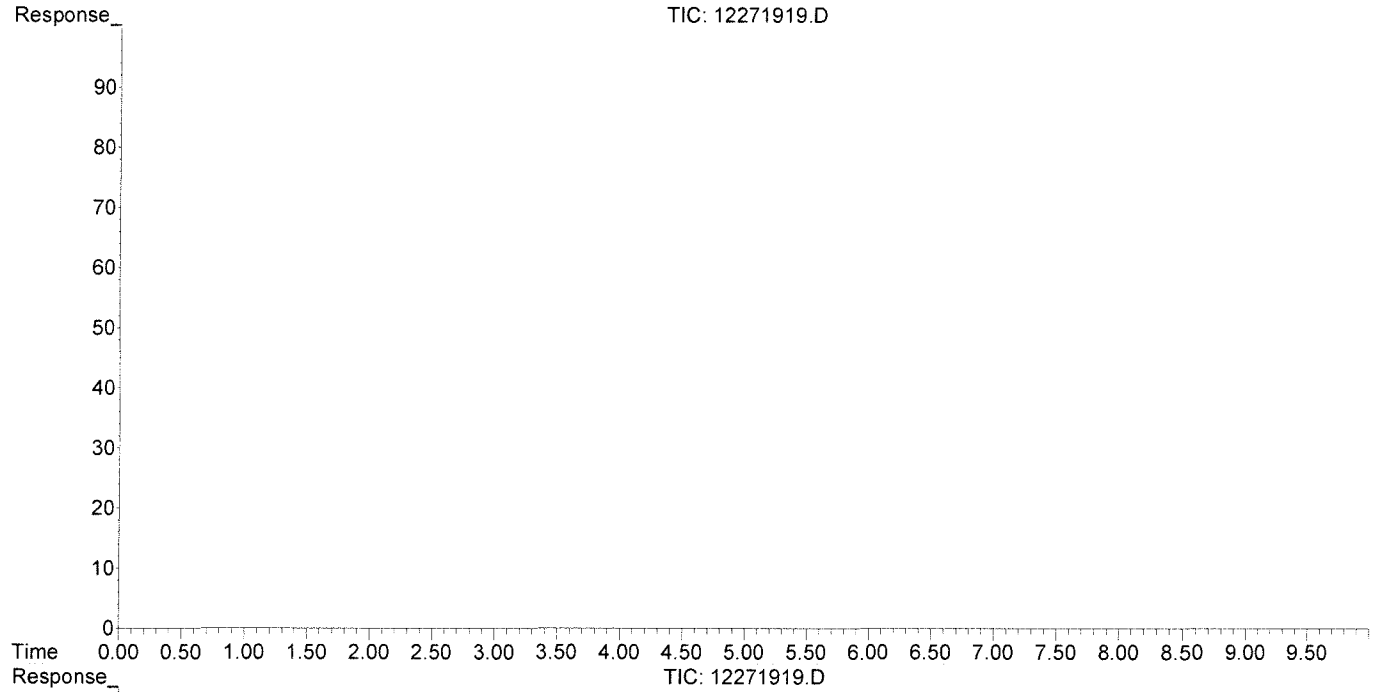
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.110	823939	90.836	ppm
7)	Ethylene	1.681	1613500	96.419	ppm
8)	Ethane	1.948	1621146	95.642	ppm
9)	Propylene	4.332	2351222	100.344	ppm
10)	Propane	4.455	2414111	97.029	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

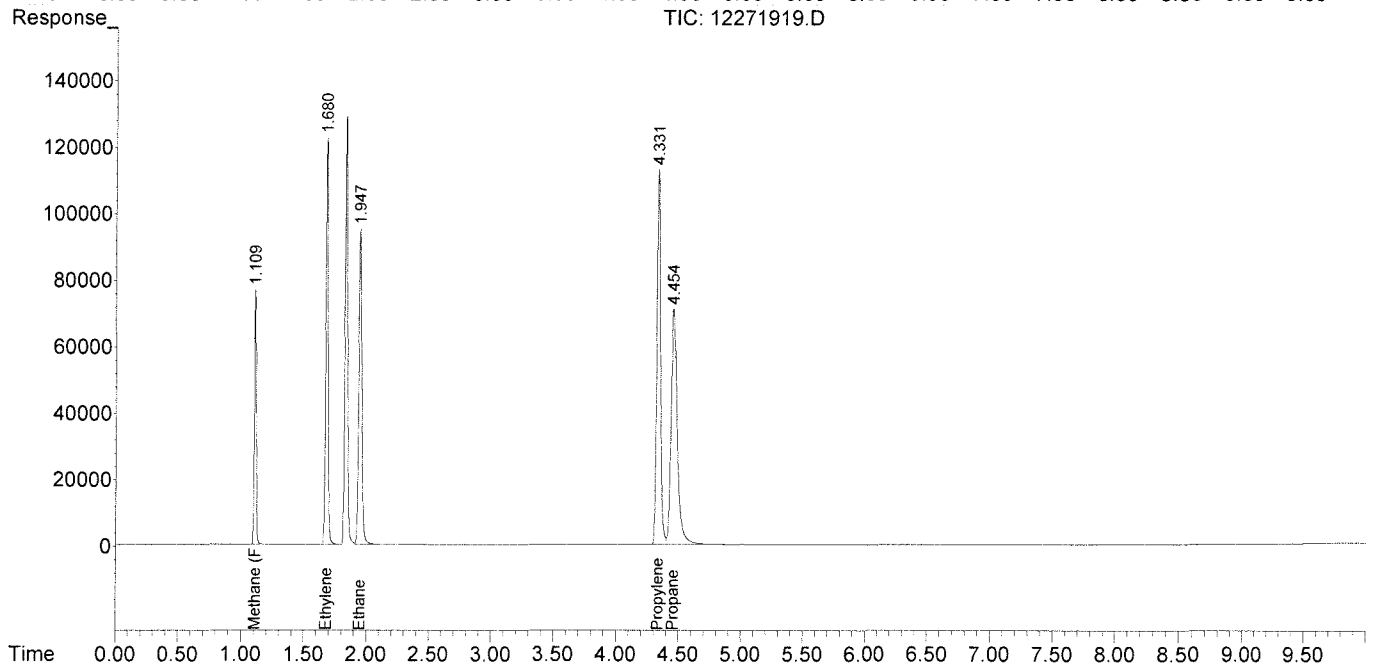
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Data Path : J:\GC10\DATA\RSK_FID\2019_12\27\
Data File : 12271919.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 27-Dec-2019, 15:04:44
Operator : LD
Sample : STD S32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 27 15:16:17 2019
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

00997524

Injection Log

12/31/19

Directory: I:\GC10\DATA\RSK_FID\2019_12\27\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	27-Dec-19, 09:48:42	12271901.D	STD S32-05221901		LD	RSKBOTH.M	pass
2	27-Dec-19, 10:03:03	12271902.D	RB 0.1ml		LD	RSKBOTH.M	pass
3	27-Dec-19, 11:17:39	12271903.D	MCS 0.1ml		LD	RSKBOTH.M	pass
4	27-Dec-19, 11:32:18	12271904.D	LCS S32-07231801		LD	RSKBOTH.M	pass
5	27-Dec-19, 11:45:51	12271905.D	LCSD S32-07231801		LD	RSKBOTH.M	pass
6	27-Dec-19, 12:00:50	12271906.D	P1907801-001 0.1ml		LD	RSKBOTH.M	
7	27-Dec-19, 12:15:29	12271907.D	P1907801-002 0.1ml		LD	RSKBOTH.M	
8	27-Dec-19, 12:29:32	12271908.D	P1907801-003 0.1ml		LD	RSKBOTH.M	
9	27-Dec-19, 12:42:33	12271909.D	P1907801-004 0.1ml		LD	RSKBOTH.M	
10	27-Dec-19, 12:56:28	12271910.D	P1907801-005 0.1ml		LD	RSKBOTH.M	
11	27-Dec-19, 13:09:49	12271911.D	P1907801-006 0.1ml		LD	RSKBOTH.M	
12	27-Dec-19, 13:26:26	12271912.D	P1907802-001 0.1ml		LD	RSKBOTH.M	
13	27-Dec-19, 13:40:35	12271913.D	P1907802-002 0.1ml		LD	RSKBOTH.M	
14	27-Dec-19, 13:54:12	12271914.D	P1907802-003 0.1ml		LD	RSKBOTH.M	
15	27-Dec-19, 14:07:18	12271915.D	P1907802-004 0.1ml		LD	RSKBOTH.M	
16	27-Dec-19, 14:20:24	12271916.D	STD S32-05221901		LD	RSKBOTH.M	pass
17	27-Dec-19, 14:33:31	12271917.D	P1907802-005 0.1ml		LD	RSKBOTH.M	
18	27-Dec-19, 14:46:47	12271918.D	xxxxSTD S32-05221901		LD	RSKBOTH.M	fail
19	27-Dec-19, 15:04:44	12271919.D	STD S32-05221901		LD	RSKBOTH.M	pass

00997525

REPORT TO:

Name: MARCIA OLIVA
Company: BHATE ENVIRONMENTAL
Address: 445 UNION BLVD. STE. 129
LAKEWOOD, CO. 80228
email: molive@bhate.com
Phone: 205-918-4000
Fax:

INVOICE TO: (For Invoices paid by a third party it is imperative that all information be provided)

Name:
Company:
Address:
email:
Phone:
Fax:

microbialinsights
10515 Research Dr
Knoxville, TN 37932
865-573-8188
www.microbe.com

Project Manager: Kim Nemmers
Project Name: LITAAP-58
Project No.: NW01312.0150

Purchase Order No.
Subcontract No.
MI Quote No.

Please Check One:
☐ More samples to follow
☒ No Additional Samples

Report Type: ☒ Standard (default) ☐ Microbial Insights Level III raw data(15% surcharge) ☐ Microbial Insights Level IV (25% surcharge) ☐ Comprehensive Interpretive(15%) ☐ Historical Interpretive (30%)

EDD type: ☐ Microbial Insights Standard (default) ☐ All other available EDDs (5% surcharge) Specify EDD Type:

Please contact us with any questions about the analyses or filling out the COC at (865) 573-8188 (9:00 am to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com

Sample Information					Analyses					CENSUS: Please select the target organism/gene																						
MI ID (Laboratory Use Only)	Sample Name	Date Sampled	Time Sampled	Matrix	PLFA	DGGE+3ID	DGGE+5ID	QuantArray Chlor	QuantArray Petro	DHC (Dehalococcoides)	DHC Functional genes (bvc, tca, vcr)	DHBt (Dehalobacter)	DSM (Desulfuromonas)	DSB (Desulfitobacterium)	EBAC (Total)	SRB (Sulfate Reducing Bacteria-APS)	MGN (Methanogens)	MOB (Methanotrophs)	SMMO	DNF (Denitrifiers-nirS and nirK)	AOB (ammonia oxidizing bacteria)	PM1 (MTBE aerobic)	RMO (Toluene Monooxygenase)	RDEG (Toluene Monooxygenase)	PHE (Phenol Hydroxylase)	NAH (Napthalene-aerobic)	BSSA (Toluene/Xylene-Anaerobic)	add. qPCR:	add. qPCR:	RNA (Expression Option)*	Other:	Other:	Other:
095QL1	35AWW20-121919	12/19/19	0920	WG							X	X																				
2	35AWW06-121919	12/19/19	1035	WG							X	X																				
3	LHSMW07-121919	12/19/19	1130	WG							X	X																				

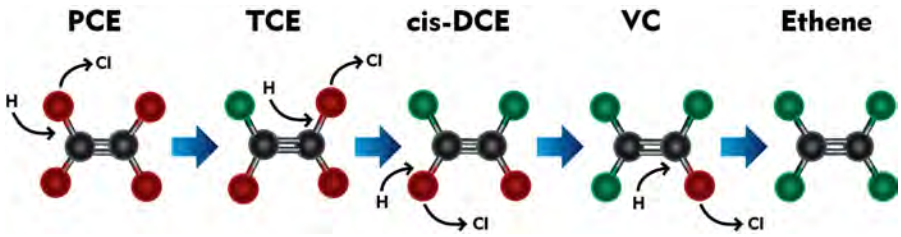
Relinquished by: Scott Bellinger 12/19/19 1430 Received by: Date 12/20/19

It is vital that chain of custody is filled out correctly & that all relative information is provided.
Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable.

DHC Interpretation

Dehalococcoides 16S rRNA gene (qDHC)

Under anaerobic conditions, tetrachloroethene (PCE) and trichloroethene (TCE) can undergo sequential reductive dechlorination through the daughter products *cis*-dichloroethene (*cis*-DCE) and vinyl chloride to nontoxic ethene (1,2).



While a number of bacterial cultures capable of utilizing PCE and TCE as growth supporting electron acceptors have been isolated (3-7), *Dehalococcoides* spp. may be the most important because they are the only bacterial group that has been isolated to date which is capable of complete reductive dechlorination of PCE to ethene (8). In fact, the presence of *Dehalococcoides* spp. has been associated with complete dechlorination to ethene at sites across North America and Europe (9).

Status	*Dehalococcoides spp.*	Observation
	**≥ 10^4** (cells/mL)	Lu et al. proposed that a concentration of 1 x 10^4 DHC cells/mL could be used as a screening criterion to identify sites where reductive dechlorination will yield a generally useful biodegradation rate (10). Similarly, in an internal study conducted with nearly 1000 groundwater samples obtained from sites across the US, ethene production was observed in approximately 80% of samples in which CENSUS® qDHC results were greater than or equal to 10^4 DHC cells/mL.
	**10^1 to < 10^4** (cells/mL)	When vinyl chloride reductase genes (See DHC functional genes discussion below) are also detected, complete reductive dechlorination of PCE and TCE to ethene may still occur even with moderate DHC concentrations. When the DHC population is below the 10^4 cells/mL criterion proposed by Lu et al. (10), project managers should carefully consider other site-specific data to determine whether subsurface conditions may be limiting reductive dechlorination. For example, the addition of an electron donor may be able to stimulate DHC growth and enhance anaerobic bioremediation.
	**< 10^1** (cells/mL)	DHC concentrations are low suggesting that complete reductive dechlorination of PCE and TCE to ethene is unlikely to occur under existing conditions. Enhanced anaerobic bioremediation options (biostimulation or bioaugmentation) may need to be considered.

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DHC Interpretation

DHC Functional Genes (*tce*A, *bvc*A, *vcr*A)

A "stall" where daughter products *cis*-DCE and vinyl chloride accumulate can occur at PCE- and TCE-impacted sites especially under MNA conditions. The accumulation of vinyl chloride, generally considered more carcinogenic than the parent compounds, is particularly problematic. Although elevated *Dehalococcoides* concentrations correspond to ethene production in numerous studies, the range of chlorinated ethenes metabolized and cometabolized varies among species and strains within the *Dehalococcoides* genus. For example, *Dehalococcoides ethenogenes* str. 195 metabolizes PCE, TCE, and *cis*-DCE and cometabolizes vinyl chloride (8) to produce ethene. Conversely, *Dehalococcoides* sp. CBDB1 utilizes PCE and TCE but does not cometabolize additional chloroethenes (11). Other *Dehalococcoides* strains, such as BAV1, GT and VS, are known to fully dechlorinate cis-DCE and VC to ethene (14,16,19). Quantification of reductive dehalogenase genes is used to more definitively confirm the potential for reductive dechlorination of TCE, cis-DCE, and vinyl chloride (12-15).

Functional Gene	Observation
TCE Reductase	
***tce*A gene**	The *tce*A gene encodes the enzyme responsible for reductive dechlorination of TCE to *cis*-DCE in some strains of *Dehalococcoides*. Absence of *tce*A does not preclude the potential for reductive dechlorination of TCE in the field since the *tce*A gene is not universally distributed among all DHC and is not present in other microorganisms capable of reductive dechlorination of TCE (e.g. *Dehalobacter*). Detection of the *tce*A gene provides an additional line of evidence indicating the potential for dechlorination of TCE.
Vinyl Chloride Reductase	
***bvc*A gene**	The *bvc*A gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of vinyl chloride to ethene by *Dehalococcoides* sp. str. BAV1 (16). Presence of *bvc*A gene indicates the potential for reductive dechlorination of VC to ethene. Absence of both *bvc*A and *vcr*A genes suggests VC may accumulate. An internal study with ~1,000 samples showed ethene production was observed in 80% of the samples that the DHC population was greater than or equal to 10^4 cells/mL. The *bvc*A gene was detected in over 50% of these samples. Van Der Zaan et al (17) noted that the bvcA gene was the only VC reductase gene detected at three of their sites. Alfred Spormann's laboratory at Stanford University (18) reported that the *bvc*A gene was the most abundant and active at the outflow of a PCE fed column study. This section of the column was in the DCE to VC stages of reductive dechlorination thus confirming the importance of the *bvc*A gene for complete reductive dechlorination.
***vcr*A gene**	The *vcr*A gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of *cis*-DCE and vinyl chloride by *Dehalococcoides* sp. strain VS (14). Presence of *vcr*A gene indicates the potential for reductive dechlorination of DCE and/or VC to ethene. Absence of both *bvc*A and *vcr*A genes suggest VC may accumulate. As with the *bvc*A gene, detection of the *vcr*A gene is associated with ethene production in internal studies (67%) and vinyl chloride reduction in independent studies (14, 17).

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DHC Interpretation

Reporting

Microbial Insights can provide a variety of data packages and reporting levels to suit the needs of any project. Data packages range from simple analytical reports with results only to more complex data packages that include a report narrative, analytical results, QC data, and supporting materials including all raw data and chain-of-custody documentation. The figure below shows our standard report and explains the way values are reported.

Microbial Insights, Inc.

2340 Stock Creek Blvd. Rockford, TN 37853-3044
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: Company Name
Project: Your Project Name

MI Project Number: Unique Laboratory Identifier
Date Received: Date Samples Arrived

Sample Information

Client Sample ID:		Sample A	Sample B	Sample C
Sample Date:		00/00/0000	00/00/0000	00/00/0000
Units:		cells/mL	cells/mL	cells/mL
Analyst:		Intials	Intials	Intials
Dechlorinating Bacteria				
Dehalococcoides spp.	DHC	**1.84E+05**	**2.76E+02**	**2.28E+01 (J)**
Functional Genes				
tceA Reductase	TCE	**6.00E+01**	**3.23E+01**	<4.00E-01
bvcA Reductase	BVC	**1.17E+04**	**1.81E+01**	<4.00E-01
vcrA Reducatase	VCR	**8.42E+04**	**1.74E+02**	<4.00E-01

"J" value
Result is an estimated value. This data qualifier (flag) is used when the target gene is detected but at a concentration or abundance below the practical quantification limit (PQL).

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

< value
The target gene was not detected at the limit of quantitation (LOQ) reported for that sample.

"I" value
QA Procedure indicated that the sample may have exhibited PCR inhibition. Although relatively rare, PCR inhibition can occur due to the presence of metals or humic acids at high concentrations in the sample.

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Quality Assurance

Microbial Insights' comprehensive Quality Assurance (QA) Program is the foundation of all laboratory analyses, ensuring that our clients receive high-quality analytical services that are timely, reliable, and meet their intended purpose in a cost effective manner. MI is committed to providing quality data that surpasses regulatory and industry standards, thus enabling the client to make well-informed decisions. MI maintains strict standard operating procedures and QA/QC measures throughout all of the analyses offered. The following Table details specific QA/QC procedures that are used for CENSUS.

QA/QC	Description
Date of Extraction	DNA and RNA extractions are performed the day the samples are received by MI to minimize the possibility of any changes to the microbial community prior to analysis.
Laboratory Method Blanks	An extraction blank (no sample added) is processed alongside each set of field samples from DNA extraction through CENSUS® analysis to ensure that cross contamination has not occurred. Although MI has never experienced this issue, the detection of the CENSUS® target (e.g. *Dehalococcoides*) in an extraction blank is direct evidence of cross contamination with a sample or contamination of a reagent and would invalidate the results. If this were to occur, MI would re-extract the sample. If not possible to re-extract, MI would contact the client immediately and notate it on the laboratory report.
Laboratory Control Samples (LCS)	A laboratory control sample (LCS) or positive control (target DNA) is included with each CENSUS® plate to confirm amplification and as a continuing calibration check.
Negative Controls	A negative control (no DNA) is included with each CENSUS plate to ensure that cross contamination has not occurred during amplification. As with the extraction blank, detection of CENSUS target (e.g. DHC) in a negative control is direct evidence of contamination and would invalidate the results. If this were to occur, MI would rerun the analysis.

References

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3. Gerritse, J., V. Renard, T. M. Pedro Gomes, P. A. Lawson, M. D. Collins, and J. C. Gottschal. 1996. *Desulfitobacterium* sp. Strain PCE1, an anaerobic bacterium that can grow by reductive dechlorination of tetrachloroethene or ortho-chlorinated phenols. Archives of Microbiology 165(2): 132-140.

4. Gerritse, J., O. Drzyzga, G. Kloetstra, M. Keijmel, L. P. Wiersum, R. Hutson, M. D. Collins, and J. C. Gottschal. 1999. Influence of different electron donors and acceptors on dehalorespiration of tetrachloroethene by *Desulfitobacterium frappieri* TCE1. Applied and Environmental Microbiology 65(12): 5212-5221.

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8. Maymó-Gatell, X., T. Anguish, and S.H. Zinder. 1999. Reductive dechlorination of chlorinated ethenes and 1,2-dichloroethane by *Dehalococcoides ethenogenes* 195. Applied and Environmental Microbiology 65(7): 3108–3113.

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How to Retrieve and Use Estimated Percentile Ranks from the Microbial Insights Database

The MI Database

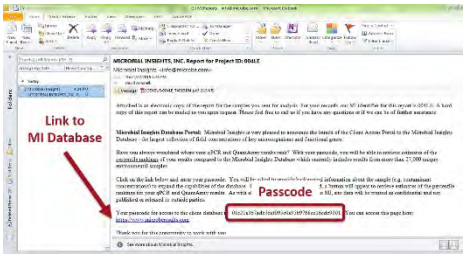
The Microbial Insights Database is the largest collection of field concentrations of key microorganisms and functional genes currently containing qPCR and QuantArray results for more than 40,000 unique groundwater, soil, and sediment samples from all 50 states and 33 countries worldwide.

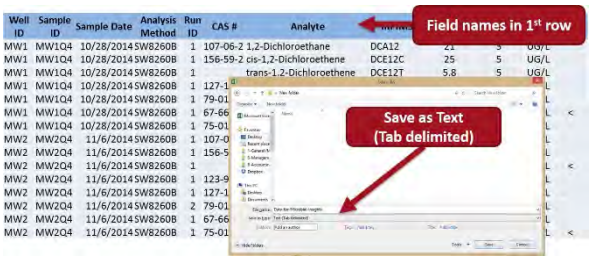
Is that low, medium or high?

In practice, biodegradation depends not just on the presence but the actual concentrations of the contaminant degrading microorganisms. The estimated percentile ranks retrieved from the MI Database answer the question "Is that low, medium or high?" by comparing your results to those of the literally thousands of other environmental samples submitted to MI for analysis over the last 20+ years.

Retrieving Estimated Percentile Ranks

With your report, you were emailed a passcode and link enabling you to login to the Client Portal. Just enter basic information about the sample (e.g. contaminant concentrations) to aid in understanding the links between environmental conditions and microbial populations and you can retrieve estimates of the percentile ranks of your results based on those compiled in the MI database at no additional charge.





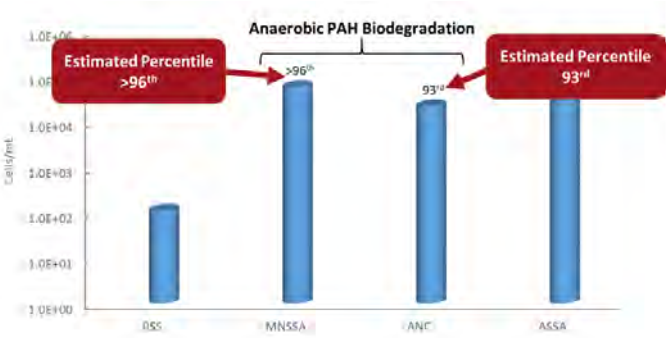
All site specific data will be treated as confidential and uploading is easy.

You can even upload chemical and geochemical data from EDDs. Just save as a Tab Delimited text file.

Example - Using Estimated Percentile for MNA Assessment at an MGP Site

CENSUS® qPCR was performed to quantify anaerobic naphthalene carboxylase (ANC) and naphthyl-2-methylsuccinate synthase (MNSSA) to assess anaerobic biodegradation of naphthalene and methyl-naphthalene under existing site conditions.

- Not only were ANC and MNSSA genes detected, but these functional genes responsible for anaerobic biodegradation of PAHs were present at concentrations "far better than average" based on the estimated percentile ranks.
- Demonstrating high concentrations of ANC and MNSSA gave an additional line of evidence indicating growth substantial populations of anaerobic PAH degraders and suggested a greater probability that monitored natural attenuation (MNA) will be successful.



How to Use Estimated Percentile Ranks from the Microbial Insights Database

The MI Database and Client Portal

The Microbial Insights Database is the largest collection of field concentrations of key microorganisms and functional genes currently containing qPCR and QuantArray results for more than 32,000 unique groundwater, soil, and sediment samples from all 50 states and 33 countries worldwide. Driven by field samples, the database reflects the impacts of common contaminants, geochemical conditions, and site management practices on critical microbial populations.

With your report, you received a passcode enabling you to retrieve estimates of the percentile ranks of your results based on those compiled in the MI database at no additional charge. When accessing the database, you will be asked to provide background information about the sample (e.g. contaminant concentrations) to aid in understanding the links between environmental conditions and microbial populations. As with all client information provided to MI, site specific data will be treated as confidential.

Is that low, medium or high?

In practice, biodegradation depends not just on the presence but the actual concentrations of the contaminant degrading microorganisms. Simply put, qPCR and QuantArray results demonstrating high concentrations of target microorganisms or functional genes suggest in situ selection, enrichment and growth of those specific contaminant degraders and therefore a greater probability that monitored natural attenuation (MNA) or bioremediation will be successful.

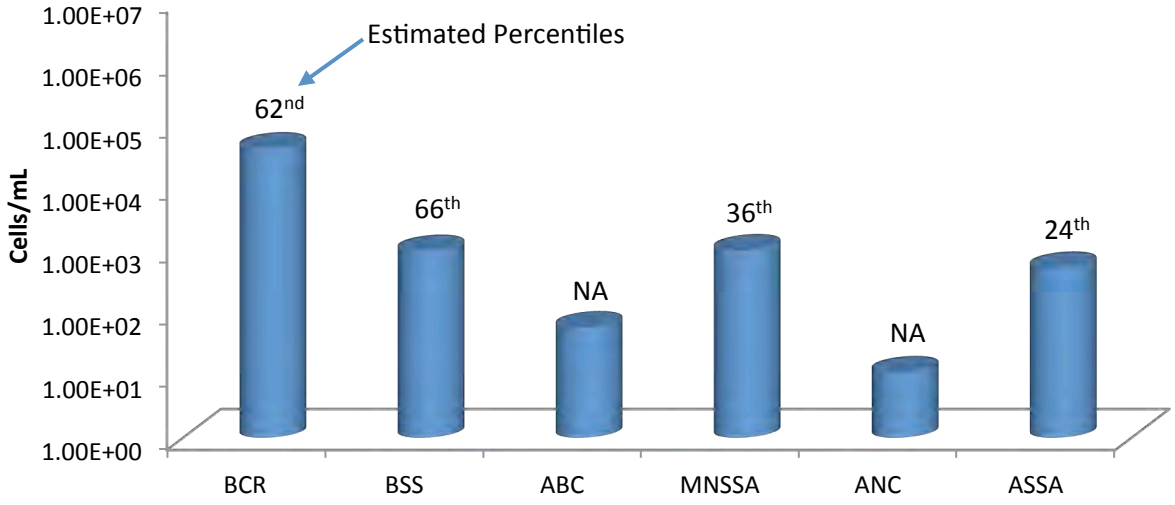
Is that a low, medium, or high concentration? The estimated percentile ranks retrieved from the MI Database answer that question by comparing your qPCR and QuantArray results to those of the literally thousands of other environmental samples submitted to MI for analysis over the last 20+ years.

Using the Estimated Percentile - Interpretation Examples

MNA Assessment – Petroleum Hydrocarbon Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between samples obtained from background and impacted wells. The estimated percentile ranks however provide an additional avenue for comparison and evaluation of treatment options as shown below.

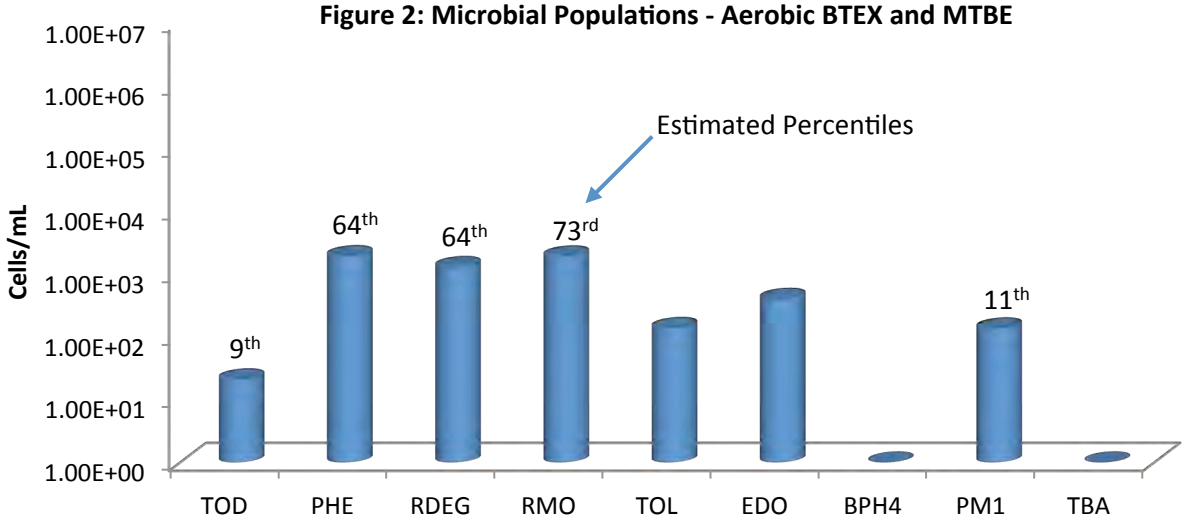
Figure 1: Microbial Populations - Anaerobic BTEX and PAHs



Anaerobic BTEX and PAH Biodegradation (Figure 1):

- With moderate concentrations of functional genes involved in anaerobic BTEX metabolism detected, the QuantArray-Petro® results were encouraging in terms of evaluating biodegradation potential under existing site conditions.
- More specifically, benzylsuccinate synthase (BSS) was detected on the order of nearly 10^3 cells/mL indicating the presence of a substantial population (66^{th} percentile) capable of anaerobic biodegradation of toluene and other alkyl substituted benzenes.
- Naphthyl-2-methylsuccinate synthase (MNSSA) and alkylsuccinate synthase (ASSA) genes were also detected indicating the potential for anaerobic biodegradation of 2-methylnaphthalene and normal alkanes.
- The concentration of MNSSA genes would be considered modest with an estimated percentile of 36^{th}.
- While the percentile rank for MNSSA would be "below average", a number of additional factors should be considered.
    - First, anaerobic hydrocarbon degraders are less prevalent than aerobic BTEX degraders and overall detection frequencies for many genes involved in anaerobic hydrocarbon biodegradation are less than 50%.
    - Therefore, the detection of genes like BSS, MNSSA, ASSA, anaerobic benzene carboxylase (ABC), and anaerobic naphthalene carboxylase (ANC) even at low concentrations is certainly noteworthy and inherently "better than average".
    - The estimated percentiles for all assays are based only on samples where the concentration of the target gene was greater than the practical quantitation limit (PQL).
    - For less commonly detected targets like many of the genes involved in anaerobic hydrocarbon biodegradation this is an especially important consideration.
    - Excluding samples where a gene target is below the PQL ensured that the median concentrations of less commonly detected targets would not be unduly biased low by the fact that the gene is not detected in most samples.
- Anaerobic benzene carboxylase (ABC) and naphthalene carboxylase (ANC) genes were also detected indicating the presence of bacterial populations capable of anaerobic biodegradation of benzene and naphthalene.
- For newly identified genes like ABC and ANC, estimated percentile ranks are not yet available due to the limited number of field samples that have been analyzed to date.
- However, like MNSSA and other genes involved in anaerobic hydrocarbon biodegradation, ABC and ANC detection frequencies are relatively low so the detection of these genes even at low concentrations should be considered when evaluating biodegradation potential under existing site conditions.

Figure 2: Microbial Populations - Aerobic BTEX and MTBE



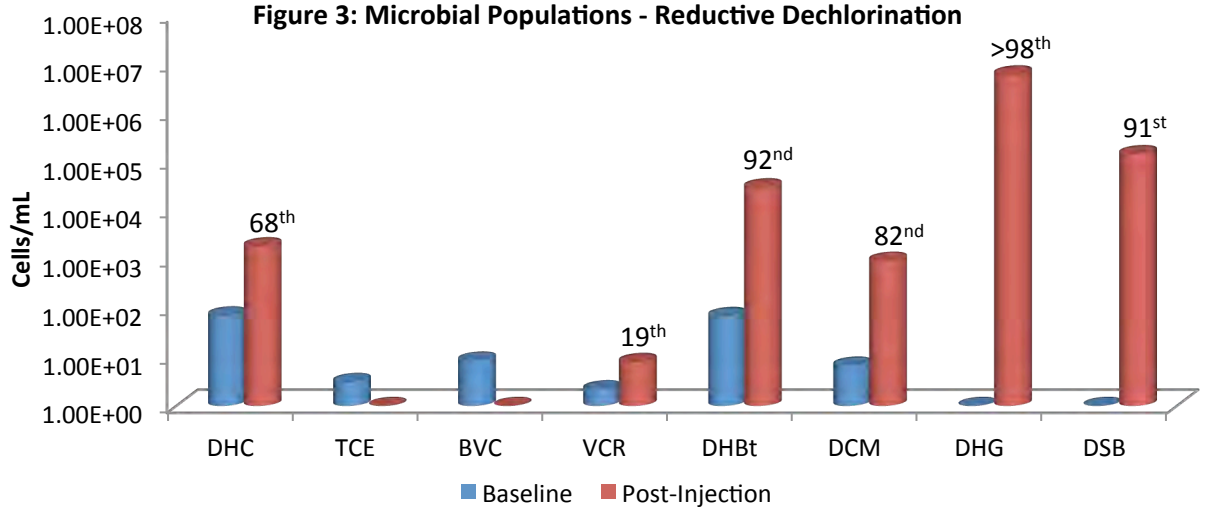
Aerobic BTEX and MTBE Biodegradation (Figure 2):

- With growing evidence that aromatic oxygenases function at low dissolved oxygen concentrations, aerobic BTEX biodegradation pathways should also be evaluated when considering MNA.
- Again, the QuantArray-Petro results were encouraging – genes encoding the first step in multiple pathways for aerobic BTEX biodegradation were detected indicating the presence of a diverse population of aerobic BTEX degraders.
- However, aerobic BTEX degraders are often considered ubiquitous. Therefore answering the question "Is that low, medium or high?" becomes especially important when evaluating aerobic BTEX biodegradation at petroleum hydrocarbon sites.
- In this case, the estimated percentile ranks of the concentrations of toluene/benzene monooxygenase (RMO and RDEG) and phenol hydroxylase (PHE) genes ranged from the 64th to 73rd percentile.
- In other words, the concentrations of RMO, RDEG, and PHE detected in this groundwater sample were greater than the concentrations detected in 64% to 73% of all other groundwater samples where these genes were analyzed and detected above the PQL.
- Aerobic BTEX degraders are common in the environment, but in this sample concentrations of toluene/benzene monooxygenase genes could be viewed as "better than average" when compared to the MI Database.

Biostimulation – Chlorinated Solvent Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between baseline and post-injection monitoring events as shown below (Figure 3). The estimated percentile ranks however provide an additional avenue for comparison and evaluation of remedy performance.

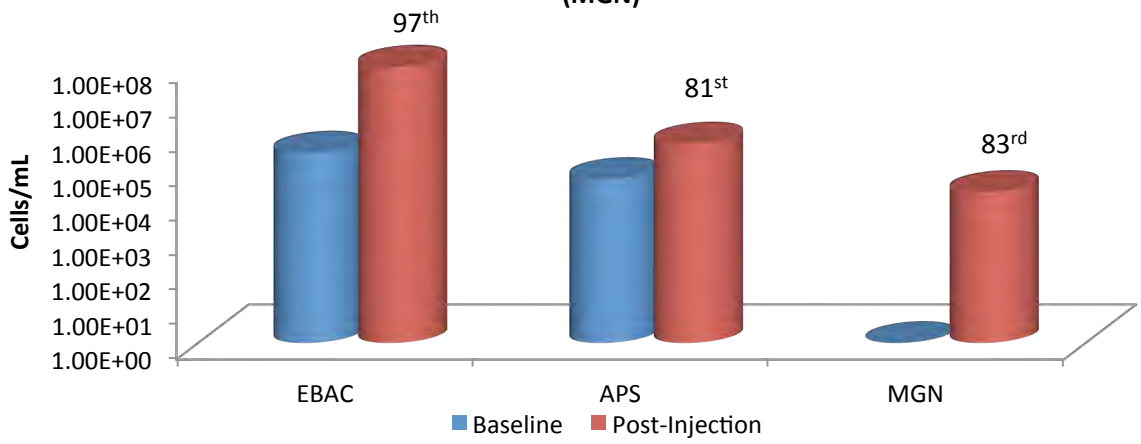
Figure 3: Microbial Populations - Reductive Dechlorination



- During the baseline groundwater sampling event, *Dehalococcoides* and vinyl chloride reductase genes were detected indicating the potential for complete reductive dechlorination of PCE and TCE to ethene.
- However, the *Dehalococcoides* concentration was well below the 10^4 cells/mL recommended by Lu et al. (2006) for generally effective rates of reductive dechlorination.
- Based on qPCR results as well as traditional groundwater monitoring, biostimulation with electron donor addition was selected as the site management plan.
- By the first monitoring event after injection, populations of halorespiring bacteria had increased substantially in response to electron donor addition.
    - *Dehalobacter* populations increased by more than two orders of magnitude to post-injection concentrations greater than 10^4 cells/mL (92^{nd} percentile).
    - *Dehalogenimonas* (10^6 cells/mL) and *Desulfitobacterium* (10^5 cells/mL) which had not been detected prior electron donor addition were present at concentrations greater than observed in over 90% of other groundwater samples where these halorespiring bacteria were detected.
- After injection, *Dehalococcoides* populations increased by more than an order of magnitude to a concentration of over 10^3 cells/mL (68^{th} percentile) demonstrating growth of this key group of halorespiring bacteria.
- Despite a substantial increase and a "better than average" concentration, the *Dehalococcoides* population was still below the 10^4 cells/mL threshold and vinyl chloride reductase gene copies were low (19^{th} percentile).
    - In terms of electron donors and acceptors, the metabolic capabilities of *Dehalococcoides* are rather specialized (hydrogen utilizing obligate halorespiring bacteria) so the median concentration is low. With a low median concentration across the database, a "better than average" *Dehalococcoides* concentration in a given sample may not exceed the 10^4 cells/mL threshold established for effective reductive dechlorination (Lu et al. 2006) and ethene production (Microbial Insights, unpublished data).

- In this case, the initial growth of *Dehalococcoides* was substantial but may have been somewhat hindered by competition with sulfate reducing bacteria (Figure 4 below).
    - The baseline population of sulfate reducing bacteria was moderate (10^4 cells/mL; 63rd percentile). Consistent with an observed decreased in dissolved sulfate concentrations, populations of sulfate reducing bacteria increased and were detected at a relatively high concentration (81st percentile) after electron donor addition.
    - After injection, methanogen populations also increased to a relatively high concentration (83rd percentile) suggesting generation of methanogenic conditions.
- With sulfate depletion and generation of highly anaerobic conditions more conducive to reductive dechlorination, *Dehalococcoides* populations may continue to increase and exceed the 10^4 *Dehalococcoides* cells/mL threshold in subsequent monitoring events.
- Overall, QuantArray analysis conclusively demonstrated that electron donor addition stimulated growth of halorespiring bacteria with the estimated percentiles retrieved from the MI Database providing the "low, medium or high" perspective to the observed changes in microbial populations.

Figure 4: Total Bacteria (EBAC), Sulfate Reducering Bacteria (APS) and Methanogens (MGN)



References

Lu, X., J.T. Wilson, and D.H. Kampbell. 2006. Relationship between *Dehalococcoides* DNA in ground water and rates of reductive dechlorination at field scale. *Water Research* 40 no. 16: 3131-3140.

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Client: RJ Modashia
ALS Laboratory Group
10450 Stancliff Rd
Suite 210
Houston, TX 77040

Phone: 281-575-2279

Fax:

Identifier: 095QL **Date Rec:** 12/20/2019 **Report Date:** 12/27/2019

Client Project #: NW01312.0150 **Client Project Name:** LHAAP-58

Purchase Order #:

Analysis Requested: CENSUS

Reviewed By:



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MICROBIAL INSIGHTS, INC.

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CENSUS

Client: **ALS Laboratory Group**
Project: LHAAP-58

MI Project Number: **095QL**
Date Received: 12/20/2019

Sample Information

Client Sample ID:		**35AWW20_121919**	**35AWW06_121919**	**LHSMW07_121919**
Sample Date:		12/19/2019	12/19/2019	12/19/2019
Units:		cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		HT	HT	HT
Dechlorinating Bacteria				
Dehalococcoides	*DHC*	**2.78E+04**	**8.03E+01**	**9.49E+02**
tceA Reductase	TCE	<5.00E-01	<1.00E+00	**2.00E-01 (J)**
BAV1 Vinyl Chloride Reductase	BVC	**4.91E+04**	**2.96E+01**	**3.30E+00**
Vinyl Chloride Reductase	VCR	**4.60E+00**	<1.00E+00	**2.71E+02**
Dehalobacter spp.	*DHBt*	**6.07E+03**	<1.02E+01	**5.23E+03**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

Quality Assurance/Quality Control Data

Samples Received **12/20/2019**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHBt	12/20/2019	12/27/2019	4 °C	111%	non-detect	non-detect
DHC	12/20/2019	12/27/2019	4 °C	111%	non-detect	non-detect
BVC	12/20/2019	12/27/2019	4 °C	111%	non-detect	non-detect
TCE	12/20/2019	12/27/2019	4 °C	110%	non-detect	non-detect
VCR	12/20/2019	12/27/2019	4 °C	108%	non-detect	non-detect

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January 08, 2020

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS19121257**

Laboratory Results for: **LHAAP/SITE58**

Dear Marcia,

ALS Environmental received 7 sample(s) on Dec 21, 2019 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: DAYNA.FISHER
RJ Modashia
Project Manager

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
Work Order: HS19121257

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19121257-01	35AWW01_122019	Groundwater		20-Dec-2019 08:35	21-Dec-2019 10:10	☐
HS19121257-02	LHSMW06_122019	Groundwater		20-Dec-2019 09:25	21-Dec-2019 10:10	☐
HS19121257-03	LHSMW06_122019_a	Groundwater		20-Dec-2019 09:25	21-Dec-2019 10:10	☐
HS19121257-04	35AWW15_122019	Groundwater		20-Dec-2019 08:50	21-Dec-2019 10:10	☐
HS19121257-05	35AWW21_122019	Groundwater		20-Dec-2019 10:25	21-Dec-2019 10:10	☐
HS19121257-06	35AWW21_122019_a	Groundwater		20-Dec-2019 10:25	21-Dec-2019 10:10	☐
HS19121257-07	Trip Blank	Water		20-Dec-2019 00:00	21-Dec-2019 10:10	☐

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
Work Order: HS19121257

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R353818

Sample ID: CCV

- 1,2,3_Trichlorobenzene and 2_Butanone exceeded %D limits for CCV. Samples are ND for these compounds.

Sample ID: VLCSW-200103

- 1,2,3_Trichlorobenzene is also high for LCS.

Sample ID: HS19121484-01MS

- MS and MSD are for an unrelated sample

Batch ID: R353734

Sample ID: CCV

- Carbon Disulfide exceeded %D limits for CCV. Samples are ND for this compound.

Sample ID: CCV-END

- The internal standard amount was 2 times our normal added amount due to auto addition from the autosampler, causing low compound recoveries

Sample ID: VLCSW-200102

- 1,2,3_Trichlorobenzene exceeded QC limits for LCS. CCV is OK.

Sample ID: 35AWW01_122019 (HS19121257-01MSD)

- MS/MSD RPD recovered above upper control limits Hexachlorobutadiene

Metals by Method SW6020

Batch ID: 149161

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
Sample ID: 35AWW01_122019
Collection Date: 20-Dec-2019 08:35

ANALYTICAL REPORT
WorkOrder:HS19121257
Lab ID:HS19121257-01
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	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 16:22
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 16:22
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	02-Jan-2020 16:22
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 16:22
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	02-Jan-2020 16:22
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 16:22
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	02-Jan-2020 16:22
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
Sample ID: 35AWW01_122019
Collection Date: 20-Dec-2019 08:35

ANALYTICAL REPORT
WorkOrder:HS19121257
Lab ID:HS19121257-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 16:22
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 16:22
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 16:22
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 16:22
Surr: 1,2-Dichloroethane-d4	*96.5*			**0**	*81-118*	*%REC*	*1*	*02-Jan-2020 16:22*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*02-Jan-2020 16:22*
Surr: Dibromofluoromethane	*97.0*			**0**	*80-119*	*%REC*	*1*	*02-Jan-2020 16:22*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*02-Jan-2020 16:22*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
Sample ID: LHSMW06_122019
Collection Date: 20-Dec-2019 09:25

ANALYTICAL REPORT
WorkOrder:HS19121257
Lab ID:HS19121257-02
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	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:59
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:59
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
1,1-Dichloroethane	**8.4**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 19:59
1,1-Dichloroethene	**19**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 19:59
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:59
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:59
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:59
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:59
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:59
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:59
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:59
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:59
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:59
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:59
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:59
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 19:59
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	02-Jan-2020 19:59
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:59
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	02-Jan-2020 19:59
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 19:59
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	02-Jan-2020 19:59
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
Sample ID: LHSMW06_122019
Collection Date: 20-Dec-2019 09:25

ANALYTICAL REPORT
WorkOrder:HS19121257
Lab ID:HS19121257-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:59
cis-1,2-Dichloroethene	**68**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 19:59
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 19:59
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 19:59
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 19:59
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Tetrachloroethene	**1.9**		**0.30**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 19:59
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:59
trans-1,2-Dichloroethene	**1.4**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 19:59
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Trichloroethene	**17**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 19:59
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 19:59
Vinyl chloride	**5.7**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 19:59
Surr: 1,2-Dichloroethane-d4	*99.5*			**0**	*81-118*	*%REC*	*1*	*02-Jan-2020 19:59*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*02-Jan-2020 19:59*
Surr: Dibromofluoromethane	*97.5*			**0**	*80-119*	*%REC*	*1*	*02-Jan-2020 19:59*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*02-Jan-2020 19:59*
METALS BY ICPMS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 27-Dec-2019		Analyst: JHD
Arsenic	0.000500	U	0.000400	0.000500	0.00500	mg/L	1	03-Jan-2020 12:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
Sample ID: LHSMW06_122019_a
Collection Date: 20-Dec-2019 09:25

ANALYTICAL REPORT
WorkOrder:HS19121257
Lab ID:HS19121257-03
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	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:23
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 20:23
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
1,1-Dichloroethane	**8.4**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 20:23
1,1-Dichloroethene	**20**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 20:23
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 20:23
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 20:23
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 20:23
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:23
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:23
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 20:23
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:23
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 20:23
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 20:23
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 20:23
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:23
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 20:23
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	02-Jan-2020 20:23
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 20:23
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	02-Jan-2020 20:23
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 20:23
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	02-Jan-2020 20:23
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
Sample ID: LHSMW06_122019_a
Collection Date: 20-Dec-2019 09:25

ANALYTICAL REPORT
WorkOrder:HS19121257
Lab ID:HS19121257-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:23
cis-1,2-Dichloroethene	**68**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 20:23
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 20:23
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 20:23
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 20:23
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Tetrachloroethene	**1.9**		**0.30**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 20:23
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:23
trans-1,2-Dichloroethene	**1.5**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 20:23
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Trichloroethene	**17**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 20:23
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:23
Vinyl chloride	**5.6**		**0.20**	**0.50**	**1.0**	**UG/L**	1	02-Jan-2020 20:23
Surr: 1,2-Dichloroethane-d4	*99.4*			**0**	*81-118*	*%REC*	*1*	*02-Jan-2020 20:23*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*02-Jan-2020 20:23*
Surr: Dibromofluoromethane	*97.0*			**0**	*80-119*	*%REC*	*1*	*02-Jan-2020 20:23*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*02-Jan-2020 20:23*
METALS BY ICPMS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 27-Dec-2019		Analyst: JHD
Arsenic	0.000500	U	0.000400	0.000500	0.00500	mg/L	1	03-Jan-2020 15:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
Sample ID: 35AWW15_122019
Collection Date: 20-Dec-2019 08:50

ANALYTICAL REPORT
WorkOrder:HS19121257
Lab ID:HS19121257-04
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	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 20:47
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 20:47
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	02-Jan-2020 20:47
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 20:47
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	02-Jan-2020 20:47
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 20:47
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	02-Jan-2020 20:47
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
Sample ID: 35AWW15_122019
Collection Date: 20-Dec-2019 08:50

ANALYTICAL REPORT
WorkOrder:HS19121257
Lab ID:HS19121257-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	02-Jan-2020 20:47
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	02-Jan-2020 20:47
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	02-Jan-2020 20:47
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	02-Jan-2020 20:47
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*81-118*	*%REC*	*1*	*02-Jan-2020 20:47*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*02-Jan-2020 20:47*
Surr: Dibromofluoromethane	*97.9*			**0**	*80-119*	*%REC*	*1*	*02-Jan-2020 20:47*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*02-Jan-2020 20:47*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
Sample ID: 35AWW21_122019
Collection Date: 20-Dec-2019 10:25

ANALYTICAL REPORT
WorkOrder:HS19121257
Lab ID:HS19121257-05
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	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 15:58
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	03-Jan-2020 15:58
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	03-Jan-2020 15:58
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 15:58
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	03-Jan-2020 15:58
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	03-Jan-2020 15:58
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	03-Jan-2020 15:58
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
Sample ID: 35AWW21_122019
Collection Date: 20-Dec-2019 10:25

ANALYTICAL REPORT
WorkOrder:HS19121257
Lab ID:HS19121257-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	03-Jan-2020 15:58
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	03-Jan-2020 15:58
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 15:58
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:58
Surr: 1,2-Dichloroethane-d4	*99.7*			**0**	*81-118*	*%REC*	*1*	*03-Jan-2020 15:58*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*03-Jan-2020 15:58*
Surr: Dibromofluoromethane	*97.4*			**0**	*80-119*	*%REC*	*1*	*03-Jan-2020 15:58*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*03-Jan-2020 15:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
Sample ID: 35AWW21_122019_a
Collection Date: 20-Dec-2019 10:25

ANALYTICAL REPORT
WorkOrder:HS19121257
Lab ID:HS19121257-06
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	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 16:22
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	03-Jan-2020 16:22
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	03-Jan-2020 16:22
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 16:22
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	03-Jan-2020 16:22
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	03-Jan-2020 16:22
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	03-Jan-2020 16:22
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
Sample ID: 35AWW21_122019_a
Collection Date: 20-Dec-2019 10:25

ANALYTICAL REPORT
WorkOrder:HS19121257
Lab ID:HS19121257-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	03-Jan-2020 16:22
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	03-Jan-2020 16:22
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 16:22
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 16:22
Surr: 1,2-Dichloroethane-d4	*99.7*			**0**	*81-118*	*%REC*	*1*	*03-Jan-2020 16:22*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*03-Jan-2020 16:22*
Surr: Dibromofluoromethane	*97.3*			**0**	*80-119*	*%REC*	*1*	*03-Jan-2020 16:22*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*03-Jan-2020 16:22*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
Sample ID: Trip Blank
Collection Date: 20-Dec-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19121257
Lab ID:HS19121257-07
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	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 15:34
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	03-Jan-2020 15:34
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	03-Jan-2020 15:34
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 15:34
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	03-Jan-2020 15:34
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	03-Jan-2020 15:34
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	03-Jan-2020 15:34
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
Sample ID: Trip Blank
Collection Date: 20-Dec-2019 00:00

ANALYTICAL REPORT
WorkOrder:HS19121257
Lab ID:HS19121257-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	03-Jan-2020 15:34
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	03-Jan-2020 15:34
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	03-Jan-2020 15:34
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	03-Jan-2020 15:34
Surr: 1,2-Dichloroethane-d4	*99.1*			**0**	*81-118*	*%REC*	*1*	*03-Jan-2020 15:34*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*03-Jan-2020 15:34*
Surr: Dibromofluoromethane	*97.6*			**0**	*80-119*	*%REC*	*1*	*03-Jan-2020 15:34*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*03-Jan-2020 15:34*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 08-Jan-20

Weight / Prep Log

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

Batch ID: 149161 **Start Date:** 27 Dec 2019 09:00 **End Date:** 27 Dec 2019 13:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS19121257-02		10 (mL)	10 (mL)	1
HS19121257-03		10 (mL)	10 (mL)	1

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 149161 (0)	**Test Name :** METALS BY ICPMS BY SW6020A				**Matrix:** Groundwater	
HS19121257-02	LHSMW06_122019	20 Dec 2019 09:25		27 Dec 2019 13:00	03 Jan 2020 12:52	1
HS19121257-03	LHSMW06_122019_a	20 Dec 2019 09:25		27 Dec 2019 13:00	03 Jan 2020 15:52	1
Batch ID: R353734 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS19121257-01	35AWW01_122019	20 Dec 2019 08:35			02 Jan 2020 16:22	1
HS19121257-02	LHSMW06_122019	20 Dec 2019 09:25			02 Jan 2020 19:59	1
HS19121257-03	LHSMW06_122019_a	20 Dec 2019 09:25			02 Jan 2020 20:23	1
HS19121257-04	35AWW15_122019	20 Dec 2019 08:50			02 Jan 2020 20:47	1
Batch ID: R353818 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS19121257-07	Trip Blank	20 Dec 2019 00:00			03 Jan 2020 15:34	1
Batch ID: R353818 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS19121257-05	35AWW21_122019	20 Dec 2019 10:25			03 Jan 2020 15:58	1
HS19121257-06	35AWW21_122019_a	20 Dec 2019 10:25			03 Jan 2020 16:22	1

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

QC BATCH REPORT

Batch ID: 149161 (0) **Instrument: ICPMS05** **Method: METALS BY ICPMS BY SW6020A**

MBLK Sample ID: **MBLK-149161** Units: **mg/L** Analysis Date: **03-Jan-2020 12:00**
Client ID: Run ID: **ICPMS05_353764** SeqNo: **5423038** PrepDate: **27-Dec-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.000500	0.00500								U

LCS Sample ID: **LCS-149161** Units: **mg/L** Analysis Date: **03-Jan-2020 12:03**
Client ID: Run ID: **ICPMS05_353764** SeqNo: **5423039** PrepDate: **27-Dec-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05072	0.00500	0.05	0	101	84 - 116				

MS Sample ID: **HS19121036-01MS** Units: **mg/L** Analysis Date: **03-Jan-2020 12:14**
Client ID: Run ID: **ICPMS05_353764** SeqNo: **5423044** PrepDate: **27-Dec-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04954	0.00500	0.05	0	99.1	84 - 116				

MSD Sample ID: **HS19121036-01MSD** Units: **mg/L** Analysis Date: **03-Jan-2020 12:17**
Client ID: Run ID: **ICPMS05_353764** SeqNo: **5423045** PrepDate: **27-Dec-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04823	0.00500	0.05	0	96.5	84 - 116	0.04954	2.68	20	

PDS Sample ID: **HS19121036-01PDS** Units: **mg/L** Analysis Date: **03-Jan-2020 12:19**
Client ID: Run ID: **ICPMS05_353764** SeqNo: **5423046** PrepDate: **27-Dec-2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09811	0.00500	0.1	0	98.1	80 - 120				

SD Sample ID: **HS19121036-01SD** Units: **mg/L** Analysis Date: **03-Jan-2020 12:12**
Client ID: Run ID: **ICPMS05_353764** SeqNo: **5423043** PrepDate: **27-Dec-2019** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.00250	0.0250					0.000238	0	10	U

The following samples were analyzed in this batch: HS19121257-02 HS19121257-03

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

QC BATCH REPORT

Batch ID: R353734 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200102** Units: **UG/L** Analysis Date: **02-Jan-2020 12:46**
Client ID: Run ID: **VOA6_353734** SeqNo: **5421202** 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	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

QC BATCH REPORT

Batch ID: R353734 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200102** Units: **UG/L** Analysis Date: **02-Jan-2020 12:46**
Client ID: Run ID: **VOA6_353734** SeqNo: **5421202** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	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	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	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	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*46.95*	*1.0*	*50*	*0*	*93.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.6*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*47.85*	*1.0*	*50*	*0*	*95.7*	*80 - 119*				
Surr: Toluene-d8	*51.33*	*1.0*	*50*	*0*	*103*	*89 - 112*				

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

QC BATCH REPORT

Batch ID: R353734 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200102** Units: **UG/L** Analysis Date: **02-Jan-2020 11:58**
Client ID: Run ID: **VOA6_353734** SeqNo: **5421201** 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	20.51	1.0	20	0	103	78 - 124				
1,1,1-Trichloroethane	20.78	1.0	20	0	104	74 - 131				
1,1,2,2-Tetrachloroethane	21.78	1.0	20	0	109	71 - 121				
1,1,2-Trichloroethane	21.13	1.0	20	0	106	80 - 119				
1,1-Dichloroethane	23.41	1.0	20	0	117	77 - 125				
1,1-Dichloroethene	18.5	1.0	20	0	92.5	71 - 131				
1,1-Dichloropropene	21.22	1.0	20	0	106	78 - 125				
1,2,3-Trichlorobenzene	26.79	1.0	20	0	134	69 - 129				S
1,2,3-Trichloropropane	22.17	1.0	20	0	111	73 - 122				
1,2,4-Trichlorobenzene	23.14	1.0	20	0	116	69 - 130				
1,2,4-Trimethylbenzene	22.04	1.0	20	0	110	76 - 124				
1,2-Dibromo-3-chloropropane	20.77	1.0	20	0	104	62 - 128				
1,2-Dibromoethane	20.49	1.0	20	0	102	77 - 121				
1,2-Dichlorobenzene	20.59	1.0	20	0	103	80 - 119				
1,2-Dichloroethane	20.41	1.0	20	0	102	73 - 128				
1,2-Dichloropropane	21.89	1.0	20	0	109	78 - 122				
1,3,5-Trimethylbenzene	22.48	1.0	20	0	112	75 - 124				
1,3-Dichlorobenzene	20.89	1.0	20	0	104	80 - 119				
1,3-Dichloropropane	21.56	1.0	20	0	108	80 - 119				
1,4-Dichlorobenzene	20.56	1.0	20	0	103	79 - 118				
2,2-Dichloropropane	21.09	1.0	20	0	105	60 - 139				
2-Butanone	45.04	2.0	40	0	113	56 - 143				
2-Chlorotoluene	23.4	1.0	20	0	117	79 - 122				
2-Hexanone	41.42	2.0	40	0	104	57 - 139				
4-Chlorotoluene	22.1	1.0	20	0	111	78 - 122				
4-Isopropyltoluene	21.78	1.0	20	0	109	77 - 127				
4-Methyl-2-pentanone	41.53	2.0	40	0	104	67 - 130				
Acetone	45.36	2.0	40	0	113	39 - 160				
Benzene	22.85	1.0	20	0	114	79 - 120				
Bromobenzene	21.04	1.0	20	0	105	80 - 120				
Bromochloromethane	21.54	1.0	20	0	108	78 - 123				
Bromodichloromethane	20.7	1.0	20	0	104	79 - 125				
Bromoform	19.48	1.0	20	0	97.4	66 - 130				
Bromomethane	15.08	1.0	20	0	75.4	53 - 141				

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

QC BATCH REPORT

Batch ID: R353734 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200102** Units: **UG/L** Analysis Date: **02-Jan-2020 11:58**
Client ID: Run ID: **VOA6_353734** SeqNo: **5421201** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	47.72	2.0	40	0	119	64 - 133				
Carbon tetrachloride	19.13	1.0	20	0	95.6	72 - 136				
Chlorobenzene	20.34	1.0	20	0	102	82 - 118				
Chloroethane	19.4	1.0	20	0	97.0	60 - 138				
Chloroform	20.49	1.0	20	0	102	79 - 124				
Chloromethane	19.08	1.0	20	0	95.4	50 - 139				
cis-1,2-Dichloroethene	22.6	1.0	20	0	113	78 - 123				
cis-1,3-Dichloropropene	22.01	1.0	20	0	110	75 - 124				
Dibromochloromethane	20.37	1.0	20	0	102	74 - 126				
Dibromomethane	20.47	1.0	20	0	102	79 - 123				
Dichlorodifluoromethane	21.42	1.0	20	0	107	32 - 152				
Ethylbenzene	21.13	1.0	20	0	106	79 - 121				
Hexachlorobutadiene	20.81	1.0	20	0	104	66 - 134				
Isopropylbenzene	20.72	1.0	20	0	104	72 - 131				
m,p-Xylene	42.02	2.0	40	0	105	80 - 121				
Methylene chloride	22.02	2.0	20	0	110	74 - 124				
Naphthalene	21.46	1.0	20	0	107	61 - 128				
n-Butylbenzene	21.66	1.0	20	0	108	75 - 128				
n-Propylbenzene	22.54	1.0	20	0	113	76 - 126				
o-Xylene	20.89	1.0	20	0	104	78 - 122				
sec-Butylbenzene	21.89	1.0	20	0	109	77 - 126				
Styrene	21.01	1.0	20	0	105	78 - 123				
tert-Butylbenzene	21.97	1.0	20	0	110	78 - 124				
Tetrachloroethene	19.33	1.0	20	0	96.6	74 - 129				
Toluene	21.62	1.0	20	0	108	80 - 121				
trans-1,2-Dichloroethene	22.47	1.0	20	0	112	75 - 124				
trans-1,3-Dichloropropene	21.64	1.0	20	0	108	73 - 127				
Trichloroethene	20.57	1.0	20	0	103	79 - 123				
Trichlorofluoromethane	18.39	1.0	20	0	91.9	65 - 141				
Vinyl chloride	21.77	1.0	20	0	109	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.11*	*1.0*	*50*	*0*	*104*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.92*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*51.17*	*1.0*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*49.02*	*1.0*	*50*	*0*	*98.0*	*89 - 112*				

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

QC BATCH REPORT

Batch ID: R353734 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS19121257-01MS** Units: **UG/L** Analysis Date: **02-Jan-2020 17:11**
Client ID: **35AWW01_122019** Run ID: **VOA6_353734** SeqNo: **5422710** 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	19.85	1.0	20	0	99.2	78 - 124				
1,1,1-Trichloroethane	19.9	1.0	20	0	99.5	74 - 131				
1,1,2,2-Tetrachloroethane	21.6	1.0	20	0	108	71 - 121				
1,1,2-Trichloroethane	20.5	1.0	20	0	102	80 - 119				
1,1-Dichloroethane	21.56	1.0	20	0	108	77 - 125				
1,1-Dichloroethene	18.21	1.0	20	0	91.1	71 - 131				
1,1-Dichloropropene	21	1.0	20	0	105	78 - 125				
1,2,3-Trichlorobenzene	25.55	1.0	20	0	128	69 - 129				
1,2,3-Trichloropropane	21.96	1.0	20	0	110	73 - 122				
1,2,4-Trichlorobenzene	22.84	1.0	20	0	114	69 - 130				
1,2,4-Trimethylbenzene	22.78	1.0	20	0	114	76 - 124				
1,2-Dibromo-3-chloropropane	20.7	1.0	20	0	103	62 - 128				
1,2-Dibromoethane	19.57	1.0	20	0	97.9	77 - 121				
1,2-Dichlorobenzene	20.61	1.0	20	0	103	80 - 119				
1,2-Dichloroethane	19.09	1.0	20	0	95.5	73 - 128				
1,2-Dichloropropane	20.85	1.0	20	0	104	78 - 122				
1,3,5-Trimethylbenzene	23.37	1.0	20	0	117	75 - 124				
1,3-Dichlorobenzene	21.65	1.0	20	0	108	80 - 119				
1,3-Dichloropropane	20.68	1.0	20	0	103	80 - 119				
1,4-Dichlorobenzene	20.88	1.0	20	0	104	79 - 118				
2,2-Dichloropropane	20.13	1.0	20	0	101	60 - 139				
2-Butanone	37.73	2.0	40	0	94.3	56 - 143				
2-Chlorotoluene	24.36	1.0	20	0	122	79 - 122				
2-Hexanone	39.14	2.0	40	0	97.9	57 - 139				
4-Chlorotoluene	22.94	1.0	20	0	115	78 - 122				
4-Isopropyltoluene	23.16	1.0	20	0	116	77 - 127				
4-Methyl-2-pentanone	41.97	2.0	40	0	105	67 - 130				
Acetone	27.69	2.0	40	0	69.2	39 - 160				
Benzene	21.47	1.0	20	0	107	79 - 120				
Bromobenzene	21.32	1.0	20	0	107	80 - 120				
Bromochloromethane	18.92	1.0	20	0	94.6	78 - 123				
Bromodichloromethane	19.15	1.0	20	0	95.7	79 - 125				
Bromoform	18.43	1.0	20	0	92.2	66 - 130				
Bromomethane	12.02	1.0	20	0	60.1	53 - 141				

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

QC BATCH REPORT

Batch ID: R353734 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS19121257-01MS** Units: **UG/L** Analysis Date: **02-Jan-2020 17:11**
Client ID: **35AWW01_122019** Run ID: **VOA6_353734** SeqNo: **5422710** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	46.13	2.0	40	0	115	64 - 133				
Carbon tetrachloride	19.34	1.0	20	0	96.7	72 - 136				
Chlorobenzene	19.95	1.0	20	0	99.8	82 - 118				
Chloroethane	18.38	1.0	20	0	91.9	60 - 138				
Chloroform	18.87	1.0	20	0	94.4	79 - 124				
Chloromethane	18.66	1.0	20	0	93.3	50 - 139				
cis-1,2-Dichloroethene	21.05	1.0	20	0	105	78 - 123				
cis-1,3-Dichloropropene	20.5	1.0	20	0	102	75 - 124				
Dibromochloromethane	19.65	1.0	20	0	98.3	74 - 126				
Dibromomethane	18.61	1.0	20	0	93.0	79 - 123				
Dichlorodifluoromethane	22.57	1.0	20	0	113	32 - 152				
Ethylbenzene	21.03	1.0	20	0	105	79 - 121				
Hexachlorobutadiene	20.68	1.0	20	0	103	66 - 134				
Isopropylbenzene	21.08	1.0	20	0	105	72 - 131				
m,p-Xylene	41.88	2.0	40	0	105	80 - 121				
Methylene chloride	19.86	2.0	20	0	99.3	74 - 124				
Naphthalene	21.13	1.0	20	0	106	61 - 128				
n-Butylbenzene	23.26	1.0	20	0	116	75 - 128				
n-Propylbenzene	23.99	1.0	20	0	120	76 - 126				
o-Xylene	20.42	1.0	20	0	102	78 - 122				
sec-Butylbenzene	23.75	1.0	20	0	119	77 - 126				
Styrene	20.08	1.0	20	0	100	78 - 123				
tert-Butylbenzene	23.59	1.0	20	0	118	78 - 124				
Tetrachloroethene	19.67	1.0	20	0	98.3	74 - 129				
Toluene	21.49	1.0	20	0	107	80 - 121				
trans-1,2-Dichloroethene	21.24	1.0	20	0	106	75 - 124				
trans-1,3-Dichloropropene	19.8	1.0	20	0	99.0	73 - 127				
Trichloroethene	19.76	1.0	20	0	98.8	79 - 123				
Trichlorofluoromethane	18.46	1.0	20	0	92.3	65 - 141				
Vinyl chloride	22.06	1.0	20	0	110	58 - 137				
Surr: 1,2-Dichloroethane-d4	*48.37*	*1.0*	*50*	*0*	*96.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.75*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*48.75*	*1.0*	*50*	*0*	*97.5*	*80 - 119*				
Surr: Toluene-d8	*51.66*	*1.0*	*50*	*0*	*103*	*89 - 112*				

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

QC BATCH REPORT

Batch ID: R353734 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19121257-01MSD** Units: **UG/L** Analysis Date: **02-Jan-2020 17:35**
Client ID: **35AWW01_122019** Run ID: **VOA6_353734** SeqNo: **5422711** 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	19.53	1.0	20	0	97.6	78 - 124	19.85	1.63	20	
1,1,1-Trichloroethane	19.2	1.0	20	0	96.0	74 - 131	19.9	3.56	20	
1,1,2,2-Tetrachloroethane	21.21	1.0	20	0	106	71 - 121	21.6	1.84	20	
1,1,2-Trichloroethane	19.88	1.0	20	0	99.4	80 - 119	20.5	3.07	20	
1,1-Dichloroethane	20.78	1.0	20	0	104	77 - 125	21.56	3.7	20	
1,1-Dichloroethene	17.3	1.0	20	0	86.5	71 - 131	18.21	5.16	20	
1,1-Dichloropropene	20.04	1.0	20	0	100	78 - 125	21	4.71	20	
1,2,3-Trichlorobenzene	21.42	1.0	20	0	107	69 - 129	25.55	17.6	20	
1,2,3-Trichloropropane	21.47	1.0	20	0	107	73 - 122	21.96	2.28	20	
1,2,4-Trichlorobenzene	19.08	1.0	20	0	95.4	69 - 130	22.84	17.9	20	
1,2,4-Trimethylbenzene	22.19	1.0	20	0	111	76 - 124	22.78	2.6	20	
1,2-Dibromo-3-chloropropane	18.93	1.0	20	0	94.7	62 - 128	20.7	8.91	20	
1,2-Dibromoethane	19.19	1.0	20	0	95.9	77 - 121	19.57	1.97	20	
1,2-Dichlorobenzene	20.22	1.0	20	0	101	80 - 119	20.61	1.9	20	
1,2-Dichloroethane	18.77	1.0	20	0	93.9	73 - 128	19.09	1.7	20	
1,2-Dichloropropane	20.04	1.0	20	0	100	78 - 122	20.85	3.97	20	
1,3,5-Trimethylbenzene	22.87	1.0	20	0	114	75 - 124	23.37	2.15	20	
1,3-Dichlorobenzene	20.86	1.0	20	0	104	80 - 119	21.65	3.72	20	
1,3-Dichloropropane	20.38	1.0	20	0	102	80 - 119	20.68	1.45	20	
1,4-Dichlorobenzene	20.39	1.0	20	0	102	79 - 118	20.88	2.38	20	
2,2-Dichloropropane	19.29	1.0	20	0	96.4	60 - 139	20.13	4.3	20	
2-Butanone	36.76	2.0	40	0	91.9	56 - 143	37.73	2.62	20	
2-Chlorotoluene	23.67	1.0	20	0	118	79 - 122	24.36	2.91	20	
2-Hexanone	38.23	2.0	40	0	95.6	57 - 139	39.14	2.35	20	
4-Chlorotoluene	22.46	1.0	20	0	112	78 - 122	22.94	2.14	20	
4-Isopropyltoluene	22.35	1.0	20	0	112	77 - 127	23.16	3.57	20	
4-Methyl-2-pentanone	41.18	2.0	40	0	103	67 - 130	41.97	1.91	20	
Acetone	26.05	2.0	40	0	65.1	39 - 160	27.69	6.1	20	
Benzene	20.61	1.0	20	0	103	79 - 120	21.47	4.1	20	
Bromobenzene	21.11	1.0	20	0	106	80 - 120	21.32	1	20	
Bromochloromethane	18.44	1.0	20	0	92.2	78 - 123	18.92	2.55	20	
Bromodichloromethane	18.93	1.0	20	0	94.7	79 - 125	19.15	1.13	20	
Bromoform	17.97	1.0	20	0	89.8	66 - 130	18.43	2.55	20	
Bromomethane	11.7	1.0	20	0	58.5	53 - 141	12.02	2.7	20	

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

QC BATCH REPORT

Batch ID: R353734 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS19121257-01MSD** Units: **UG/L** Analysis Date: **02-Jan-2020 17:35**
Client ID: **35AWW01_122019** Run ID: **VOA6_353734** SeqNo: **5422711** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	43.46	2.0	40	0	109	64 - 133	46.13	5.95	20	
Carbon tetrachloride	18.58	1.0	20	0	92.9	72 - 136	19.34	3.99	20	
Chlorobenzene	19.29	1.0	20	0	96.5	82 - 118	19.95	3.36	20	
Chloroethane	17.86	1.0	20	0	89.3	60 - 138	18.38	2.85	20	
Chloroform	18.41	1.0	20	0	92.1	79 - 124	18.87	2.48	20	
Chloromethane	17.73	1.0	20	0	88.7	50 - 139	18.66	5.11	20	
cis-1,2-Dichloroethene	19.97	1.0	20	0	99.8	78 - 123	21.05	5.27	20	
cis-1,3-Dichloropropene	19.78	1.0	20	0	98.9	75 - 124	20.5	3.54	20	
Dibromochloromethane	19.1	1.0	20	0	95.5	74 - 126	19.65	2.88	20	
Dibromomethane	18.25	1.0	20	0	91.3	79 - 123	18.61	1.92	20	
Dichlorodifluoromethane	20.89	1.0	20	0	104	32 - 152	22.57	7.74	20	
Ethylbenzene	20.52	1.0	20	0	103	79 - 121	21.03	2.44	20	
Hexachlorobutadiene	16.58	1.0	20	0	82.9	66 - 134	20.68	22	20	R
Isopropylbenzene	20.46	1.0	20	0	102	72 - 131	21.08	2.98	20	
m,p-Xylene	40.86	2.0	40	0	102	80 - 121	41.88	2.47	20	
Methylene chloride	19.05	2.0	20	0	95.3	74 - 124	19.86	4.16	20	
Naphthalene	19.35	1.0	20	0	96.7	61 - 128	21.13	8.82	20	
n-Butylbenzene	22.5	1.0	20	0	113	75 - 128	23.26	3.3	20	
n-Propylbenzene	23.25	1.0	20	0	116	76 - 126	23.99	3.13	20	
o-Xylene	20.08	1.0	20	0	100	78 - 122	20.42	1.68	20	
sec-Butylbenzene	23.08	1.0	20	0	115	77 - 126	23.75	2.85	20	
Styrene	19.82	1.0	20	0	99.1	78 - 123	20.08	1.32	20	
tert-Butylbenzene	22.73	1.0	20	0	114	78 - 124	23.59	3.7	20	
Tetrachloroethene	18.97	1.0	20	0	94.8	74 - 129	19.67	3.61	20	
Toluene	20.73	1.0	20	0	104	80 - 121	21.49	3.58	20	
trans-1,2-Dichloroethene	20.05	1.0	20	0	100	75 - 124	21.24	5.77	20	
trans-1,3-Dichloropropene	19.47	1.0	20	0	97.3	73 - 127	19.8	1.68	20	
Trichloroethene	19.21	1.0	20	0	96.0	79 - 123	19.76	2.83	20	
Trichlorofluoromethane	17.43	1.0	20	0	87.2	65 - 141	18.46	5.69	20	
Vinyl chloride	20.19	1.0	20	0	101	58 - 137	22.06	8.85	20	
Surr: 1,2-Dichloroethane-d4	*48.06*	*1.0*	*50*	*0*	*96.1*	*81 - 118*	*48.37*	*0.655*	*20*	
Surr: 4-Bromofluorobenzene	*50.59*	*1.0*	*50*	*0*	*101*	*85 - 114*	*50.75*	*0.332*	*20*	
Surr: Dibromofluoromethane	*48.53*	*1.0*	*50*	*0*	*97.1*	*80 - 119*	*48.75*	*0.459*	*20*	
Surr: Toluene-d8	*51.47*	*1.0*	*50*	*0*	*103*	*89 - 112*	*51.66*	*0.38*	*20*	

ALS Houston, US Date: 08-Jan-20

Client:	Bhate Environmental Associates, Inc.
Project:	LHAAP/SITE58
WorkOrder:	HS19121257

QC BATCH REPORT

Batch ID:	**R353734 (0)**	**Instrument:**	**VOA6**	**Method:**	**VOLATILES ORGANICS BY METHOD 8260C**

The following samples were analyzed in this batch:	HS19121257-01	HS19121257-02	HS19121257-03	HS19121257-04

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

QC BATCH REPORT

Batch ID: R353818 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200103** Units: **UG/L** Analysis Date: **03-Jan-2020 15:10**
Client ID: Run ID: **VOA6_353818** SeqNo: **5423601** 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	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

QC BATCH REPORT

Batch ID: R353818 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200103** Units: **UG/L** Analysis Date: **03-Jan-2020 15:10**
Client ID: Run ID: **VOA6_353818** SeqNo: **5423601** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	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	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	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	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*49.87*	*1.0*	*50*	*0*	*99.7*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.04*	*1.0*	*50*	*0*	*100*	*85 - 114*				
Surr: Dibromofluoromethane	*48.57*	*1.0*	*50*	*0*	*97.1*	*80 - 119*				
Surr: Toluene-d8	*51.27*	*1.0*	*50*	*0*	*103*	*89 - 112*				

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

QC BATCH REPORT

Batch ID: R353818 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200103** Units: **UG/L** Analysis Date: **03-Jan-2020 14:22**
Client ID: Run ID: **VOA6_353818** SeqNo: **5423600** 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	20.56	1.0	20	0	103	78 - 124				
1,1,1-Trichloroethane	21.61	1.0	20	0	108	74 - 131				
1,1,2,2-Tetrachloroethane	22.09	1.0	20	0	110	71 - 121				
1,1,2-Trichloroethane	21.64	1.0	20	0	108	80 - 119				
1,1-Dichloroethane	24.25	1.0	20	0	121	77 - 125				
1,1-Dichloroethene	19.16	1.0	20	0	95.8	71 - 131				
1,1-Dichloropropene	20.95	1.0	20	0	105	78 - 125				
1,2,3-Trichlorobenzene	26.15	1.0	20	0	131	69 - 129				S
1,2,3-Trichloropropane	22.56	1.0	20	0	113	73 - 122				
1,2,4-Trichlorobenzene	23.24	1.0	20	0	116	69 - 130				
1,2,4-Trimethylbenzene	21.52	1.0	20	0	108	76 - 124				
1,2-Dibromo-3-chloropropane	19.13	1.0	20	0	95.7	62 - 128				
1,2-Dibromoethane	20.59	1.0	20	0	103	77 - 121				
1,2-Dichlorobenzene	20.45	1.0	20	0	102	80 - 119				
1,2-Dichloroethane	21.28	1.0	20	0	106	73 - 128				
1,2-Dichloropropane	22.64	1.0	20	0	113	78 - 122				
1,3,5-Trimethylbenzene	21.98	1.0	20	0	110	75 - 124				
1,3-Dichlorobenzene	20.76	1.0	20	0	104	80 - 119				
1,3-Dichloropropane	21.88	1.0	20	0	109	80 - 119				
1,4-Dichlorobenzene	20.27	1.0	20	0	101	79 - 118				
2,2-Dichloropropane	22.09	1.0	20	0	110	60 - 139				
2-Butanone	46.15	2.0	40	0	115	56 - 143				
2-Chlorotoluene	23.3	1.0	20	0	116	79 - 122				
2-Hexanone	41.4	2.0	40	0	103	57 - 139				
4-Chlorotoluene	22.28	1.0	20	0	111	78 - 122				
4-Isopropyltoluene	20.74	1.0	20	0	104	77 - 127				
4-Methyl-2-pentanone	42.57	2.0	40	0	106	67 - 130				
Acetone	44.68	2.0	40	0	112	39 - 160				
Benzene	22.89	1.0	20	0	114	79 - 120				
Bromobenzene	21.42	1.0	20	0	107	80 - 120				
Bromochloromethane	21.42	1.0	20	0	107	78 - 123				
Bromodichloromethane	21.53	1.0	20	0	108	79 - 125				
Bromoform	19.43	1.0	20	0	97.2	66 - 130				
Bromomethane	15.71	1.0	20	0	78.6	53 - 141				

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

QC BATCH REPORT

Batch ID: R353818 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200103** Units: **UG/L** Analysis Date: **03-Jan-2020 14:22**
Client ID: Run ID: **VOA6_353818** SeqNo: **5423600** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	48.51	2.0	40	0	121	64 - 133				
Carbon tetrachloride	18.91	1.0	20	0	94.5	72 - 136				
Chlorobenzene	20.85	1.0	20	0	104	82 - 118				
Chloroethane	20.05	1.0	20	0	100	60 - 138				
Chloroform	21.85	1.0	20	0	109	79 - 124				
Chloromethane	20.12	1.0	20	0	101	50 - 139				
cis-1,2-Dichloroethene	23.63	1.0	20	0	118	78 - 123				
cis-1,3-Dichloropropene	22.76	1.0	20	0	114	75 - 124				
Dibromochloromethane	20.69	1.0	20	0	103	74 - 126				
Dibromomethane	20.72	1.0	20	0	104	79 - 123				
Dichlorodifluoromethane	20.97	1.0	20	0	105	32 - 152				
Ethylbenzene	20.85	1.0	20	0	104	79 - 121				
Hexachlorobutadiene	20.58	1.0	20	0	103	66 - 134				
Isopropylbenzene	19.64	1.0	20	0	98.2	72 - 131				
m,p-Xylene	41.2	2.0	40	0	103	80 - 121				
Methylene chloride	22.76	2.0	20	0	114	74 - 124				
Naphthalene	21.59	1.0	20	0	108	61 - 128				
n-Butylbenzene	20.84	1.0	20	0	104	75 - 128				
n-Propylbenzene	21.97	1.0	20	0	110	76 - 126				
o-Xylene	20.48	1.0	20	0	102	78 - 122				
sec-Butylbenzene	20.92	1.0	20	0	105	77 - 126				
Styrene	20.4	1.0	20	0	102	78 - 123				
tert-Butylbenzene	21.24	1.0	20	0	106	78 - 124				
Tetrachloroethene	18.52	1.0	20	0	92.6	74 - 129				
Toluene	21.67	1.0	20	0	108	80 - 121				
trans-1,2-Dichloroethene	23.26	1.0	20	0	116	75 - 124				
trans-1,3-Dichloropropene	22.17	1.0	20	0	111	73 - 127				
Trichloroethene	21.01	1.0	20	0	105	79 - 123				
Trichlorofluoromethane	17.89	1.0	20	0	89.5	65 - 141				
Vinyl chloride	22.3	1.0	20	0	111	58 - 137				
Surr: 1,2-Dichloroethane-d4	*57.35*	*1.0*	*50*	*0*	*115*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*53.88*	*1.0*	*50*	*0*	*108*	*85 - 114*				
Surr: Dibromofluoromethane	*54.72*	*1.0*	*50*	*0*	*109*	*80 - 119*				
Surr: Toluene-d8	*51.4*	*1.0*	*50*	*0*	*103*	*89 - 112*				

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

QC BATCH REPORT

Batch ID: R353818 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS19121484-01MS** Units: **UG/L** Analysis Date: **03-Jan-2020 19:11**
Client ID: Run ID: **VOA6_353818** SeqNo: **5424214** 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	19.3	1.0	20	0	96.5	78 - 124				
1,1,1-Trichloroethane	19.73	1.0	20	0	98.7	74 - 131				
1,1,2,2-Tetrachloroethane	21.21	1.0	20	0	106	71 - 121				
1,1,2-Trichloroethane	20.4	1.0	20	0	102	80 - 119				
1,1-Dichloroethane	21.08	1.0	20	0	105	77 - 125				
1,1-Dichloroethene	17.81	1.0	20	0	89.0	71 - 131				
1,1-Dichloropropene	20.63	1.0	20	0	103	78 - 125				
1,2,3-Trichlorobenzene	26.03	1.0	20	0	130	69 - 129				S
1,2,3-Trichloropropane	21.65	1.0	20	0	108	73 - 122				
1,2,4-Trichlorobenzene	22.98	1.0	20	0	115	69 - 130				
1,2,4-Trimethylbenzene	21.95	1.0	20	0	110	76 - 124				
1,2-Dibromo-3-chloropropane	20.69	1.0	20	0	103	62 - 128				
1,2-Dibromoethane	19.7	1.0	20	0	98.5	77 - 121				
1,2-Dichlorobenzene	20.38	1.0	20	0	102	80 - 119				
1,2-Dichloroethane	20.18	1.0	20	1.477	93.5	73 - 128				
1,2-Dichloropropane	20.35	1.0	20	0	102	78 - 122				
1,3,5-Trimethylbenzene	22.62	1.0	20	0	113	75 - 124				
1,3-Dichlorobenzene	20.94	1.0	20	0	105	80 - 119				
1,3-Dichloropropane	20.51	1.0	20	0	103	80 - 119				
1,4-Dichlorobenzene	20.18	1.0	20	0	101	79 - 118				
2,2-Dichloropropane	19.45	1.0	20	0	97.3	60 - 139				
2-Butanone	38.44	2.0	40	0	96.1	56 - 143				
2-Chlorotoluene	23.7	1.0	20	0	118	79 - 122				
2-Hexanone	39.88	2.0	40	0	99.7	57 - 139				
4-Chlorotoluene	22.36	1.0	20	0	112	78 - 122				
4-Isopropyltoluene	22.42	1.0	20	0	112	77 - 127				
4-Methyl-2-pentanone	41.67	2.0	40	0	104	67 - 130				
Acetone	28.87	2.0	40	0	72.2	39 - 160				
Benzene	20.83	1.0	20	0	104	79 - 120				
Bromobenzene	21.07	1.0	20	0	105	80 - 120				
Bromochloromethane	18.68	1.0	20	0	93.4	78 - 123				
Bromodichloromethane	19.05	1.0	20	0	95.2	79 - 125				
Bromoform	18.33	1.0	20	0	91.6	66 - 130				
Bromomethane	12.1	1.0	20	0	60.5	53 - 141				

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

QC BATCH REPORT

Batch ID: R353818 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS19121484-01MS** Units: **UG/L** Analysis Date: **03-Jan-2020 19:11**
Client ID: Run ID: **VOA6_353818** SeqNo: **5424214** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	43.97	2.0	40	0	110	64 - 133				
Carbon tetrachloride	19.1	1.0	20	0	95.5	72 - 136				
Chlorobenzene	19.49	1.0	20	0	97.5	82 - 118				
Chloroethane	18.2	1.0	20	0	91.0	60 - 138				
Chloroform	18.52	1.0	20	0	92.6	79 - 124				
Chloromethane	17.94	1.0	20	0	89.7	50 - 139				
cis-1,2-Dichloroethene	52.56	1.0	20	32.16	102	78 - 123				
cis-1,3-Dichloropropene	19.99	1.0	20	0	99.9	75 - 124				
Dibromochloromethane	19.34	1.0	20	0	96.7	74 - 126				
Dibromomethane	18.69	1.0	20	0	93.4	79 - 123				
Dichlorodifluoromethane	21.4	1.0	20	0	107	32 - 152				
Ethylbenzene	20.8	1.0	20	0	104	79 - 121				
Hexachlorobutadiene	20.47	1.0	20	0	102	66 - 134				
Isopropylbenzene	20.73	1.0	20	0	104	72 - 131				
m,p-Xylene	40.76	2.0	40	0	102	80 - 121				
Methylene chloride	20.27	2.0	20	0	101	74 - 124				
Naphthalene	21.29	1.0	20	0	106	61 - 128				
n-Butylbenzene	22.42	1.0	20	0	112	75 - 128				
n-Propylbenzene	23.29	1.0	20	0	116	76 - 126				
o-Xylene	20.21	1.0	20	0	101	78 - 122				
sec-Butylbenzene	22.66	1.0	20	0	113	77 - 126				
Styrene	19.43	1.0	20	0	97.2	78 - 123				
tert-Butylbenzene	22.97	1.0	20	0	115	78 - 124				
Tetrachloroethene	19.33	1.0	20	0	96.6	74 - 129				
Toluene	20.94	1.0	20	0	105	80 - 121				
trans-1,2-Dichloroethene	20.28	1.0	20	0	101	75 - 124				
trans-1,3-Dichloropropene	19.34	1.0	20	0	96.7	73 - 127				
Trichloroethene	24.42	1.0	20	4.834	97.9	79 - 123				
Trichlorofluoromethane	17.97	1.0	20	0	89.9	65 - 141				
Vinyl chloride	21.43	1.0	20	0	107	58 - 137				
Surr: 1,2-Dichloroethane-d4	*49.39*	*1.0*	*50*	*0*	*98.8*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.59*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*48.45*	*1.0*	*50*	*0*	*96.9*	*80 - 119*				
Surr: Toluene-d8	*51.05*	*1.0*	*50*	*0*	*102*	*89 - 112*				

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

QC BATCH REPORT

Batch ID: R353818 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS19121484-01MSD** Units: **UG/L** Analysis Date: **03-Jan-2020 19:35**
Client ID: Run ID: **VOA6_353818** SeqNo: **5424215** 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	18.89	1.0	20	0	94.5	78 - 124	19.3	2.14	20	
1,1,1-Trichloroethane	18.74	1.0	20	0	93.7	74 - 131	19.73	5.18	20	
1,1,2,2-Tetrachloroethane	20.36	1.0	20	0	102	71 - 121	21.21	4.1	20	
1,1,2-Trichloroethane	19.75	1.0	20	0	98.8	80 - 119	20.4	3.23	20	
1,1-Dichloroethane	20.23	1.0	20	0	101	77 - 125	21.08	4.12	20	
1,1-Dichloroethene	16.57	1.0	20	0	82.9	71 - 131	17.81	7.19	20	
1,1-Dichloropropene	19.5	1.0	20	0	97.5	78 - 125	20.63	5.66	20	
1,2,3-Trichlorobenzene	23.55	1.0	20	0	118	69 - 129	26.03	10	20	
1,2,3-Trichloropropane	20.98	1.0	20	0	105	73 - 122	21.65	3.16	20	
1,2,4-Trichlorobenzene	20.14	1.0	20	0	101	69 - 130	22.98	13.2	20	
1,2,4-Trimethylbenzene	21.2	1.0	20	0	106	76 - 124	21.95	3.46	20	
1,2-Dibromo-3-chloropropane	19.89	1.0	20	0	99.4	62 - 128	20.69	3.97	20	
1,2-Dibromoethane	18.91	1.0	20	0	94.6	77 - 121	19.7	4.08	20	
1,2-Dichlorobenzene	19.53	1.0	20	0	97.6	80 - 119	20.38	4.29	20	
1,2-Dichloroethane	19.96	1.0	20	1.477	92.4	73 - 128	20.18	1.09	20	
1,2-Dichloropropane	20.04	1.0	20	0	100	78 - 122	20.35	1.55	20	
1,3,5-Trimethylbenzene	21.79	1.0	20	0	109	75 - 124	22.62	3.73	20	
1,3-Dichlorobenzene	20.02	1.0	20	0	100	80 - 119	20.94	4.49	20	
1,3-Dichloropropane	19.89	1.0	20	0	99.4	80 - 119	20.51	3.06	20	
1,4-Dichlorobenzene	19.77	1.0	20	0	98.9	79 - 118	20.18	2.04	20	
2,2-Dichloropropane	18.54	1.0	20	0	92.7	60 - 139	19.45	4.82	20	
2-Butanone	37.18	2.0	40	0	92.9	56 - 143	38.44	3.34	20	
2-Chlorotoluene	22.44	1.0	20	0	112	79 - 122	23.7	5.45	20	
2-Hexanone	38.07	2.0	40	0	95.2	57 - 139	39.88	4.66	20	
4-Chlorotoluene	21.47	1.0	20	0	107	78 - 122	22.36	4.08	20	
4-Isopropyltoluene	21.11	1.0	20	0	106	77 - 127	22.42	6.03	20	
4-Methyl-2-pentanone	39.31	2.0	40	0	98.3	67 - 130	41.67	5.83	20	
Acetone	27.28	2.0	40	0	68.2	39 - 160	28.87	5.68	20	
Benzene	20.01	1.0	20	0	100	79 - 120	20.83	4.04	20	
Bromobenzene	20.03	1.0	20	0	100	80 - 120	21.07	5.06	20	
Bromochloromethane	17.97	1.0	20	0	89.9	78 - 123	18.68	3.87	20	
Bromodichloromethane	18.8	1.0	20	0	94.0	79 - 125	19.05	1.3	20	
Bromoform	17.89	1.0	20	0	89.4	66 - 130	18.33	2.45	20	
Bromomethane	11.6	1.0	20	0	58.0	53 - 141	12.1	4.24	20	

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: HS19121257

QC BATCH REPORT

Batch ID: R353818 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS19121484-01MSD** Units: **UG/L** Analysis Date: **03-Jan-2020 19:35**
Client ID: Run ID: **VOA6_353818** SeqNo: **5424215** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	40.98	2.0	40	0	102	64 - 133	43.97	7.04	20	
Carbon tetrachloride	18.29	1.0	20	0	91.5	72 - 136	19.1	4.34	20	
Chlorobenzene	18.95	1.0	20	0	94.8	82 - 118	19.49	2.83	20	
Chloroethane	16.93	1.0	20	0	84.6	60 - 138	18.2	7.22	20	
Chloroform	18.12	1.0	20	0	90.6	79 - 124	18.52	2.17	20	
Chloromethane	16.9	1.0	20	0	84.5	50 - 139	17.94	5.96	20	
cis-1,2-Dichloroethene	50.96	1.0	20	32.16	94.0	78 - 123	52.56	3.1	20	
cis-1,3-Dichloropropene	19.83	1.0	20	0	99.1	75 - 124	19.99	0.8	20	
Dibromochloromethane	18.84	1.0	20	0	94.2	74 - 126	19.34	2.62	20	
Dibromomethane	18.09	1.0	20	0	90.5	79 - 123	18.69	3.23	20	
Dichlorodifluoromethane	19.14	1.0	20	0	95.7	32 - 152	21.4	11.1	20	
Ethylbenzene	19.58	1.0	20	0	97.9	79 - 121	20.8	6.07	20	
Hexachlorobutadiene	17.71	1.0	20	0	88.5	66 - 134	20.47	14.5	20	
Isopropylbenzene	19.63	1.0	20	0	98.2	72 - 131	20.73	5.46	20	
m,p-Xylene	39.27	2.0	40	0	98.2	80 - 121	40.76	3.7	20	
Methylene chloride	19.5	2.0	20	0	97.5	74 - 124	20.27	3.84	20	
Naphthalene	20.81	1.0	20	0	104	61 - 128	21.29	2.27	20	
n-Butylbenzene	21.27	1.0	20	0	106	75 - 128	22.42	5.27	20	
n-Propylbenzene	22.13	1.0	20	0	111	76 - 126	23.29	5.1	20	
o-Xylene	19.41	1.0	20	0	97.1	78 - 122	20.21	4.02	20	
sec-Butylbenzene	21.87	1.0	20	0	109	77 - 126	22.66	3.54	20	
Styrene	19.15	1.0	20	0	95.8	78 - 123	19.43	1.45	20	
tert-Butylbenzene	21.53	1.0	20	0	108	78 - 124	22.97	6.45	20	
Tetrachloroethene	18.22	1.0	20	0	91.1	74 - 129	19.33	5.89	20	
Toluene	19.9	1.0	20	0	99.5	80 - 121	20.94	5.09	20	
trans-1,2-Dichloroethene	19.33	1.0	20	0	96.7	75 - 124	20.28	4.78	20	
trans-1,3-Dichloropropene	18.96	1.0	20	0	94.8	73 - 127	19.34	2	20	
Trichloroethene	23.31	1.0	20	4.834	92.4	79 - 123	24.42	4.66	20	
Trichlorofluoromethane	16.48	1.0	20	0	82.4	65 - 141	17.97	8.64	20	
Vinyl chloride	19.74	1.0	20	0	98.7	58 - 137	21.43	8.18	20	
Surr: 1,2-Dichloroethane-d4	*49.32*	*1.0*	*50*	*0*	*98.6*	*81 - 118*	*49.39*	*0.133*	*20*	
Surr: 4-Bromofluorobenzene	*50.47*	*1.0*	*50*	*0*	*101*	*85 - 114*	*50.59*	*0.253*	*20*	
Surr: Dibromofluoromethane	*48.39*	*1.0*	*50*	*0*	*96.8*	*80 - 119*	*48.45*	*0.127*	*20*	
Surr: Toluene-d8	*50.83*	*1.0*	*50*	*0*	*102*	*89 - 112*	*51.05*	*0.441*	*20*	

ALS Houston, US Date: 08-Jan-20

Client:	Bhate Environmental Associates, Inc.
Project:	LHAAP/SITE58
WorkOrder:	HS19121257

QC BATCH REPORT

Batch ID:	**R353818 (0)**	**Instrument:**	**VOA6**	**Method:**	**VOLATILES ORGANICS BY METHOD 8260C**

The following samples were analyzed in this batch:	HS19121257-05	HS19121257-06	HS19121257-07

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
WorkOrder: **HS19121257**

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

ALS Houston, US Date: 08-Jan-20

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

ALS Houston, US Date: 08-Jan-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/SITE58
Work Order: HS19121257

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS19121257-01	35AWW01_122019	Login	12/22/2019 3:22:16 PM	NDR	Disposed

00997581

ALS Houston, US Date: 08-Jan-20

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS19121257
Date/Time Received: **21-Dec-2019 10:10**
Received by: **PMG**

Checklist completed by: *Nilesh D. Ranchod* 22-Dec-2019
eSignature | Date

Reviewed by: _____
eSignature | Date

Matrices: **Groundwater/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 ☐	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):	0.5c U/C	IR25
Cooler(s)/Kit(s):	25749	
Date/Time sample(s) sent to storage:	12/21/2019 13:00	

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:

bhate

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: _____ of _____

Project/Phase No: NWO1312.0150

COC Number(1): _____

LIMS Number: _____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	VOC	MEE	TOC	Carbon Dioxide	Anions	Arsenic	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35AWW01_122019	20 Dec 2019	0835	-	N		WG	3	X									
35AWW01-122019_MS	20 Dec 2019	0835	-	MS		WG	3	X									
35AWW01-122019_MSD	20 Dec 2019	0835	-	SD		WG	3	X									
LHSMW06-122019	20 Dec 2019	0925		N		WG	4	X					X				
LHSMW06_122019_a	20 Dec 2019	0925		FD		WG	4	X					X				
35AWW15_122019	20 Dec 2019	0850	-	N		WG	3	X									
35AWW21-122019	20 Dec 2019	1025	-	N		WG	3	X									
35AWW21-122019_a	20 Dec 2019	1025	-	FD		WG	3	X									
TRIP BLANK	20 Dec 2019		-	TB		W	2	X									
			-														
			-														

Sample Analysis Requested [5]

Quality Assurance Samples [6]

HS19121257

Bhate Environmental Associates, Inc.
LHAAP/SITE58

COMMENTS: _____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	12/20/19	12:00	1.	12/21/19	10:10
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped

_____ Method of Shipment: _____

_____ Fed Ex _____ Airbill Number: _____

_____ Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

25749 0.5'
#21' 21'-0.5'

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

UMS Number: ____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	MEE	TOC	Carbon Dioxide	Anions	Arsenic				Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
							Sample Analysis Requested (5)										Quality Assurance Samples (6)			
35AWW01_122019	20 Dec 2019	0835	-	N		WG	3	X												
35AWW01-122019_MS	20 Dec 2019	0835	-	MS		WG	3	X												
35AWW01-122019_MSD	20 Dec 2019	0835	-	SD		WG	3	X												
LHSMW06-122019	20 Dec 2019	0925		N		WG	4	X					X							
LHSMW06_122019_a	20 Dec 2019	0925		FD		WG	4	X					X							
35AWW15_122019	20 Dec 2019	0850	-	N		WG	3	X												
35AWW21-122019	20 Dec 2019	1025	-	N		WG	3	X												
35AWW21-122019_a	20 Dec 2019	1025	-	FD		WG	3	X												
TRIP BLANK	20 Dec 2019		-	TB		W	2	X												
			-																	
			-																	

COMMENTS: ____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	12/20/19	12:00	1.	12/21/19	10:10
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

Fed ____ Ex ____ Airbill ____ Number:

Analytical Lab: ALS 10450 Stanglift Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

25749 VIC_3 0.5 #21 CIT-0.5

00997584

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

25749

CUSTODY SEAL

Date: 12/20/19 Time: 1200
Name: Scott Beesinger
Company: Bhate

Seal Broken By: SM
Date: 12/21/19

25749 DEC 2 1 2019

Must Deliver Next Business Day
Time and Tempature Sensitive!

25749

ORIGIN ID:SGRA (903) 938-8233
SCOTT BEESINER
BHATE ENVIRONMENTAL ASSOCIATES
1203-B EAST GRAND AVE. PMB202

MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 21DEC19
ACTWGT: 1.00 LB MAN
CAD: 3001307/CAFE3211
DIMS: 26x14x14 IN

TO **CLIENT SERVICES**
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-58- BO 68898- RJ
RMA:

FedEx Express

FedEx
TRK# 0221 1251 0292 3795

SATURDAY 12:00P
PRIORITY OVERNIGHT

77099
TX-US
IAH

X0 SGRA

TID 5890257 28DEC19 0008A 56AC2/1B00/85A2

QUALITY CONTROL SUMMARY REPORT
LHAAP-58 MARCH 2020
WESTERN PLUME QUARTERLY SAMPLING EVENT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

April 2020

Prepared For:

Longhorn Army Ammunition Plant
Karnack, Texas

Under Contract To:

U.S. Army Corps of Engineers
Tulsa District
Tulsa, Oklahoma

Contract Number: W9128F-13-D-0012
Task Order Number: W912BV17F0150

Prepared By:

1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
1-800-806-4001 • www.bhate.com

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Tables

Table 1: Field Sample Identification and Laboratory Packages
Table 2: Qualified Analytical Data
Table 3: Completeness by Method

1 INTRODUCTION

Bhate reviewed 3 data packages (including one package with corrected detection limits for Volatile Fatty Acids (VFAs) and one package for the resample of 35AWW06 for VFAs due to bottle breakage) from ALS Environmental, Houston, Texas with the analyses for VFAs subcontracted to ALS Rochester, NY; Total Organic Carbon (TOC) subcontracted to ALS Kelso, WA; and the analyses of dissolved gases to ALS Simi Valley, CA. The dechlorinating bacteria analysis was subcontracted to Microbial Insights in Knoxville, TN. Groundwater samples were collected on March 24, 2020, and April 7, 2020, from Site LHAAP-58 at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas. Data were reviewed for conformance to the requirements of the following guidance documents: *USEPA Contract Laboratory Program* [CLP] *National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA, January 2017), *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (USEPA, January 2017) and the *Final Basewide Uniform Federal Policy* [UFP] – *Quality Assurance Project Plan* [QAPP] *Longhorn Army Ammunition Plant* which is in Appendix C of the *Final Installation-Wide Work Plan for Longhorn Army Ammunition Plant Karnack, Texas* (Bhate, May 2018).

1.1 Intended Use of Data

The objective of sampling at LHAAP-58 in the first quarter of 2020 was to complete the western plume quarterly performance event.

Analyses performed include:

- RSK175 – Dissolved Gases
- SM5310 C – TOC
- SW8260C – Volatile Organic Compounds (VOCs)
- SW9056A – Anions (chloride, nitrate, nitrite and sulfate)
- High Performance Liquid Chromatography (HPLC)-METACIDS –VFAs
- CENSUS – Dechlorinating Bacteria (dehalococcoides [DHC]/dehalobacter [DHB])

Table 1 lists the sample identification (ID) numbers and their associated laboratory package.

Table 2 lists qualified results with the qualification flag and reason code.

The following narrative is a brief synopsis of data that required qualification due to quality control discrepancies.

1.2 Preservation and Holding Times

Sample identification data were evaluated for agreement with the chain-of-custody (COC). All samples were received in appropriate containers, within the proper temperature range, in good condition, and within the required hold time.

1.3 Calibrations

All analytes reported must be present in the initial and continuing calibration. The calibrations must meet the acceptance criteria specified in Worksheet 24 (Analytical Instrument Calibration) of the QAPP. All results reported must be within the calibration range. Samples were diluted, if necessary, to bring analyte responses within the calibration range.

1.3.1 Continuing Calibration Verifications (CCV)

The calibrations must meet the following criteria otherwise the compound is qualified J or UJ: The continuing calibration verification (CCV) criteria are 20 percent difference (%D) for VOCs and 50% for closing CCVs. Metals and general chemistry - 10%D; VFAs, dissolved gases and TOC - 15%D.

All calibration verification was within control limits.

1.4 Blanks

If the analyte result for an associated sample was less than 5X (10X for common laboratory contaminants) the analyte concentration in the blank, that result was qualified "UB" and considered an artifact of blank contamination. Where the sample result for the affected analyte was non-detect or greater than 5X the amount in the blank, no qualifier was applied.

No compounds were detected in the blanks.

1.5 Surrogates

Surrogates were evaluated using limits defined by each method in the project-specific QAPP Worksheet 28.

No surrogates were reported outside control limits.

1.6 Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

LCS/LCSD recoveries were evaluated using limits defined in the project-specific QAPP Worksheet 15.

The LCS recovery of Butyric acid was above control limits. This compound was not detected in any sample and required no qualification. The LCS/LCSD recoveries of lactic acid were below control limits for all samples with the exception of 35AWW06_032420. The data were considered estimated and flagged "J/UJ".

1.7 Matrix Spike (MS)/Matrix Spike Duplicate Sample (MSD)

MS/MSD recoveries were evaluated using limits defined in Worksheet 15 of the project-specific QAPP. When sample results were greater than 4x the spike amount, control limits were not applicable and require no qualification. Furthermore, if a MS/MSD analyses was performed on a batched (unrelated) sample no qualification was made to the sample data.

1.7.1 SW9056A

The MS and MSD recoveries of chloride, sulfate and nitrate, in spike sample 35AWW20_032420, were below control limits. Due to matrix effect, these compounds were flagged "J/UJ" (see Table 2).

1.7.2 RSK175

The MS and MSD recoveries, in spike sample 35AWW20_032420, were above control limits for ethene. Due to matrix effect, this compound was flagged "J".

1.8 Internal Standards

If the %R for an internal standard in a sample is not within the limit, the associated sample is qualified for those analytes associated with the internal standard(s) outside of the limit.

Internal standards were within acceptance criteria for the associated compounds.

1.9 Precision

Precision is the measure of variability of individual sample measurements. Evaluation of field duplicates for precision was done using the RPD. The RPD is defined as the difference between two duplicate samples divided by the mean and expressed as a percent. Field duplicate RPD limits were set at <30% for groundwater matrices.

1.9.1 Lab Precision

The laboratory RPD of sample LHSMW07_032420 was exceeded for TOC. This compound was qualified estimated "J".

1.9.2 Field Precision

The RPD between the sample (35AWW11_032420) and field duplicate of sulfate was outside control limits. This compound has been flagged estimated "J" in both samples.

2.0 DATA USABILITY SUMMARY

The data are usable for the intended purposes of the project (see Table 3). The data quality objectives have been met for the project.

Table 1: Field Sample Identification and Laboratory Packages

Client Sample ID	Lab Package/ID	SM2320B	E365.3	SM5310 C	SW6020A	SW8260C	HPLC-METACIDS	SW9056A	RSK-175	SM3500Fe	E376.1	CENSUS	Arsenic 6020A
35AWW06_032420	HS20031084			X		X		X	X			X	
35AWW06_032420*	HS20040727						X						
35AWW11_032420	HS20031084			X		X		X	X			X	
35AWW11_032420	R2002537						X						
35AWW11_032420-a	HS20031084			X		X		X	X				
35AWW11_032420-a	R2002537						X						
35AWW19_032420	HS20031084			X		X		X	X			X	
35AWW19_032420	R2002537						X						
35AWW20_032420	HS20031084			X		X		X	X			X	
35AWW20_032420	R2002537						X						
35AWW23_032420	HS20031084			X		X		X	X			X	
35AWW23_032420	R2002537						X						
LHSMW07_032420	HS20031084			X		X		X	X			X	
LHSMW07_032420	R2002537						X						

Notes:
MW – Monitoring Well
SM – Standard Method
SW-846 - Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.
E – U.S. Environmental Protection Agency Method
HS – Houston
R – Rochester
*required resample as original bottle was received broken by the lab

Table 2: Qualified Analytical Data

Client Sample ID Laboratory	Laboratory Package	Analyte Name	Result and Qualifier (mg/L)	Reason for Qualification
35AWW11_032420	HS20031084/ R2002537	Sulfate Lactic Acid	282 J < 1.0 UJ	FD RPD LCS/LCSD <
35AWW11_032420-a	HS20031084/ R2002537	Sulfate Lactic Acid	113 J 0.67 J	FD RPD LCS/LCSD <
35AWW19_032420	R2002537	Lactic Acid	< 1.0 UJ	LCS/LCSD <
35AWW20_032420	HS20031084/ R2002537	Chloride Nitrate Sulfate Ethene (µg/L) Lactic Acid	718 J < 0.100 UJ 1,020 J 6.0 J < 1.0 UJ	MS/MSD < MS/MSD < MS/MSD < MS/MSD > LCS/LCSD <
35AWW23_032420	R2002537	Lactic Acid	< 2.0 UJ	LCS/LCSD <
LHSMW07_032420	HS20031084/ R2002537	TOC Lactic Acid	3.29 J < 1.0 UJ	Lab RPD LCS/LCSD <

Notes:
mg/L – milligrams per liter, 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.
UJ – The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
Lab RPD – the relative percent difference between sample and laboratory duplicate was outside control limits
MS/MSD</> – Matrix spike/duplicate recoveries were below/above control limits
FD RPD – field duplicate relative percent difference was outside control limits
LCS/LCSD < - laboratory control sample/duplicate below control limits

Table 3: Completeness by Method

Method	No. of Rejected Results	% Completeness
SM5310C	0	100
SW8260C	0	100
HPLC-METACIDS	0	100
SW9056A	0	100
RSK-175	0	100
CENSUS	0	100

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April 08, 2020

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS20031084**

Laboratory Results for: **LHAAP-58**

Dear Marcia,

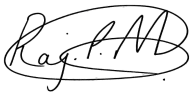
ALS Environmental received 8 sample(s) on Mar 25, 2020 for the analysis presented in the following report.

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: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS20031084

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20031084-01	35AWW11_032420	Groundwater		24-Mar-2020 07:45	25-Mar-2020 08:45	☐
HS20031084-02	35AWW11_032420_a	Groundwater		24-Mar-2020 07:45	25-Mar-2020 08:45	☐
HS20031084-03	35AWW20_032420	Groundwater		24-Mar-2020 09:05	25-Mar-2020 08:45	☐
HS20031084-04	LHSMW07_032420	Groundwater		24-Mar-2020 10:15	25-Mar-2020 08:45	☐
HS20031084-05	35AWW06_032420	Groundwater		24-Mar-2020 11:10	25-Mar-2020 08:45	☐
HS20031084-06	35AWW23_032420	Groundwater		24-Mar-2020 12:05	25-Mar-2020 08:45	☐
HS20031084-07	35AWW19_032420	Groundwater		24-Mar-2020 13:00	25-Mar-2020 08:45	☐
HS20031084-08	Trip Blank	Water	CG-111519 -108	24-Mar-2020 00:00	25-Mar-2020 08:45	☐

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: LHAAP-58
Work Order: HS20031084

Work Order Comments

- The analysis for TOC was subcontracted to ALS Environmental in Kelso, WA. Final Report attached.

  The analysis for Volatile Fatty Acids were subcontracted to ALS Environmental in Rochester, NY. Final Report attached.

  The analyses for RSK-175 Dissolved Gases and CO2 were subcontracted to ALS Environmental in Simi Valley, CA. Final Report attached.

  The analyses for DHC/DHB were subcontracted to Microbial Insights in Knoxville, TN. Final Report attached.

GCMS Volatiles by Method SW8260

Batch ID: R358961

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: R359083

Sample ID: 35AWW20_032420 (HS20031084-03MS)

- 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,Nitrogen, Nitrate (As N),Sulfate)

Sample ID: HS20030838-01MS

- MS and MSD are for an unrelated sample (Chloride)

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW11_032420
Collection Date: 24-Mar-2020 07:45

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-01
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	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:01
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Mar-2020 16:01
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Mar-2020 16:01
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:01
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Mar-2020 16:01
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	25-Mar-2020 16:01
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Mar-2020 16:01
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW11_032420
Collection Date: 24-Mar-2020 07:45

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Mar-2020 16:01
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Mar-2020 16:01
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	25-Mar-2020 16:01
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:01
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Trichloroethene	**1.4**		**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Mar-2020 16:01
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:01
Surr: 1,2-Dichloroethane-d4	*91.6*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2020 16:01*
Surr: 4-Bromofluorobenzene	*98.8*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2020 16:01*
Surr: Dibromofluoromethane	*94.6*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2020 16:01*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2020 16:01*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Chloride	**2,090**		**10.0**	**25.0**	**25.0**	**mg/L**	50	26-Mar-2020 00:56
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	25-Mar-2020 20:06
Sulfate	**282**		**1.00**	**2.50**	**2.50**	**mg/L**	5	25-Mar-2020 20:06
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See attached		0	0	0	NA	1	30-Mar-2020 12:29
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	08-Apr-2020 10:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW11_032420
Collection Date: 24-Mar-2020 07:45

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Apr-2020 15:23
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	02-Apr-2020 09:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW11_032420_a
Collection Date: 24-Mar-2020 07:45

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-02
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	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:25
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Mar-2020 16:25
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Mar-2020 16:25
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:25
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Mar-2020 16:25
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	25-Mar-2020 16:25
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Mar-2020 16:25
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW11_032420_a
Collection Date: 24-Mar-2020 07:45

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Mar-2020 16:25
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Mar-2020 16:25
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	25-Mar-2020 16:25
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:25
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:25
Surr: 1,2-Dichloroethane-d4	*92.0*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2020 16:25*
Surr: 4-Bromofluorobenzene	*96.2*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2020 16:25*
Surr: Dibromofluoromethane	*96.0*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2020 16:25*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2020 16:25*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Chloride	**2,110**		**10.0**	**25.0**	**25.0**	**mg/L**	50	26-Mar-2020 01:32
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	25-Mar-2020 20:24
Sulfate	**113**		**1.00**	**2.50**	**2.50**	**mg/L**	5	25-Mar-2020 20:24
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	08-Apr-2020 10:19
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Apr-2020 15:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW11_032420_a
Collection Date: 24-Mar-2020 07:45

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	02-Apr-2020 09:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW20_032420
Collection Date: 24-Mar-2020 09:05

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-03
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	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
1,1,1-Trichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
1,1,2,2-Tetrachloroethane	2.5	U	2.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
1,1,2-Trichloroethane	**83**		**1.5**	**2.5**	**5.0**	**UG/L**	5	25-Mar-2020 18:49
1,1-Dichloroethane	**560**		**1.0**	**2.5**	**5.0**	**UG/L**	5	25-Mar-2020 18:49
1,1-Dichloroethene	**1,300**		**5.0**	**12**	**25**	**UG/L**	25	25-Mar-2020 18:25
1,1-Dichloropropene	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
1,2,3-Trichlorobenzene	2.5	U	2.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
1,2,3-Trichloropropane	2.5	U	2.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
1,2,4-Trichlorobenzene	2.5	U	2.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
1,2,4-Trimethylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
1,2-Dibromo-3-chloropropane	2.5	U	1.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
1,2-Dibromoethane	2.5	U	1.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
1,2-Dichlorobenzene	**25**		**2.5**	**2.5**	**5.0**	**UG/L**	5	25-Mar-2020 18:49
1,2-Dichloroethane	**18**		**1.0**	**2.5**	**5.0**	**UG/L**	5	25-Mar-2020 18:49
1,2-Dichloropropane	2.5	U	2.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
1,3,5-Trimethylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
1,3-Dichlorobenzene	2.5	U	2.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
1,3-Dichloropropane	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
1,4-Dichlorobenzene	2.5	U	2.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
2,2-Dichloropropane	2.5	U	1.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
2-Butanone	5.0	U	2.5	5.0	10	UG/L	5	25-Mar-2020 18:49
2-Chlorotoluene	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
2-Hexanone	5.0	U	5.0	5.0	10	UG/L	5	25-Mar-2020 18:49
4-Chlorotoluene	2.5	U	2.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
4-Isopropyltoluene	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
4-Methyl-2-pentanone	5.0	U	3.5	5.0	10	UG/L	5	25-Mar-2020 18:49
Acetone	5.0	U	2.0	5.0	10	UG/L	5	25-Mar-2020 18:49
Benzene	**8.7**		**1.0**	**2.5**	**5.0**	**UG/L**	5	25-Mar-2020 18:49
Bromobenzene	2.5	U	2.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Bromochloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Bromodichloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Bromoform	2.5	U	2.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Bromomethane	2.5	U	2.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Carbon disulfide	5.0	U	3.0	5.0	10	UG/L	5	25-Mar-2020 18:49
Carbon tetrachloride	2.5	U	2.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Chlorobenzene	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Chloroethane	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Chloroform	2.5	U	1.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW20_032420
Collection Date: 24-Mar-2020 09:05

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
cis-1,2-Dichloroethene	**71**		**1.0**	**2.5**	**5.0**	**UG/L**	5	25-Mar-2020 18:49
cis-1,3-Dichloropropene	2.5	U	0.50	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Dibromochloromethane	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Dibromomethane	2.5	U	1.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Dichlorodifluoromethane	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Ethylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Hexachlorobutadiene	5.0	U	5.0	5.0	5.0	UG/L	5	25-Mar-2020 18:49
Isopropylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
m,p-Xylene	5.0	U	2.5	5.0	10	UG/L	5	25-Mar-2020 18:49
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	25-Mar-2020 18:49
n-Butylbenzene	2.5	U	2.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
n-Propylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Naphthalene	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
o-Xylene	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
sec-Butylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Styrene	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
tert-Butylbenzene	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Tetrachloroethene	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Toluene	2.5	U	1.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
trans-1,2-Dichloroethene	**6.6**		**1.0**	**2.5**	**5.0**	**UG/L**	5	25-Mar-2020 18:49
trans-1,3-Dichloropropene	2.5	U	1.0	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Trichloroethene	**120**		**1.0**	**2.5**	**5.0**	**UG/L**	5	25-Mar-2020 18:49
Trichlorofluoromethane	2.5	U	1.5	2.5	5.0	UG/L	5	25-Mar-2020 18:49
Vinyl chloride	**1,500**		**5.0**	**12**	**25**	**UG/L**	25	25-Mar-2020 18:25
Surr: 1,2-Dichloroethane-d4	*90.5*			**0**	*81-118*	*%REC*	*25*	*25-Mar-2020 18:25*
Surr: 1,2-Dichloroethane-d4	*89.7*			**0**	*81-118*	*%REC*	*5*	*25-Mar-2020 18:49*
Surr: 4-Bromofluorobenzene	*99.1*			**0**	*85-114*	*%REC*	*25*	*25-Mar-2020 18:25*
Surr: 4-Bromofluorobenzene	*97.8*			**0**	*85-114*	*%REC*	*5*	*25-Mar-2020 18:49*
Surr: Dibromofluoromethane	*95.3*			**0**	*80-119*	*%REC*	*5*	*25-Mar-2020 18:49*
Surr: Dibromofluoromethane	*94.3*			**0**	*80-119*	*%REC*	*25*	*25-Mar-2020 18:25*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*25*	*25-Mar-2020 18:25*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*5*	*25-Mar-2020 18:49*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Chloride	**718**		**10.0**	**25.0**	**25.0**	**mg/L**	50	26-Mar-2020 03:39
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	25-Mar-2020 20:42
Sulfate	**1,020**		**10.0**	**25.0**	**25.0**	**mg/L**	50	26-Mar-2020 03:39
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See attached		0	0	0	NA	1	30-Mar-2020 12:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW20_032420
Collection Date: 24-Mar-2020 09:05

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	08-Apr-2020 10:19
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Apr-2020 15:23
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	02-Apr-2020 09:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW07_032420
Collection Date: 24-Mar-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-04
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	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:49
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:49
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
1,1-Dichloroethane	**11**		**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Mar-2020 16:49
1,1-Dichloroethene	**94**		**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Mar-2020 16:49
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:49
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:49
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:49
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:49
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:49
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:49
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:49
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:49
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:49
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:49
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:49
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Mar-2020 16:49
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Mar-2020 16:49
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:49
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Mar-2020 16:49
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	25-Mar-2020 16:49
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Mar-2020 16:49
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW07_032420
Collection Date: 24-Mar-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:49
cis-1,2-Dichloroethene	**1.0**		**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Mar-2020 16:49
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Mar-2020 16:49
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Mar-2020 16:49
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	25-Mar-2020 16:49
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 16:49
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:49
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:49
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Trichloroethene	**2.8**		**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Mar-2020 16:49
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 16:49
Vinyl chloride	**46**		**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Mar-2020 16:49
Surr: 1,2-Dichloroethane-d4	*91.0*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2020 16:49*
Surr: 4-Bromofluorobenzene	*98.0*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2020 16:49*
Surr: Dibromofluoromethane	*94.8*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2020 16:49*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2020 16:49*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Chloride	**1,960**		**10.0**	**25.0**	**25.0**	**mg/L**	50	26-Mar-2020 04:33
Nitrogen, Nitrate (As N)	0.500	U	0.150	0.500	0.500	mg/L	5	25-Mar-2020 21:55
Sulfate	**2,750**		**10.0**	**25.0**	**25.0**	**mg/L**	50	26-Mar-2020 04:33
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See attached		0	0	0	NA	1	30-Mar-2020 12:29
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	08-Apr-2020 10:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW07_032420
Collection Date: 24-Mar-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Apr-2020 15:23
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	02-Apr-2020 09:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06_032420
Collection Date: 24-Mar-2020 11:10

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-05
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	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,1-Dichloroethene	**0.78**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Mar-2020 17:13
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 17:13
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Mar-2020 17:13
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Mar-2020 17:13
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 17:13
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Mar-2020 17:13
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	25-Mar-2020 17:13
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Mar-2020 17:13
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06_032420
Collection Date: 24-Mar-2020 11:10

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Mar-2020 17:13
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Mar-2020 17:13
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	25-Mar-2020 17:13
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 17:13
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:13
Surr: 1,2-Dichloroethane-d4	*91.4*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2020 17:13*
Surr: 4-Bromofluorobenzene	*98.6*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2020 17:13*
Surr: Dibromofluoromethane	*95.6*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2020 17:13*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2020 17:13*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Chloride	**968**		**2.00**	**5.00**	**5.00**	**mg/L**	10	26-Mar-2020 05:09
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	25-Mar-2020 22:13
Sulfate	**1.51**		**0.200**	**0.500**	**0.500**	**mg/L**	1	25-Mar-2020 22:13
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See attached		0	0	0	NA	1	30-Mar-2020 12:29
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	08-Apr-2020 10:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06_032420
Collection Date: 24-Mar-2020 11:10

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Apr-2020 15:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: LHAAP-58 WorkOrder:HS20031084
Sample ID: 35AWW23_032420 Lab ID:HS20031084-06
Collection Date: 24-Mar-2020 12:05 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	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 17:37
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:37
2-Butanone	**300**		**0.50**	**1.0**	**2.0**	**UG/L**	1	25-Mar-2020 17:37
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
2-Hexanone	**4.0**		**1.0**	**1.0**	**2.0**	**UG/L**	1	25-Mar-2020 17:37
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 17:37
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Mar-2020 17:37
Acetone	**400**		**0.40**	**1.0**	**2.0**	**UG/L**	1	25-Mar-2020 17:37
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Mar-2020 17:37
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW23_032420
Collection Date: 24-Mar-2020 12:05

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:37
cis-1,2-Dichloroethene	**6.5**		**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Mar-2020 17:37
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Mar-2020 17:37
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Mar-2020 17:37
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	25-Mar-2020 17:37
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 17:37
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Naphthalene	**3.0**		**0.30**	**0.50**	**1.0**	**UG/L**	1	25-Mar-2020 17:37
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:37
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:37
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Trichloroethene	**1.3**		**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Mar-2020 17:37
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 17:37
Surr: 1,2-Dichloroethane-d4	*93.2*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2020 17:37*
Surr: 4-Bromofluorobenzene	*99.4*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2020 17:37*
Surr: Dibromofluoromethane	*96.0*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2020 17:37*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2020 17:37*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Chloride	**925**		**2.00**	**5.00**	**5.00**	**mg/L**	10	26-Mar-2020 06:22
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	25-Mar-2020 23:07
Sulfate	**1.84**		**0.200**	**0.500**	**0.500**	**mg/L**	1	25-Mar-2020 23:07
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See attached		0	0	0	NA	1	30-Mar-2020 12:29
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	08-Apr-2020 10:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW23_032420
Collection Date: 24-Mar-2020 12:05

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Apr-2020 15:23
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	02-Apr-2020 09:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW19_032420
Collection Date: 24-Mar-2020 13:00

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-07
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	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 18:01
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 18:01
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
1,1-Dichloroethane	**0.84**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Mar-2020 18:01
1,1-Dichloroethene	**4.4**		**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Mar-2020 18:01
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 18:01
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 18:01
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 18:01
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 18:01
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 18:01
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 18:01
1,2-Dichloroethane	**1.1**		**0.20**	**0.50**	**1.0**	**UG/L**	1	25-Mar-2020 18:01
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 18:01
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 18:01
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 18:01
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 18:01
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Mar-2020 18:01
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Mar-2020 18:01
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 18:01
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Mar-2020 18:01
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	25-Mar-2020 18:01
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Mar-2020 18:01
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 18:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW19_032420
Collection Date: 24-Mar-2020 13:00

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 18:01
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 18:01
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Mar-2020 18:01
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Mar-2020 18:01
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	25-Mar-2020 18:01
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 18:01
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 18:01
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 18:01
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 18:01
Surr: 1,2-Dichloroethane-d4	*92.9*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2020 18:01*
Surr: 4-Bromofluorobenzene	*95.5*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2020 18:01*
Surr: Dibromofluoromethane	*96.1*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2020 18:01*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2020 18:01*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KVL
Chloride	**922**		**2.00**	**5.00**	**5.00**	**mg/L**	10	26-Mar-2020 06:58
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	25-Mar-2020 23:25
Sulfate	**989**		**2.00**	**5.00**	**5.00**	**mg/L**	10	26-Mar-2020 06:58
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See attached		0	0	0	NA	1	30-Mar-2020 12:29
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	08-Apr-2020 10:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW19_032420
Collection Date: 24-Mar-2020 13:00

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	03-Apr-2020 15:23
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	02-Apr-2020 09:10

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 24-Mar-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-08
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	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 15:37
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	25-Mar-2020 15:37
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
2-Hexanone	1.0	U	1.0	1.0	2.0	UG/L	1	25-Mar-2020 15:37
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 15:37
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	25-Mar-2020 15:37
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	25-Mar-2020 15:37
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Bromobenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Bromoform	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Bromomethane	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	25-Mar-2020 15:37
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Chlorobenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Chloroethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 24-Mar-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20031084
Lab ID:HS20031084-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Dibromochloromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Ethylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	25-Mar-2020 15:37
Isopropylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	25-Mar-2020 15:37
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	25-Mar-2020 15:37
n-Butylbenzene	0.50	U	0.40	0.50	1.0	UG/L	1	25-Mar-2020 15:37
n-Propylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Naphthalene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
o-Xylene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Styrene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Tetrachloroethene	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	25-Mar-2020 15:37
Surr: 1,2-Dichloroethane-d4	*89.7*			**0**	*81-118*	*%REC*	*1*	*25-Mar-2020 15:37*
Surr: 4-Bromofluorobenzene	*96.2*			**0**	*85-114*	*%REC*	*1*	*25-Mar-2020 15:37*
Surr: Dibromofluoromethane	*94.5*			**0**	*80-119*	*%REC*	*1*	*25-Mar-2020 15:37*
Surr: Toluene-d8	*105*			**0**	*89-112*	*%REC*	*1*	*25-Mar-2020 15:37*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20031084

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R358961 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS20031084-08	Trip Blank	24 Mar 2020 00:00			25 Mar 2020 15:37	1
Batch ID: R358961 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20031084-01	35AWW11_032420	24 Mar 2020 07:45			25 Mar 2020 16:01	1
HS20031084-02	35AWW11_032420_a	24 Mar 2020 07:45			25 Mar 2020 16:25	1
HS20031084-03	35AWW20_032420	24 Mar 2020 09:05			25 Mar 2020 18:49	5
HS20031084-03	35AWW20_032420	24 Mar 2020 09:05			25 Mar 2020 18:25	25
HS20031084-04	LHSMW07_032420	24 Mar 2020 10:15			25 Mar 2020 16:49	1
HS20031084-05	35AWW06_032420	24 Mar 2020 11:10			25 Mar 2020 17:13	1
HS20031084-06	35AWW23_032420	24 Mar 2020 12:05			25 Mar 2020 17:37	1
HS20031084-07	35AWW19_032420	24 Mar 2020 13:00			25 Mar 2020 18:01	1
Batch ID: R359083 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20031084-01	35AWW11_032420	24 Mar 2020 07:45			26 Mar 2020 00:56	50
HS20031084-01	35AWW11_032420	24 Mar 2020 07:45			25 Mar 2020 20:06	5
HS20031084-02	35AWW11_032420_a	24 Mar 2020 07:45			26 Mar 2020 01:32	50
HS20031084-02	35AWW11_032420_a	24 Mar 2020 07:45			25 Mar 2020 20:24	5
HS20031084-03	35AWW20_032420	24 Mar 2020 09:05			26 Mar 2020 03:39	50
HS20031084-03	35AWW20_032420	24 Mar 2020 09:05			25 Mar 2020 20:42	1
HS20031084-04	LHSMW07_032420	24 Mar 2020 10:15			26 Mar 2020 04:33	50
HS20031084-04	LHSMW07_032420	24 Mar 2020 10:15			25 Mar 2020 21:55	5
HS20031084-05	35AWW06_032420	24 Mar 2020 11:10			26 Mar 2020 05:09	10
HS20031084-05	35AWW06_032420	24 Mar 2020 11:10			25 Mar 2020 22:13	1
HS20031084-06	35AWW23_032420	24 Mar 2020 12:05			26 Mar 2020 06:22	10
HS20031084-06	35AWW23_032420	24 Mar 2020 12:05			25 Mar 2020 23:07	1
HS20031084-07	35AWW19_032420	24 Mar 2020 13:00			26 Mar 2020 06:58	10
HS20031084-07	35AWW19_032420	24 Mar 2020 13:00			25 Mar 2020 23:25	1
Batch ID: R359132 (0)	**Test Name :** SUBCONTRACT ANALYSIS - DHC/DHB				**Matrix:** Groundwater	
HS20031084-01	35AWW11_032420	24 Mar 2020 07:45			30 Mar 2020 12:29	1
HS20031084-03	35AWW20_032420	24 Mar 2020 09:05			30 Mar 2020 12:29	1
HS20031084-04	LHSMW07_032420	24 Mar 2020 10:15			30 Mar 2020 12:29	1
HS20031084-05	35AWW06_032420	24 Mar 2020 11:10			30 Mar 2020 12:29	1
HS20031084-06	35AWW23_032420	24 Mar 2020 12:05			30 Mar 2020 12:29	1
HS20031084-07	35AWW19_032420	24 Mar 2020 13:00			30 Mar 2020 12:29	1

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Client: Bhate Environmental Associates, Inc.
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DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R359358 (0)	**Test Name :** SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS				**Matrix:** Groundwater	
HS20031084-01	35AWW11_032420	24 Mar 2020 07:45			02 Apr 2020 09:10	1
HS20031084-02	35AWW11_032420_a	24 Mar 2020 07:45			02 Apr 2020 09:10	1
HS20031084-03	35AWW20_032420	24 Mar 2020 09:05			02 Apr 2020 09:10	1
HS20031084-04	LHSMW07_032420	24 Mar 2020 10:15			02 Apr 2020 09:10	1
HS20031084-06	35AWW23_032420	24 Mar 2020 12:05			02 Apr 2020 09:10	1
HS20031084-07	35AWW19_032420	24 Mar 2020 13:00			02 Apr 2020 09:10	1
Batch ID: R359470 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS20031084-01	35AWW11_032420	24 Mar 2020 07:45			03 Apr 2020 15:23	1
HS20031084-02	35AWW11_032420_a	24 Mar 2020 07:45			03 Apr 2020 15:23	1
HS20031084-03	35AWW20_032420	24 Mar 2020 09:05			03 Apr 2020 15:23	1
HS20031084-04	LHSMW07_032420	24 Mar 2020 10:15			03 Apr 2020 15:23	1
HS20031084-05	35AWW06_032420	24 Mar 2020 11:10			03 Apr 2020 15:23	1
HS20031084-06	35AWW23_032420	24 Mar 2020 12:05			03 Apr 2020 15:23	1
HS20031084-07	35AWW19_032420	24 Mar 2020 13:00			03 Apr 2020 15:23	1
Batch ID: R359649 (0)	**Test Name :** SUBCONTRACT ANALYSIS - RSK				**Matrix:** Groundwater	
HS20031084-01	35AWW11_032420	24 Mar 2020 07:45			08 Apr 2020 10:19	1
HS20031084-02	35AWW11_032420_a	24 Mar 2020 07:45			08 Apr 2020 10:19	1
HS20031084-03	35AWW20_032420	24 Mar 2020 09:05			08 Apr 2020 10:19	1
HS20031084-04	LHSMW07_032420	24 Mar 2020 10:15			08 Apr 2020 10:19	1
HS20031084-05	35AWW06_032420	24 Mar 2020 11:10			08 Apr 2020 10:19	1
HS20031084-06	35AWW23_032420	24 Mar 2020 12:05			08 Apr 2020 10:19	1
HS20031084-07	35AWW19_032420	24 Mar 2020 13:00			08 Apr 2020 10:19	1

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Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
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QC BATCH REPORT

Batch ID: R358961 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200325** Units: **UG/L** Analysis Date: **25-Mar-2020 15:13**
Client ID: Run ID: **VOA6_358961** SeqNo: **5531839** 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	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

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Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
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QC BATCH REPORT

Batch ID: R358961 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200325** Units: **UG/L** Analysis Date: **25-Mar-2020 15:13**
Client ID: Run ID: **VOA6_358961** SeqNo: **5531839** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	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	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	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	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*44.92*	*1.0*	*50*	*0*	*89.8*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.47*	*1.0*	*50*	*0*	*96.9*	*85 - 114*				
Surr: Dibromofluoromethane	*46.84*	*1.0*	*50*	*0*	*93.7*	*80 - 119*				
Surr: Toluene-d8	*51.58*	*1.0*	*50*	*0*	*103*	*89 - 112*				

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Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
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QC BATCH REPORT

Batch ID: R358961 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200325** Units: **UG/L** Analysis Date: **25-Mar-2020 14:25**
Client ID: Run ID: **VOA6_358961** SeqNo: **5531838** 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	20.02	1.0	20	0	100	78 - 124				
1,1,1-Trichloroethane	19.91	1.0	20	0	99.5	74 - 131				
1,1,2,2-Tetrachloroethane	20.02	1.0	20	0	100	71 - 121				
1,1,2-Trichloroethane	19.82	1.0	20	0	99.1	80 - 119				
1,1-Dichloroethane	20.39	1.0	20	0	102	77 - 125				
1,1-Dichloroethene	19.1	1.0	20	0	95.5	71 - 131				
1,1-Dichloropropene	18.46	1.0	20	0	92.3	78 - 125				
1,2,3-Trichlorobenzene	21.61	1.0	20	0	108	69 - 129				
1,2,3-Trichloropropane	19.86	1.0	20	0	99.3	73 - 122				
1,2,4-Trichlorobenzene	20.91	1.0	20	0	105	69 - 130				
1,2,4-Trimethylbenzene	20.22	1.0	20	0	101	76 - 124				
1,2-Dibromo-3-chloropropane	20.75	1.0	20	0	104	62 - 128				
1,2-Dibromoethane	20.26	1.0	20	0	101	77 - 121				
1,2-Dichlorobenzene	19.73	1.0	20	0	98.6	80 - 119				
1,2-Dichloroethane	20.14	1.0	20	0	101	73 - 128				
1,2-Dichloropropane	19.95	1.0	20	0	99.8	78 - 122				
1,3,5-Trimethylbenzene	19.91	1.0	20	0	99.5	75 - 124				
1,3-Dichlorobenzene	20.03	1.0	20	0	100	80 - 119				
1,3-Dichloropropane	19.89	1.0	20	0	99.5	80 - 119				
1,4-Dichlorobenzene	19.1	1.0	20	0	95.5	79 - 118				
2,2-Dichloropropane	20.17	1.0	20	0	101	60 - 139				
2-Butanone	40.71	2.0	40	0	102	56 - 143				
2-Chlorotoluene	19.76	1.0	20	0	98.8	79 - 122				
2-Hexanone	42.16	2.0	40	0	105	57 - 139				
4-Chlorotoluene	20.11	1.0	20	0	101	78 - 122				
4-Isopropyltoluene	20.38	1.0	20	0	102	77 - 127				
4-Methyl-2-pentanone	40.65	2.0	40	0	102	67 - 130				
Acetone	34.83	2.0	40	0	87.1	39 - 160				
Benzene	19.82	1.0	20	0	99.1	79 - 120				
Bromobenzene	20.12	1.0	20	0	101	80 - 120				
Bromochloromethane	20.25	1.0	20	0	101	78 - 123				
Bromodichloromethane	19.71	1.0	20	0	98.6	79 - 125				
Bromoform	20.47	1.0	20	0	102	66 - 130				
Bromomethane	23.3	1.0	20	0	116	53 - 141				

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Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
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QC BATCH REPORT

Batch ID: R358961 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200325** Units: **UG/L** Analysis Date: **25-Mar-2020 14:25**
Client ID: Run ID: **VOA6_358961** SeqNo: **5531838** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	40.44	2.0	40	0	101	64 - 133				
Carbon tetrachloride	18.54	1.0	20	0	92.7	72 - 136				
Chlorobenzene	20.08	1.0	20	0	100	82 - 118				
Chloroethane	18.83	1.0	20	0	94.2	60 - 138				
Chloroform	19.72	1.0	20	0	98.6	79 - 124				
Chloromethane	19.6	1.0	20	0	98.0	50 - 139				
cis-1,2-Dichloroethene	20.55	1.0	20	0	103	78 - 123				
cis-1,3-Dichloropropene	20.03	1.0	20	0	100	75 - 124				
Dibromochloromethane	19.65	1.0	20	0	98.2	74 - 126				
Dibromomethane	20.33	1.0	20	0	102	79 - 123				
Dichlorodifluoromethane	18.03	1.0	20	0	90.1	32 - 152				
Ethylbenzene	20.22	1.0	20	0	101	79 - 121				
Hexachlorobutadiene	20.38	1.0	20	0	102	66 - 134				
Isopropylbenzene	20.26	1.0	20	0	101	72 - 131				
m,p-Xylene	40.52	2.0	40	0	101	80 - 121				
Methylene chloride	19.82	2.0	20	0	99.1	74 - 124				
Naphthalene	20.82	1.0	20	0	104	61 - 128				
n-Butylbenzene	20.58	1.0	20	0	103	75 - 128				
n-Propylbenzene	20.51	1.0	20	0	103	76 - 126				
o-Xylene	20.36	1.0	20	0	102	78 - 122				
sec-Butylbenzene	19.98	1.0	20	0	99.9	77 - 126				
Styrene	20.06	1.0	20	0	100	78 - 123				
tert-Butylbenzene	19.94	1.0	20	0	99.7	78 - 124				
Tetrachloroethene	20	1.0	20	0	100	74 - 129				
Toluene	20.03	1.0	20	0	100	80 - 121				
trans-1,2-Dichloroethene	20.05	1.0	20	0	100	75 - 124				
trans-1,3-Dichloropropene	19.87	1.0	20	0	99.4	73 - 127				
Trichloroethene	20.18	1.0	20	0	101	79 - 123				
Trichlorofluoromethane	20.08	1.0	20	0	100	65 - 141				
Vinyl chloride	18.07	1.0	20	0	90.3	58 - 137				
Surr: 1,2-Dichloroethane-d4	*51.01*	*1.0*	*50*	*0*	*102*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.41*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*51.96*	*1.0*	*50*	*0*	*104*	*80 - 119*				
Surr: Toluene-d8	*51.04*	*1.0*	*50*	*0*	*102*	*89 - 112*				

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Client: Bhate Environmental Associates, Inc.
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QC BATCH REPORT

Batch ID: R358961 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20031084-03MS** Units: **UG/L** Analysis Date: **25-Mar-2020 19:13**
Client ID: **35AWW20_032420** Run ID: **VOA6_358961** SeqNo: **5531849** PrepDate: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	523.9	25	500	0	105	78 - 124				
1,1,1-Trichloroethane	516.5	25	500	0	103	74 - 131				
1,1,2,2-Tetrachloroethane	517.8	25	500	0	104	71 - 121				
1,1,2-Trichloroethane	605.2	25	500	83.62	104	80 - 119				
1,1-Dichloroethane	1099	25	500	584.3	103	77 - 125				
1,1-Dichloroethene	1829	25	500	1311	104	71 - 131				
1,1-Dichloropropene	502.8	25	500	0	101	78 - 125				
1,2,3-Trichlorobenzene	354.7	25	500	0	70.9	69 - 129				
1,2,3-Trichloropropane	545.6	25	500	0	109	73 - 122				
1,2,4-Trichlorobenzene	373.2	25	500	0	74.6	69 - 130				
1,2,4-Trimethylbenzene	560.8	25	500	0	112	76 - 124				
1,2-Dibromo-3-chloropropane	506.4	25	500	0	101	62 - 128				
1,2-Dibromoethane	521.2	25	500	0	104	77 - 121				
1,2-Dichlorobenzene	563.2	25	500	26.44	107	80 - 119				
1,2-Dichloroethane	528.8	25	500	23.19	101	73 - 128				
1,2-Dichloropropane	509.5	25	500	0	102	78 - 122				
1,3,5-Trimethylbenzene	552.9	25	500	0	111	75 - 124				
1,3-Dichlorobenzene	549.5	25	500	0	110	80 - 119				
1,3-Dichloropropane	505.5	25	500	0	101	80 - 119				
1,4-Dichlorobenzene	533.1	25	500	0	107	79 - 118				
2,2-Dichloropropane	492.4	25	500	0	98.5	60 - 139				
2-Butanone	977.9	50	1000	0	97.8	56 - 143				
2-Chlorotoluene	549.5	25	500	0	110	79 - 122				
2-Hexanone	1064	50	1000	0	106	57 - 139				
4-Chlorotoluene	556.1	25	500	0	111	78 - 122				
4-Isopropyltoluene	575.4	25	500	0	115	77 - 127				
4-Methyl-2-pentanone	1065	50	1000	0	107	67 - 130				
Acetone	732.1	50	1000	0	73.2	39 - 160				
Benzene	530.5	25	500	0	106	79 - 120				
Bromobenzene	544.4	25	500	0	109	80 - 120				
Bromochloromethane	482.4	25	500	0	96.5	78 - 123				
Bromodichloromethane	498.4	25	500	0	99.7	79 - 125				
Bromoform	535.5	25	500	0	107	66 - 130				
Bromomethane	515	25	500	0	103	53 - 141				

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Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
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QC BATCH REPORT

Batch ID: R358961 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS20031084-03MS** Units: **UG/L** Analysis Date: **25-Mar-2020 19:13**
Client ID: **35AWW20_032420** Run ID: **VOA6_358961** SeqNo: **5531849** PrepDate: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1055	50	1000	0	105	64 - 133				
Carbon tetrachloride	506.2	25	500	0	101	72 - 136				
Chlorobenzene	529.2	25	500	0	106	82 - 118				
Chloroethane	569	25	500	0	114	60 - 138				
Chloroform	485.9	25	500	0	97.2	79 - 124				
Chloromethane	504.4	25	500	0	101	50 - 139				
cis-1,2-Dichloroethene	572.4	25	500	72.04	100	78 - 123				
cis-1,3-Dichloropropene	494.7	25	500	0	98.9	75 - 124				
Dibromochloromethane	515.1	25	500	0	103	74 - 126				
Dibromomethane	502.9	25	500	0	101	79 - 123				
Dichlorodifluoromethane	502.4	25	500	0	100	32 - 152				
Ethylbenzene	537.5	25	500	0	108	79 - 121				
Hexachlorobutadiene	393	25	500	0	78.6	66 - 134				
Isopropylbenzene	548.4	25	500	0	110	72 - 131				
m,p-Xylene	1091	50	1000	0	109	80 - 121				
Methylene chloride	483.4	50	500	0	96.7	74 - 124				
Naphthalene	392.3	25	500	0	78.5	61 - 128				
n-Butylbenzene	571.4	25	500	0	114	75 - 128				
n-Propylbenzene	578.8	25	500	0	116	76 - 126				
o-Xylene	538.8	25	500	0	108	78 - 122				
sec-Butylbenzene	581.7	25	500	0	116	77 - 126				
Styrene	533.4	25	500	0	107	78 - 123				
tert-Butylbenzene	564.4	25	500	0	113	78 - 124				
Tetrachloroethene	563.7	25	500	0	113	74 - 129				
Toluene	537	25	500	0	107	80 - 121				
trans-1,2-Dichloroethene	502.5	25	500	0	101	75 - 124				
trans-1,3-Dichloropropene	502.1	25	500	0	100	73 - 127				
Trichloroethene	651.8	25	500	120.3	106	79 - 123				
Trichlorofluoromethane	530.7	25	500	0	106	65 - 141				
Vinyl chloride	2113	25	500	1524	118	58 - 137				
Surr: 1,2-Dichloroethane-d4	*1124*	*25*	*1250*	*0*	*90.0*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*1230*	*25*	*1250*	*0*	*98.4*	*85 - 114*				
Surr: Dibromofluoromethane	*1190*	*25*	*1250*	*0*	*95.2*	*80 - 119*				
Surr: Toluene-d8	*1292*	*25*	*1250*	*0*	*103*	*89 - 112*				

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20031084

QC BATCH REPORT

Batch ID: R358961 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS20031084-03MSD** Units: **UG/L** Analysis Date: **25-Mar-2020 19:37**
Client ID: **35AWW20_032420** Run ID: **VOA6_358961** SeqNo: **5531850** PrepDate: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	498.3	25	500	0	99.7	78 - 124	523.9	5.01	20	
1,1,1-Trichloroethane	480.6	25	500	0	96.1	74 - 131	516.5	7.2	20	
1,1,2,2-Tetrachloroethane	509.1	25	500	0	102	71 - 121	517.8	1.7	20	
1,1,2-Trichloroethane	594.1	25	500	83.62	102	80 - 119	605.2	1.84	20	
1,1-Dichloroethane	1043	25	500	584.3	91.7	77 - 125	1099	5.28	20	
1,1-Dichloroethene	1693	25	500	1311	76.5	71 - 131	1829	7.72	20	
1,1-Dichloropropene	471.8	25	500	0	94.4	78 - 125	502.8	6.35	20	
1,2,3-Trichlorobenzene	411	25	500	0	82.2	69 - 129	354.7	14.7	20	
1,2,3-Trichloropropane	508	25	500	0	102	73 - 122	545.6	7.14	20	
1,2,4-Trichlorobenzene	405.1	25	500	0	81.0	69 - 130	373.2	8.19	20	
1,2,4-Trimethylbenzene	528.2	25	500	0	106	76 - 124	560.8	5.98	20	
1,2-Dibromo-3-chloropropane	513.6	25	500	0	103	62 - 128	506.4	1.4	20	
1,2-Dibromoethane	509.5	25	500	0	102	77 - 121	521.2	2.29	20	
1,2-Dichlorobenzene	533.3	25	500	26.44	101	80 - 119	563.2	5.45	20	
1,2-Dichloroethane	519.1	25	500	23.19	99.2	73 - 128	528.8	1.87	20	
1,2-Dichloropropane	484.5	25	500	0	96.9	78 - 122	509.5	5.03	20	
1,3,5-Trimethylbenzene	518.5	25	500	0	104	75 - 124	552.9	6.42	20	
1,3-Dichlorobenzene	510.2	25	500	0	102	80 - 119	549.5	7.43	20	
1,3-Dichloropropane	502.5	25	500	0	100	80 - 119	505.5	0.605	20	
1,4-Dichlorobenzene	506.7	25	500	0	101	79 - 118	533.1	5.08	20	
2,2-Dichloropropane	448.4	25	500	0	89.7	60 - 139	492.4	9.34	20	
2-Butanone	952.8	50	1000	0	95.3	56 - 143	977.9	2.59	20	
2-Chlorotoluene	516.5	25	500	0	103	79 - 122	549.5	6.19	20	
2-Hexanone	1053	50	1000	0	105	57 - 139	1064	1.03	20	
4-Chlorotoluene	514.2	25	500	0	103	78 - 122	556.1	7.83	20	
4-Isopropyltoluene	538.9	25	500	0	108	77 - 127	575.4	6.55	20	
4-Methyl-2-pentanone	1031	50	1000	0	103	67 - 130	1065	3.29	20	
Acetone	714.6	50	1000	0	71.5	39 - 160	732.1	2.42	20	
Benzene	500.7	25	500	0	100	79 - 120	530.5	5.78	20	
Bromobenzene	509.3	25	500	0	102	80 - 120	544.4	6.65	20	
Bromochloromethane	455.4	25	500	0	91.1	78 - 123	482.4	5.75	20	
Bromodichloromethane	488.7	25	500	0	97.7	79 - 125	498.4	1.96	20	
Bromoform	517.4	25	500	0	103	66 - 130	535.5	3.44	20	
Bromomethane	486.9	25	500	0	97.4	53 - 141	515	5.61	20	

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20031084

QC BATCH REPORT

Batch ID: R358961 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS20031084-03MSD** Units: **UG/L** Analysis Date: **25-Mar-2020 19:37**
Client ID: **35AWW20_032420** Run ID: **VOA6_358961** SeqNo: **5531850** PrepDate: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	967.8	50	1000	0	96.8	64 - 133	1055	8.62	20	
Carbon tetrachloride	468.8	25	500	0	93.8	72 - 136	506.2	7.68	20	
Chlorobenzene	504	25	500	0	101	82 - 118	529.2	4.88	20	
Chloroethane	491.7	25	500	0	98.3	60 - 138	569	14.6	20	
Chloroform	460.9	25	500	0	92.2	79 - 124	485.9	5.27	20	
Chloromethane	458.4	25	500	0	91.7	50 - 139	504.4	9.56	20	
cis-1,2-Dichloroethene	530.9	25	500	72.04	91.8	78 - 123	572.4	7.51	20	
cis-1,3-Dichloropropene	487.4	25	500	0	97.5	75 - 124	494.7	1.48	20	
Dibromochloromethane	498.9	25	500	0	99.8	74 - 126	515.1	3.21	20	
Dibromomethane	505.6	25	500	0	101	79 - 123	502.9	0.521	20	
Dichlorodifluoromethane	454	25	500	0	90.8	32 - 152	502.4	10.1	20	
Ethylbenzene	511.8	25	500	0	102	79 - 121	537.5	4.9	20	
Hexachlorobutadiene	404.9	25	500	0	81.0	66 - 134	393	2.98	20	
Isopropylbenzene	521.2	25	500	0	104	72 - 131	548.4	5.07	20	
m,p-Xylene	1019	50	1000	0	102	80 - 121	1091	6.88	20	
Methylene chloride	457.7	50	500	0	91.5	74 - 124	483.4	5.47	20	
Naphthalene	440.4	25	500	0	88.1	61 - 128	392.3	11.5	20	
n-Butylbenzene	546.5	25	500	0	109	75 - 128	571.4	4.47	20	
n-Propylbenzene	537.2	25	500	0	107	76 - 126	578.8	7.44	20	
o-Xylene	506.2	25	500	0	101	78 - 122	538.8	6.24	20	
sec-Butylbenzene	531.2	25	500	0	106	77 - 126	581.7	9.06	20	
Styrene	489.5	25	500	0	97.9	78 - 123	533.4	8.58	20	
tert-Butylbenzene	526.8	25	500	0	105	78 - 124	564.4	6.9	20	
Tetrachloroethene	521.6	25	500	0	104	74 - 129	563.7	7.76	20	
Toluene	505.5	25	500	0	101	80 - 121	537	6.04	20	
trans-1,2-Dichloroethene	473.3	25	500	0	94.7	75 - 124	502.5	5.99	20	
trans-1,3-Dichloropropene	491.5	25	500	0	98.3	73 - 127	502.1	2.13	20	
Trichloroethene	623.2	25	500	120.3	101	79 - 123	651.8	4.48	20	
Trichlorofluoromethane	486.9	25	500	0	97.4	65 - 141	530.7	8.6	20	
Vinyl chloride	1908	25	500	1524	76.8	58 - 137	2113	10.2	20	
Surr: 1,2-Dichloroethane-d4	*1116*	*25*	*1250*	*0*	*89.3*	*81 - 118*	*1124*	*0.777*	*20*	
Surr: 4-Bromofluorobenzene	*1237*	*25*	*1250*	*0*	*99.0*	*85 - 114*	*1230*	*0.606*	*20*	
Surr: Dibromofluoromethane	*1171*	*25*	*1250*	*0*	*93.7*	*80 - 119*	*1190*	*1.57*	*20*	
Surr: Toluene-d8	*1278*	*25*	*1250*	*0*	*102*	*89 - 112*	*1292*	*1.08*	*20*	

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20031084

QC BATCH REPORT

Batch ID: R358961 (0)	Instrument: VOA6	Method: VOLATILES ORGANICS BY METHOD 8260C

The following samples were analyzed in this batch:

HS20031084-01	HS20031084-02	HS20031084-03	HS20031084-04
HS20031084-05	HS20031084-06	HS20031084-07	HS20031084-08

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20031084

QC BATCH REPORT

Batch ID: R359083 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-03.24.20 W** Units: **mg/L** Analysis Date: **25-Mar-2020 15:10**
Client ID: Run ID: **ICS-Integrion_359083** SeqNo: **5535422** 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-W1** Units: **mg/L** Analysis Date: **26-Mar-2020 07:34**
Client ID: Run ID: **ICS-Integrion_359083** SeqNo: **5535461** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.68	0.500	20	0	98.4	80 - 120				
Nitrogen, Nitrate (As N)	4.035	0.100	4	0	101	80 - 120				
Sulfate	19.1	0.500	20	0	95.5	80 - 120				

LCSD Sample ID: **LCSD-W1** Units: **mg/L** Analysis Date: **26-Mar-2020 07:52**
Client ID: Run ID: **ICS-Integrion_359083** SeqNo: **5535462** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.93	0.500	20	0	99.6	80 - 120	19.68	1.24	20	
Nitrogen, Nitrate (As N)	4.034	0.100	4	0	101	80 - 120	4.035	0.0297	20	
Sulfate	19.34	0.500	20	0	96.7	80 - 120	19.1	1.27	20	

MS Sample ID: **HS20031084-03MS** Units: **mg/L** Analysis Date: **26-Mar-2020 03:03**
Client ID: **35AWW20_032420** Run ID: **ICS-Integrion_359083** SeqNo: **5535446** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	791.4	5.00	100	712.7	78.6	80 - 120				SO
Nitrogen, Nitrate (As N)	22.21	1.00	20	0	111	80 - 120				
Sulfate	1075	5.00	100	1012	62.9	80 - 120				SEO

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20031084

QC BATCH REPORT

Batch ID: R359083 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MS Sample ID: **HS20031084-03MS** Units: **mg/L** Analysis Date: **26-Mar-2020 03:57**
Client ID: **35AWW20_032420** Run ID: **ICS-Integrion_359083** SeqNo: **5535449** PrepDate: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	771.8	25.0	500	718.2	10.7	80 - 120				S
Nitrogen, Nitrate (As N)	24.64	5.00	100	0	24.6	80 - 120				S
Sulfate	1038	25.0	500	1021	3.45	80 - 120				S

MS Sample ID: **HS20031084-03MS** Units: **mg/L** Analysis Date: **25-Mar-2020 21:00**
Client ID: **35AWW20_032420** Run ID: **ICS-Integrion_359083** SeqNo: **5535428** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	690.6	0.500	10	71.83	6190	80 - 120				SEO
Nitrogen, Nitrate (As N)	2.342	0.100	2	0	117	80 - 120				
Sulfate	0.500	0.500	10	102.4	-1020	80 - 120				SO U

MS Sample ID: **HS20030838-01MS** Units: **mg/L** Analysis Date: **26-Mar-2020 00:20**
Client ID: Run ID: **ICS-Integrion_359083** SeqNo: **5535437** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	356.1	0.500	10	352.5	35.8	80 - 120				SEO
Nitrogen, Nitrate (As N)	2.064	0.100	2	0.101	98.1	80 - 120				
Sulfate	42.57	0.500	10	32.76	98.1	80 - 120				

MSD Sample ID: **HS20031084-03MSD** Units: **mg/L** Analysis Date: **25-Mar-2020 21:37**
Client ID: **35AWW20_032420** Run ID: **ICS-Integrion_359083** SeqNo: **5535429** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	690.3	0.500	10	71.83	6180	80 - 120	690.6	0.0442	20	SEO
Nitrogen, Nitrate (As N)	2.372	0.100	2	0	119	80 - 120	2.342	1.28	20	
Sulfate	0.500	0.500	10	102.4	-1020	80 - 120	0	0	20	SO U

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20031084

QC BATCH REPORT

Batch ID: R359083 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MSD Sample ID: **HS20031084-03MSD** Units: **mg/L** Analysis Date: **26-Mar-2020 04:15**
Client ID: **35AWW20_032420** Run ID: **ICS-Integrion_359083** SeqNo: **5535450** PrepDate: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	779.4	25.0	500	718.2	12.2	80 - 120	771.8	0.973	20	S
Nitrogen, Nitrate (As N)	24.79	5.00	100	0	24.8	80 - 120	24.64	0.587	20	S
Sulfate	1049	25.0	500	1021	5.66	80 - 120	1038	1.06	20	S

MSD Sample ID: **HS20031084-03MSD** Units: **mg/L** Analysis Date: **26-Mar-2020 03:21**
Client ID: **35AWW20_032420** Run ID: **ICS-Integrion_359083** SeqNo: **5535447** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	790.8	5.00	100	712.7	78.0	80 - 120	791.4	0.0758	20	SO
Nitrogen, Nitrate (As N)	22.23	1.00	20	0	111	80 - 120	22.21	0.0855	20	
Sulfate	1076	5.00	100	1012	63.7	80 - 120	1075	0.0781	20	SEO

MSD Sample ID: **HS20030838-01MSD** Units: **mg/L** Analysis Date: **26-Mar-2020 00:38**
Client ID: Run ID: **ICS-Integrion_359083** SeqNo: **5535438** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	353.8	0.500	10	352.5	13.3	80 - 120	356.1	0.632	20	SEO
Nitrogen, Nitrate (As N)	2.122	0.100	2	0.101	101	80 - 120	2.064	2.81	20	
Sulfate	41.66	0.500	10	32.76	89.0	80 - 120	42.57	2.17	20	

The following samples were analyzed in this batch:

HS20031084-01	HS20031084-02	HS20031084-03	HS20031084-04
HS20031084-05	HS20031084-06	HS20031084-07	

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: **HS20031084**

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

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS20031084

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS20031084-01	35AWW11_032420	Login	3/25/2020 10:16:12 AM	JML	Sub
HS20031084-01	35AWW11_032420	Login	3/25/2020 10:16:12 AM	JML	Sub
HS20031084-01	35AWW11_032420	Login	3/25/2020 10:16:12 AM	JML	WET034
HS20031084-01	35AWW11_032420	Login	3/25/2020 10:16:12 AM	JML	VOA176
HS20031084-01	35AWW11_032420	Login	3/25/2020 10:16:12 AM	JML	Sub
HS20031084-01	35AWW11_032420	Login	3/25/2020 10:16:12 AM	JML	Sub
HS20031084-02	35AWW11_032420_a	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-02	35AWW11_032420_a	Login	3/25/2020 10:24:09 AM	JML	WET034
HS20031084-02	35AWW11_032420_a	Login	3/25/2020 10:24:09 AM	JML	VOA176
HS20031084-02	35AWW11_032420_a	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-02	35AWW11_032420_a	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-03	35AWW20_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-03	35AWW20_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-03	35AWW20_032420	Login	3/25/2020 10:24:09 AM	JML	WET034
HS20031084-03	35AWW20_032420	Login	3/25/2020 10:24:09 AM	JML	VOA176
HS20031084-03	35AWW20_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-03	35AWW20_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-04	LHSMW07_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-04	LHSMW07_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-04	LHSMW07_032420	Login	3/25/2020 10:24:09 AM	JML	WET034
HS20031084-04	LHSMW07_032420	Login	3/25/2020 10:24:09 AM	JML	VOA176
HS20031084-04	LHSMW07_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-04	LHSMW07_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-05	35AWW06_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-05	35AWW06_032420	Login	3/25/2020 10:24:09 AM	JML	WET034
HS20031084-05	35AWW06_032420	Login	3/25/2020 10:24:09 AM	JML	VOA176
HS20031084-05	35AWW06_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-05	35AWW06_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-06	35AWW23_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-06	35AWW23_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-06	35AWW23_032420	Login	3/25/2020 10:24:09 AM	JML	WET034
HS20031084-06	35AWW23_032420	Login	3/25/2020 10:24:09 AM	JML	VOA176
HS20031084-06	35AWW23_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-06	35AWW23_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-07	35AWW19_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-07	35AWW19_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-07	35AWW19_032420	Login	3/25/2020 10:24:09 AM	JML	WET034
HS20031084-07	35AWW19_032420	Login	3/25/2020 10:24:09 AM	JML	VOA176
HS20031084-07	35AWW19_032420	Login	3/25/2020 10:24:09 AM	JML	Sub

ALS Houston, US Date: 08-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS20031084

SAMPLE TRACKING

HS20031084-07	35AWW19_032420	Login	3/25/2020 10:24:09 AM	JML	Sub
HS20031084-08	Trip Blank	Login	3/25/2020 10:28:32 AM	JML	VOA176

ALS Houston, US Date: 08-Apr-20

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS20031084
Date/Time Received: **25-Mar-2020 08:45**
Received by: **AC**

Checklist completed by: *Paresh M. Giga* eSignature 25-Mar-2020 Date
Reviewed by: *RJ Modashia* eSignature 25-Mar-2020 Date

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):	0.4c U/c	IR11
Cooler(s)/Kit(s):	44711	
Date/Time sample(s) sent to storage:	3/25/2020 10:50	

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:

bhate

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: _____ of _____

Project/Phase No: NWO1312.0150

COC Number(1): _____

LIMS Number: _____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	MEE	TOC	Carbon Dioxide	Anions	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35AWW11-032420	24 MAR 2020	0745	-	N		WG	12	X	X	X	X	X				
35AWW11-032420-a	24 MAR 2020	0745	-	FD		WG	12	X	X	X	X	X				
35AWW20-032420	24 MAR 2020	0905	-	N		WG	11	X	X	X	X	X				
35AWW20-032420-MS	24 MAR 2020	0905		MS		WG	11	X	X	X	X	X				
35AWW20-032420-MSD	24 MAR 2020	0905		SD		WG	11	X	X	X	X	X				
LHSMW07-032420	24 MAR 2020	1015	-	N		WG	11	X	X	X	X	X				
35AWW06-032420	24 MAR 2020	1110	-	N		WG	11	X	X	X	X	X				
35AWW23-032420	24 MAR 2020	1205	-	N		WG	11	X	X	X	X	X				
35AWW19-032420	24 MAR 2020	1300	-	N		WG	11	X	X	X	X	X				
TRIP BLANK	24 MAR 2020		-	TB		W	2	X								
			-													

Sample Analysis Requested (5) | Quality Assurance Samples (6)

HS20031084
Bhate Environmental Associates, Inc.
LHAAP-58

COMMENTS: _____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received By (signed)	Date	Time
1. Scott Beesinger	3/24/20	1430	1. AIC	3/25/2020	0830
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.:

Method of Shipment: _____

Fed Ex Airbill Number:

Analytical Lab: ALS 10450 Stanciff Rd, Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

4471 SIC

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

44711

CUSTODY SEAL

Date: 3/24/20 Time: 1430
Name: Scott Beesinger
Company: ALS

Seal Broken By: SM
Date: 03/25/20

44711 MAR 25 2020

Must Deliver Next Business Day
Time and Tempature Sensitive!

44711

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: 01NOV19
ACTWGT: 1.00 LB MAN
CAD: 3001130/CAFE3211
DIMS: 19x16x13 IN

TO **CLIENT SERVICES**
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5868
REF: LHAAP 4 - RJ

RMA:

FedEx Express

FedEx
TRK# 0221 1251 0291 2710

WED - 25 MAR 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

April 03, 2020

Analytical Report for Service Request No: K2002616

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

RE: HS20031084

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory March 26, 2020
For your reference, these analyses have been assigned our service request number **K2002616.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

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www.alsglobal.com

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636-1 068
www.alsglobal.com

ALS Environmental

Client: ALS Environmental - US
Project: HS20031084
Sample Matrix: Ground Water

Service Request: K2002616
Date Received: 03/26/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Seven ground water samples were received for analysis at ALS Environmental on 03/26/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 04/03/2020

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636-1 068
www.alsglobal.com

K2002616

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: **Texas** **COC ID:** **13579**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

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:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20031084
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20031084-01**	**35AWW11_032420**	**Groundwater**	**24 Mar 2020 07:45**
	TOC Analysis for DOD Level IV/Excel EDD			08 Apr 2020
2.	**HS20031084-02**	**35AWW11_032420-a**	**Groundwater**	**24 Mar 2020 07:45**
	TOC Analysis for DOD Level IV/Excel EDD			08 Apr 2020
3.	**HS20031084-03**	**35AWW20_032420**	**Groundwater**	**24 Mar 2020 09:05**
	TOC Analysis for DOD Level IV/Excel EDD			08 Apr 2020
4.	**HS20031084-04**	**LHSMW07_032420**	**Groundwater**	**24 Mar 2020 10:15**
	TOC Analysis for DOD Level IV/Excel EDD			08 Apr 2020
5.	**HS20031084-05**	**35AWW06_032420**	**Groundwater**	**24 Mar 2020 11:10**
	TOC Analysis for DOD Level IV/Excel EDD			08 Apr 2020
6.	**HS20031084-06**	**35AWW23_032420**	**Groundwater**	**24 Mar 2020 12:05**
	TOC Analysis for DOD Level IV/Excel EDD			08 Apr 2020
7.	**HS20031084-07**	**35AWW19_032420**	**Groundwater**	**24 Mar 2020 13:00**
	TOC Analysis for DOD Level IV/Excel EDD			08 Apr 2020

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.
HS20031084-03 = MS/MSD

RIGHT SOLUTIONS | RIGHT PARTNER

K200261G

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **13579**

QC Level: DOD IV (DoD Data Package)

Relinquished By:		Date/Time:	3/25/20 18:00
Received By:	ALS	Date/Time:	3/26/20 0940
Cooler ID(s):		Temperature(s):	

PC KL

Cooler Receipt and Preservation Form

Client ALS-Houston Service Request K2002616

Received: 3/26/20 Opened: 3/26/20 By: dh Unloaded: 3/26/20 By: dh

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 Front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID NA	Tracking Number NA	Filed
—	4.2	4.3	3.9	3.8	398001488WS	13575	125102958701	

4. Packing material: *Inserts* *Baggies* (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: ***Frozen*** ***Partially Thawed*** ***Thawed***
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636-1 068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2002616
Project:	HS20031084	**Date Collected:**	03/24/20
Sample Matrix:	Ground Water	**Date Received:**	03/26/20
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
35AWW11_32420	K2002616-001	**5.88**	0.50	0.20	0.07	1	03/31/20 14:24	
35AWW11_32420-a	K2002616-002	**7.86**	0.50	0.20	0.07	1	03/31/20 14:52	
35AWW20_32420	K2002616-003	**18.3**	0.50	0.20	0.07	1	03/31/20 15:20	
LHSMW07_32420	K2002616-004	**3.29**	0.50	0.20	0.07	1	03/31/20 16:18	
35AWW06_32420	K2002616-005	**15.6**	0.50	0.20	0.07	1	03/31/20 16:46	
35AWW23_32420	K2002616-006	**250**	100	40	20	200	03/31/20 17:44	
35AWW19_32420	K2002616-007	**1.79**	0.50	0.20	0.07	1	03/31/20 18:12	
Method Blank	K2002616-MB	ND U	0.50	0.20	0.07	1	03/31/20 13:40	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2002616
Project	HS20031084	**Date Collected:**	03/24/20
Sample Matrix:	Ground Water	**Date Received:**	03/26/20
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Replicate Sample Summary

Carbon, Total Organic

Sample Name:	Lab Code:	LOQ	LOD	MDL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
35AWW11_32420	K2002616-001DUP	0.50	0.20	0.07	5.88	5.76	5.82	2	10	03/31/20
35AWW11_32420-a	K2002616-002DUP	0.50	0.20	0.07	7.86	8.19	8.03	4	10	03/31/20
35AWW20_32420	K2002616-003DUP	0.50	0.20	0.07	18.3	17.9	18.1	2	10	03/31/20
LHSMW07_32420	K2002616-004DUP	0.50	0.20	0.07	3.29	2.88	3.08	13 *	10	03/31/20
35AWW06_32420	K2002616-005DUP	0.50	0.20	0.07	15.6	16.3	15.9	5	10	03/31/20
35AWW23_32420	K2002616-006DUP	100	40	20	250	240	244	5	10	03/31/20
35AWW19_32420	K2002616-007DUP	0.50	0.20	0.07	1.79	1.76	1.77	1	10	03/31/20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2002616
Project:	HS20031084	**Date Collected:**	03/24/20
Sample Matrix:	Ground Water	**Date Received:**	03/26/20
		Date Analyzed:	03/31/20
		Date Extracted:	NA

Matrix Spike Summary
Carbon, Total Organic

Sample Name:	35AWW20_32420	**Units:**	mg/L
Lab Code:	K2002616-003	**Basis:**	NA
Analysis Method:	SM 5310 C		
Prep Method:	None		

Matrix Spike
K2002616-003MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	18.3	129	100	111	83-117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2002616
Project:	HS20031084	**Date Analyzed:**	03/31/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	675059

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2002616-LCS	23.2	25.0	93	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2002616
Project: HS20031084

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	675059	KQ2004390-01	03/31/20 13:11	25.0	24.9	100	90-110
CCV2	675059	KQ2004390-02	03/31/20 17:14	25.0	26.4	105	90-110
CCV3	675059	KQ2004390-03	03/31/20 22:24	25.0	24.5	98	90-110
CCV4	675059	KQ2004390-04	04/01/20 03:08	25.0	23.9	96	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K2002616
Project: HS20031084

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	675059	KQ2004390-05	03/31/20 13:25	0.50	0.20	0.07	ND	U
CCB2	675059	KQ2004390-06	03/31/20 17:29	0.50	0.20	0.07	ND	U
CCB3	675059	KQ2004390-07	03/31/20 22:39	0.50	0.20	0.07	ND	U
CCB4	675059	KQ2004390-08	04/01/20 03:22	0.50	0.20	0.07	ND	U

Raw Data

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636-1 068
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Work Request # Original ( ) K2002616, 2617, 2626, 2643, 2669, 2615, 2627,

Tier: IV IV I IV II I I

Date Analyzed: 3/31/20

Analyst: BDP

Analysis: TOC

TOC: 675059, 675060

Run #

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS: K2002616-4/4d report a high %RSD due to suspected non-homogenous sample.

Final Approved by: _____ Date: 4/1/20

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 675059 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002616-001	Carbon, Total Organic	N/A		Ground Water	5.88 mg/L	10 mL	5.88 mg/L	1	0.07	0.50			3/31/20 14:24:00	N	IV
K2002616-002	Carbon, Total Organic	N/A		Ground Water	7.86 mg/L	10 mL	7.86 mg/L	1	0.07	0.50			3/31/20 14:52:00	N	IV
K2002616-003	Carbon, Total Organic	N/A		Ground Water	18.28 mg/L	10 mL	18.3 mg/L	1	0.07	0.50			3/31/20 15:20:00	Y	IV
K2002616-004	Carbon, Total Organic	N/A		Ground Water	3.29 mg/L	10 mL	3.29 mg/L	1	0.07	0.50			3/31/20 16:18:00	N	IV
K2002616-005	Carbon, Total Organic	N/A		Ground Water	15.55 mg/L	10 mL	15.6 mg/L	1	0.07	0.50			3/31/20 16:46:00	N	IV
K2002616-006	Carbon, Total Organic	N/A		Ground Water	1.25 mg/L	10 mL	250 mg/L	200	20	100			3/31/20 17:44:00	N	IV
K2002616-007	Carbon, Total Organic	N/A		Ground Water	1.79 mg/L	10 mL	1.79 mg/L	1	0.07	0.50			3/31/20 18:12:00	N	IV
K2002617-001	Carbon, Total Organic	N/A		Water	1.97 mg/L	10 mL	1.97 mg/L	1	0.07	0.50			3/31/20 18:40:00	N	IV
K2002626-001	Carbon, Total Organic	N/A		Ground Water	1.96 mg/L	10 mL	78 mg/L	40	3	20			3/31/20 21:56:00	N	I
K2002626-002	Carbon, Total Organic	N/A		Ground Water	4.92 mg/L	10 mL	4.92 mg/L	1	0.07	0.50			3/31/20 23:23:00	N	I
K2002626-003	Carbon, Total Organic	N/A		Ground Water	8.93 mg/L	10 mL	8.93 mg/L	1	0.07	0.50			3/31/20 23:51:00	N	I
K2002643-001	Carbon, Total Organic	N/A		Ground Water	5.21 mg/L	10 mL	5.21 mg/L	1	0.07	0.50			3/31/20 19:08:00	N	IV
K2002643-002	Carbon, Total Organic	N/A		Ground Water	13.59 mg/L	10 mL	2720 mg/L	200	20	100			3/31/20 19:36:00	N	IV
K2002643-003	Carbon, Total Organic	N/A		Ground Water	4.10 mg/L	10 mL	820 mg/L	200	20	100			3/31/20 20:04:00	N	IV
K2002643-004	Carbon, Total Organic	N/A		Ground Water	4.10 mg/L	10 mL	820 mg/L	200	20	100			3/31/20 20:32:00	N	IV
K2002643-005	Carbon, Total Organic	N/A		Ground Water	3.23 mg/L	10 mL	650 mg/L	200	20	100			3/31/20 21:00:00	N	IV
K2002669-001	Carbon, Total Organic	N/A		Water	2.38 mg/L	10 mL	2.38 mg/L	1	0.07	0.50			3/31/20 21:28:00	N	II
KQ2004390-01	Carbon, Total Organic	CCV		Ground Water	24.90 mg/L	10 mL	24.9 mg/L	1					3/31/20 13:11:00	N	IV
KQ2004390-02	Carbon, Total Organic	CCV		Ground Water	26.36 mg/L	10 mL	26.4 mg/L	1					3/31/20 17:14:00	N	IV
KQ2004390-03	Carbon, Total Organic	CCV		Ground Water	24.52 mg/L	10 mL	24.5 mg/L	1					3/31/20 22:24:00	N	IV
KQ2004390-04	Carbon, Total Organic	CCV		Ground Water	23.88 mg/L	10 mL	23.9 mg/L	1					4/1/20 03:08:00	N	IV
KQ2004390-05	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/31/20 13:25:00	N	IV
KQ2004390-06	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/31/20 17:29:00	N	IV
KQ2004390-07	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/31/20 22:39:00	N	IV

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 675059 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ2004390-08	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			4/1/20 03:22:00	N	IV
KQ2004390-09	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/31/20 13:40:00	N	IV
KQ2004390-10	Carbon, Total Organic	LCS		Ground Water	23.18 mg/L	10 mL	23.2 mg/L	1	0.07	0.50	93		3/31/20 13:55:00	N	IV
KQ2004390-11	Carbon, Total Organic	MS	K2002616-003	Ground Water	32.23 mg/L	10 mL	129 mg/L	4	0.3	2.0	111		3/31/20 15:49:00	N	IV
KQ2004390-12	Carbon, Total Organic	DUP	K2002616-002	Ground Water	8.19 mg/L	10 mL	8.19 mg/L	1	0.07	0.50		4	3/31/20 14:52:00	N	IV
KQ2004390-13	Carbon, Total Organic	DUP	K2002616-001	Ground Water	5.76 mg/L	10 mL	5.76 mg/L	1	0.07	0.50		2	3/31/20 14:24:00	N	IV
KQ2004390-14	Carbon, Total Organic	DUP	K2002616-003	Ground Water	17.94 mg/L	10 mL	17.9 mg/L	1	0.07	0.50		2	3/31/20 15:20:00	N	IV
KQ2004390-15	Carbon, Total Organic	DUP	K2002616-004	Ground Water	2.88 mg/L	10 mL	2.88 mg/L	1	0.07	0.50		13*	3/31/20 16:18:00	N	IV
KQ2004390-16	Carbon, Total Organic	DUP	K2002616-005	Ground Water	16.31 mg/L	10 mL	16.3 mg/L	1	0.07	0.50		5	3/31/20 16:46:00	N	IV
KQ2004390-17	Carbon, Total Organic	DUP	K2002616-006	Ground Water	1.19 mg/L	10 mL	240 mg/L	200	20	100		5	3/31/20 17:44:00	N	IV
KQ2004390-18	Carbon, Total Organic	DUP	K2002616-007	Ground Water	1.76 mg/L	10 mL	1.76 mg/L	1	0.07	0.50		1	3/31/20 18:12:00	N	IV
KQ2004390-19	Carbon, Total Organic	DUP	K2002617-001	Water	1.92 mg/L	10 mL	1.92 mg/L	1	0.07	0.50		3	3/31/20 18:40:00	N	IV
KQ2004390-20	Carbon, Total Organic	DUP	K2002626-003	Ground Water	9.15 mg/L	10 mL	9.15 mg/L	1	0.07	0.50		3	3/31/20 23:51:00	N	I
KQ2004390-21	Carbon, Total Organic	DUP	K2002626-001	Ground Water	1.84 mg/L	10 mL	74 mg/L	40	3	20		6	3/31/20 21:56:00	N	I
KQ2004390-22	Carbon, Total Organic	DUP	K2002626-002	Ground Water	4.82 mg/L	10 mL	4.82 mg/L	1	0.07	0.50		2	3/31/20 23:23:00	N	I
KQ2004390-23	Carbon, Total Organic	DUP	K2002643-002	Ground Water	13.82 mg/L	10 mL	2760 mg/L	200	20	100		2	3/31/20 19:36:00	N	IV
KQ2004390-24	Carbon, Total Organic	DUP	K2002643-001	Ground Water	5.01 mg/L	10 mL	5.01 mg/L	1	0.07	0.50		4	3/31/20 19:08:00	N	IV
KQ2004390-25	Carbon, Total Organic	DUP	K2002643-003	Ground Water	4.00 mg/L	10 mL	800 mg/L	200	20	100		3	3/31/20 20:04:00	N	IV
KQ2004390-26	Carbon, Total Organic	DUP	K2002643-004	Ground Water	4.10 mg/L	10 mL	820 mg/L	200	20	100		<1	3/31/20 20:32:00	N	IV
KQ2004390-27	Carbon, Total Organic	DUP	K2002643-005	Ground Water	3.23 mg/L	10 mL	650 mg/L	200	20	100		<1	3/31/20 21:00:00	N	IV
KQ2004390-28	Carbon, Total Organic	DUP	K2002669-001	Water	2.35 mg/L	10 mL	2.35 mg/L	1	0.07	0.50		1	3/31/20 21:28:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 675060 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2002615-001	Carbon, Total Organic	N/A		Water	3.82 mg/L	10 mL	3.82 mg/L	1	0.07	0.50			4/1/20 02:40:00	N	I
K2002615-002	Carbon, Total Organic	N/A		Water	1.99 mg/L	10 mL	1.99 mg/L	1	0.07	0.50			4/1/20 03:37:00	N	I
K2002615-003	Carbon, Total Organic	N/A		Water	1.84 mg/L	10 mL	1.84 mg/L	1	0.07	0.50			4/1/20 04:34:00	N	I
K2002615-004	Carbon, Total Organic	N/A		Water	1.94 mg/L	10 mL	1.94 mg/L	1	0.07	0.50			4/1/20 05:03:00	N	I
K2002615-005	Carbon, Total Organic	N/A		Water	1.75 mg/L	10 mL	1.75 mg/L	1	0.07	0.50			4/1/20 05:31:00	N	I
K2002627-001	Carbon, Total Organic	N/A		Ground Water	9.51 mg/L	10 mL	9.51 mg/L	1	0.07	0.50			4/1/20 00:19:00	N	I
K2002627-002	Carbon, Total Organic	N/A		Ground Water	17.26 mg/L	10 mL	17.3 mg/L	1	0.07	0.50			4/1/20 00:47:00	N	I
K2002627-003	Carbon, Total Organic	N/A		Ground Water	21.98 mg/L	10 mL	22.0 mg/L	1	0.07	0.50			4/1/20 01:15:00	N	I
K2002627-004	Carbon, Total Organic	N/A		Ground Water	16.50 mg/L	10 mL	16.5 mg/L	1	0.07	0.50			4/1/20 01:43:00	N	I
K2002627-005	Carbon, Total Organic	N/A		Ground Water	3.70 mg/L	10 mL	74 mg/L	20	2	10			4/1/20 02:11:00	N	I
KQ2004389-01	Carbon, Total Organic	MS	K2002615-002	Water	29.40 mg/L	10 mL	29.4 mg/L	1	0.07	0.50	110		4/1/20 04:05:00	N	I
KQ2004389-02	Carbon, Total Organic	CCV		Ground Water	24.52 mg/L	10 mL	24.5 mg/L	1					3/31/20 22:24:00	N	I
KQ2004389-03	Carbon, Total Organic	CCV		Ground Water	23.88 mg/L	10 mL	23.9 mg/L	1					4/1/20 03:08:00	N	I
KQ2004389-04	Carbon, Total Organic	CCV		Ground Water	24.14 mg/L	10 mL	24.1 mg/L	1					4/1/20 05:59:00	N	I
KQ2004389-05	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/31/20 22:39:00	N	I
KQ2004389-06	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			4/1/20 03:22:00	N	I
KQ2004389-07	Carbon, Total Organic	CCB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			4/1/20 06:14:00	N	I
KQ2004389-08	Carbon, Total Organic	MB		Ground Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			3/31/20 22:54:00	N	I
KQ2004389-09	Carbon, Total Organic	LCS		Ground Water	23.02 mg/L	10 mL	23.0 mg/L	1	0.07	0.50	92		3/31/20 23:08:00	N	I
KQ2004389-10	Carbon, Total Organic	DUP	K2002615-001	Water	3.86 mg/L	10 mL	3.86 mg/L	1	0.07	0.50		<1	4/1/20 02:40:00	N	I
KQ2004389-11	Carbon, Total Organic	DUP	K2002615-002	Water	2.06 mg/L	10 mL	2.06 mg/L	1	0.07	0.50		3	4/1/20 03:37:00	N	I
KQ2004389-12	Carbon, Total Organic	DUP	K2002615-003	Water	1.83 mg/L	10 mL	1.83 mg/L	1	0.07	0.50		<1	4/1/20 04:34:00	N	I
KQ2004389-13	Carbon, Total Organic	DUP	K2002615-004	Water	1.97 mg/L	10 mL	1.97 mg/L	1	0.07	0.50		1	4/1/20 05:03:00	N	I
KQ2004389-14	Carbon, Total Organic	DUP	K2002615-005	Water	1.77 mg/L	10 mL	1.77 mg/L	1	0.07	0.50		1	4/1/20 05:31:00	N	I
KQ2004389-15	Carbon, Total Organic	DUP	K2002627-001	Ground Water	9.27 mg/L	10 mL	9.27 mg/L	1	0.07	0.50		3	4/1/20 00:19:00	N	I
KQ2004389-16	Carbon, Total Organic	DUP	K2002627-002	Ground Water	16.99 mg/L	10 mL	17.0 mg/L	1	0.07	0.50		2	4/1/20 00:47:00	N	I
KQ2004389-17	Carbon, Total Organic	DUP	K2002627-003	Ground Water	22.16 mg/L	10 mL	22.2 mg/L	1	0.07	0.50		<1	4/1/20 01:15:00	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 675060 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ2004389-18	Carbon, Total Organic	DUP	K2002627-004	Ground Water	15.54 mg/L	10 mL	15.5 mg/L	1	0.07	0.50		6	4/1/20 01:43:00	N	I
KQ2004389-19	Carbon, Total Organic	DUP	K2002627-005	Ground Water	3.73 mg/L	10 mL	75 mg/L	20	2	10		<1	4/1/20 02:11:00	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

TOC: ~~674059~~, 675060 EDD 4/11/20 675059

Schedule: 03312020

Version: 2
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2020/03/31 09:56 - Tuesday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
75	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	6	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K2002616-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K2002616-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K2002616-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
6	Sample	K2002616-003.01 ms 4x	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
7	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
8	Sample	K2002616-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K2002616-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K2002616-006.01 200x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K2002616-007.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K2002617-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K2002643-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K2002643-002.01 200x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K2002643-003.01 200x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K2002643-004.01 200x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K2002643-005.01 200x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K2002669-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K2002626-001.03 40x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	K2002626-002.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	K2002626-003.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K2002627-001.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K2002627-002.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K2002627-003.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K2002627-004.03	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K2002627-005.03 20x	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K2002615-001.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K2002615-002.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K2002615-002.01 ms	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
31	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
32	Sample	K2002615-003.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K2002615-004.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K2002615-005.01	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - 03312020
Tuesday, March 31, 2020 09:56 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2020/04/01 09:42 - Wednesday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	03312020	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2)		
Comment:			

Report Results

Sample Type: Clean

From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/03/31 09:56

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	14.29	20.33	6.04	49.65	05:22
2	TC Clean	48.76	52.68	3.92	49.97	04:04
3	TC Clean	23.02	27.18	4.16	50.02	03:48
4	TC Clean	16.99	20.98	3.99	49.98	03:47

Sample Type: Sample

From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	75	TOC	RB	0.3482 ppm	0.3035 ppm	87.1600%	2020/03/31 10:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8670	8.6704	13.06	17.11	4.06	49.97	10:26
2	TOC	0.5444	5.4437	10.89	14.92	4.03	49.95	10:27
3	TOC	0.2892	2.8920	9.17	13.14	3.96	50.01	10:25
4	TOC	0.1915	1.9150	8.51	12.63	4.12	50.00	10:26
5	TOC	0.1109	1.1091	7.97	11.90	3.93	50.02	10:26
6	TOC	0.0864	0.8637	7.81	11.82	4.01	50.06	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2272 (IC) (v1367)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/03/31 11:39

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	12.69	17.32	4.63	49.59	05:20
2	TC Clean	5.58	9.55	3.97	49.97	04:00
3	TC Clean	3.49	7.47	3.98	49.97	03:46
4	TC Clean	3.19	7.07	3.88	50.08	03:44

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/03/31 12:00

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.98	4.91	3.92	49.61	05:11
2	TC Clean	7.38	11.45	4.07	50.06	04:05
3	TC Clean	2.70	6.66	3.96	49.97	03:52
4	TC Clean	2.62	6.74	4.12	50.04	03:54

Sample Type: Blank (Creating v1368) — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2020/03/31 12:22

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.99	4.94	3.95	49.76	05:21
2	TC Clean	6.55	10.65	4.10	50.01	04:03
3	TC Clean	2.47	6.68	4.21	49.97	03:54
4	TC Clean	2.37	6.44	4.07	50.00	03:54
5	Reagent Blank	2.81	6.93	4.12	50.03	05:06

6	Acid Blank	0.86	5.01	4.15	49.61	05:28

Sample Type: Sample — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	D	TOC	RB	0.1360 ppm	0.0000 ppm	0.0000%	2020/03/31 12:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1360	1.3602	8.14	12.20	4.06	50.02	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.9028 ppm (PASS)	0.0000 ppm	0%	2020/03/31 13:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.9028	249.0277	175.29	179.38	4.09	50.03	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB — From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/03/31 13:25

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.09	10.24	4.15	50.07	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/31 13:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.63	9.78	4.15	50.03	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS

From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	23.1776 ppm (PASS)	0.0000 ppm	0%	2020/03/31 13:55

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	23.1776	231.7756	163.69	167.63	3.94	50.02	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample

From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.3678 ppm	0.0000 ppm	0.0000%	2020/03/31 14:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3678	3.6784	9.70	13.82	4.12	50.04	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K2002616-001.01	5.8203 ppm	0.0834 ppm	1.4300%	2020/03/31 14:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.8792	58.7924	46.76	50.75	3.99	50.05	10:27
2	TOC	5.7613	57.6132	45.97	49.87	3.90	50.07	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis	Sample ID	Result (ppmC)	Std. Dev.	RSD	Start Time

		Type			(ppmC)		
◈	4	TOC	K2002616-002.01	8.0252 ppm	0.2306 ppm	2.8700%	2020/03/31 14:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.8621	78.6215	60.10	64.03	3.94	50.05	10:30
2	TOC	8.1882	81.8824	62.29	66.34	4.05	50.04	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	K2002616-003.01	18.1073 ppm	0.2396 ppm	1.3200%	2020/03/31 15:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	18.2768	182.7676	130.13	134.06	3.92	50.07	10:29
2	TOC	17.9379	179.3788	127.86	131.72	3.86	50.08	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K2002616-003.01 ms 4x	32.2294 ppm	0.0000 ppm	0.0000%	2020/03/31 15:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	32.2294	322.2939	223.96	227.85	3.88	50.08	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	RB	0.1033 ppm	0.0000 ppm	0.0000%	2020/03/31 16:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1033	1.0330	7.92	11.83	3.92	50.11	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K2002616-004.01	3.0809 ppm	0.2896 ppm	9.4000%	2020/03/31 16:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.2856	32.8562	29.32	33.48	4.16	50.10	10:28
2	TOC	2.8761	28.7610	26.56	30.62	4.06	50.08	10:28

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K2002616-005.01	15.9327 ppm	0.5349 ppm	3.3600%	2020/03/31 16:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	15.5545	155.5452	111.83	115.79	3.96	50.06	10:29
2	TOC	16.3110	163.1095	116.91	121.05	4.14	50.06	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.3566 ppm (PASS)	0.0000 ppm	0%	2020/03/31 17:14

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	26.3566	263.5660	185.06	188.96	3.89	50.09	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/03/31 17:29

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.58	11.56	3.98	50.10	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample

From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	10	TOC	K2002616-006.01 200x	1.2187 ppm	0.0421 ppm	3.4500%	2020/03/31 17:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.2484	12.4844	15.62	19.50	3.88	50.11	10:29
2	TOC	1.1890	11.8896	15.22	19.07	3.85	50.09	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	11	TOC	K2002616-007.01	1.7747 ppm	0.0154 ppm	0.8700%	2020/03/31 18:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7855	17.8554	19.23	23.17	3.94	50.06	10:32
2	TOC	1.7638	17.6383	19.08	22.95	3.86	50.08	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	12	TOC	K2002617-001.01	1.9417 ppm	0.0365 ppm	1.8800%	2020/03/31 18:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9675	19.6755	20.45	24.36	3.91	50.05	10:29
2	TOC	1.9159	19.1595	20.11	24.00	3.90	50.07	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K2002643-001.01	5.1094 ppm	0.1398 ppm	2.7400%	2020/03/31 19:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.2083	52.0831	42.25	46.15	3.90	50.07	10:31
2	TOC	5.0105	50.1054	40.92	44.84	3.93	50.07	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K2002643-002.01 200x	13.7052 ppm	0.1570 ppm	1.1500%	2020/03/31 19:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	13.5942	135.9421	98.64	102.59	3.94	50.12	10:27
2	TOC	13.8162	138.1622	100.14	104.12	3.99	50.10	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC)	CAS_salt_010711	CAS_salt_010711

(v1368) (v4) (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K2002643-003.01 200x	4.0489 ppm	0.0728 ppm	1.8000%	2020/03/31 20:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.1003	41.0035	34.80	38.76	3.96	50.11	10:30
2	TOC	3.9974	39.9745	34.11	38.24	4.13	50.08	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K2002643-004.01 200x	4.0983 ppm	0.0005 ppm	0.0100%	2020/03/31 20:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.0980	40.9797	34.78	38.80	4.01	50.07	10:29
2	TOC	4.0987	40.9871	34.79	38.58	3.79	50.11	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K2002643-005.01 200x	3.2333 ppm	0.0011 ppm	0.0300%	2020/03/31 21:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.2340	32.3402	28.97	32.78	3.80	50.06	10:28
2	TOC	3.2325	32.3254	28.96	32.83	3.86	50.08	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	K2002669-001.01	2.3631 ppm	0.0214 ppm	0.9100%	2020/03/31 21:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3783	23.7826	23.22	27.17	3.95	50.04	10:25
2	TOC	2.3479	23.4792	23.01	26.81	3.80	50.03	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	K2002626-001.03 40x	1.8987 ppm	0.0801 ppm	4.2200%	2020/03/31 21:56

Rep	Base	ppm	µg	Adjusted	NDIR (Abs)	Baseline	Pressure	Run

#	Analysis Type			(Abs)		(Abs)	(psig)	Time
1	TOC	1.9554	19.5536	20.37	24.04	3.67	50.04	10:30
2	TOC	1.8420	18.4205	19.61	23.45	3.84	50.05	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.5215 ppm (PASS)	0.0000 ppm	0%	2020/03/31 22:24

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.5215	245.2150	172.72	176.49	3.77	50.04	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/03/31 22:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.75	9.68	3.93	50.03	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample

From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2020/03/31 22:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.38	9.25	3.86	50.02	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> LCS

From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	23.0156 ppm (PASS)	0.0000 ppm	0%	2020/03/31 23:08

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	23.0156	230.1562	162.60	166.47	3.87	50.01	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	25 ppmC

Sample Type: Sample

From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K2002626-002.03	4.8696 ppm	0.0768 ppm	1.5800%	2020/03/31 23:23

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.9238	49.2384	40.34	44.20	3.87	50.02	10:26
2	TOC	4.8153	48.1529	39.61	43.50	3.90	50.01	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K2002626-003.03	9.0398 ppm	0.1610 ppm	1.7800%	2020/03/31 23:51

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.9259	89.2594	67.25	71.09	3.84	50.00	10:29
2	TOC	9.1536	91.5360	68.78	72.65	3.87	50.01	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K2002627-001.03	9.3889 ppm	0.1660 ppm	1.7700%	2020/04/01 00:19

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.5063	95.0632	71.15	75.01	3.86	49.99	10:26
2	TOC	9.2715	92.7152	69.57	73.58	4.01	50.01	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K2002627-002.03	17.1223 ppm	0.1942 ppm	1.1300%	2020/04/01 00:47

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	17.2597	172.5966	123.29	127.22	3.92	49.99	10:30
2	TOC	16.9850	169.8501	121.45	125.30	3.85	50.00	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	25	TOC	K2002627-003.03	22.0681 ppm	0.1309 ppm	0.5900%	2020/04/01 01:15

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	21.9755	219.7551	155.01	158.98	3.97	50.02	10:29
2	TOC	22.1606	221.6064	156.25	160.15	3.89	49.98	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	26	TOC	K2002627-004.03	16.0202 ppm	0.6826 ppm	4.2600%	2020/04/01 01:43

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	16.5029	165.0293	118.20	122.21	4.01	49.98	10:27
2	TOC	15.5376	155.3757	111.71	115.69	3.97	50.00	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K2002627-005.03 20x	3.7166 ppm	0.0182 ppm	0.4900%	2020/04/01 02:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.7038	37.0376	32.13	36.14	4.01	50.00	10:29
2	TOC	3.7295	37.2949	32.30	36.31	4.01	49.99	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K2002615-001.01	3.8382 ppm	0.0252 ppm	0.6600%	2020/04/01 02:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.8203	38.2034	32.92	36.90	3.98	49.98	10:25

2	TOC	3.8560	38.5603	33.16	37.04	3.89	49.98	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) 1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	23.8767 ppm (PASS)	0.0000 ppm	0%	2020/04/01 03:08

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	23.8767	238.7674	168.39	172.35	3.96	50.00	10:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/04/01 03:22

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	5.05	8.96	3.91	49.97	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Sample Type: Sample

From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	29	TOC	K2002615-002.01	2.0222 ppm	0.0481 ppm	2.3800%	2020/04/01 03:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9882	19.8822	20.59	24.65	4.06	49.96	10:27
2	TOC	2.0562	20.5617	21.05	24.93	3.88	49.99	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

		Analysis			Std. Dev.		

	Pos	Type	Sample ID	Result (ppmC)	(ppmC)	RSD	Start Time
◈	30	TOC	K2002615-002.01 ms	29.3992 ppm	0.0000 ppm	0.0000%	2020/04/01 04:05

Rep	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.3992	293.9919	204.93	208.92	3.98	49.99	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/04/01 04:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	5.36	9.23	3.87	49.97	10:34

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K2002615-003.01	1.8307 ppm	0.0076 ppm	0.4100%	2020/04/01 04:34

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.8361	18.3610	19.57	23.47	3.90	49.97	10:25
2	TOC	1.8254	18.2539	19.50	23.43	3.93	50.01	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K2002615-004.01	1.9548 ppm	0.0196 ppm	1.0000%	2020/04/01 05:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.9409	19.4093	20.28	24.36	4.08	49.97	10:27
2	TOC	1.9686	19.6859	20.46	24.51	4.05	49.99	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K2002615-005.01	1.7603 ppm	0.0131 ppm	0.7500%	2020/04/01 05:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.7510	17.5104	19.00	23.08	4.08	50.00	10:25
2	TOC	1.7696	17.6963	19.12	22.94	3.82	49.98	10:27

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 7.2233 (IC) (v1368)	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.1353 ppm (PASS)	0.0000 ppm	0%	2020/04/01 05:59

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.1353	241.3533	170.13	174.09	3.97	49.99	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/04/01 06:14

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	4.66	8.60	3.94	49.99	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v32)	0 ppmC

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1367	0.9567	1.0790	0.0000	0.0000	0.0000	2020/03/28 23:52	Fusion1 (Fusion1)
v1368	0.9373	0.8610	0.0000	0.0000	0.0000	2020/03/31 12:56	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version:	v32	Calibration curve formula:	TOC: y = 6.725x + 7.818
Ver Creation:	2020/03/11 15:55	r^2 value:	TOC: r^2 = 0.99921
Comment:			
Operator:	Fusion1 (Fusion1)		
Basic Analysis Type	TOC		

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	5.8640	0.0000		2020/03/11 14:28
0.500 ppm	9.5210	0.5000		2020/03/11 14:42
1.0 ppm	12.5930	1.0000		2020/03/11 14:56
5.0 ppm	40.5270	5.0000		2020/03/11 15:10
10 ppm	79.5310	10.0000		2020/03/11 15:25
25 ppm	181.4610	25.0000		2020/03/11 15:39
50 ppm	340.5610	50.0000		2020/03/11 15:53

Methods

Name: CAS_salt_010711 (TOC)

Version:	v4	Operator:	Fusion1 (Fusion1)
Ver Creation:	2019/02/21 17:57		
Comment:			

Parameter	Value
SampleVolume	10.0 mL
Dilution	1:10
AcidVolume	0.5 ml
ReagentVolume	2.0 ml
UVReactorPrerinse	Off
UVReactorPrerinseVolume	5.0
NumberOfUVReactorPrerinses	1
ICSpargeTime	1.00 mins
DetectorSweepFlow	500 ml/min
PreSpargeTime	2.00 mins
SystemFlow	500 ml/min

Advanced Parameter	Value
NeedleRinseVolume	5.0 ml
VialPrimeVolume	2.0 ml
ICSamplePrimeVolume	2.0 ml
ICSpargeRinseVolume	12.0 ml
BaselineStabilizeTime	0.70 min
DetectorPressureFlow	150 ml/min
SyringeSpeedWaste	10
SyringeSpeedAcid	7
SyringeSpeedReagent	7
SyringeSpeedDIWater	7
NDIRPressurization	60 psig
SyringeSpeedSampleDispense	5
SyringeSpeedSampleAspirate	4
SyringeSpeedUVDispense	5
SyringeSpeedUVAspirate	5
SyringeSpeedICDispense	5
SyringeSpeedICAspirate	5
NDIRPressureStabilize	1.75 min
SampleMixing	Off
SampleMixingCycles	1
SampleMixingVolume	10.0

LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2020/04/01 06:29

ALS Environmental

StarLIMS Run: 675059, 675060

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-82C 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/11/2020

ICAL ID: 19-GEN-8-7-E->J

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-82C 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 19-GEN-08-9-H

21 % H3PO4: 19-GEN-08-10-G

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 16967789

Analyzed By:	Date Analyzed: 3/31/20
Reviewed By:	Date Reviewed: 4/1/20

April 28, 2020 Service Request No:R2002537

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

Laboratory Results for: LHAAP / Site 58

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory March 25, 2020
For your reference, these analyses have been assigned our service request number **R2002537.**

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7471. You may also contact me via email at Brady.Kalkman@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Brady Kalkman
Project Manager

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Narrative Documents

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ALS Environmental

Client: ALS Environmental - US
Project: LHAAP / Site 58
Sample Matrix: Water

Service Request: R2002537
Date Received: 03/25/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Six water samples were received for analysis at ALS Environmental on 03/25/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivoa GC:

Method Organic Acids, 03/28/2020: Due to a change in QA Plan and therefore recovery limits for Laboratory Control Sample (LCS), Duplicate Laboratory Control Sample (DLCS), Matrix Spike (MS), and Duplicate Matrix Spike (DMS), all of the proceeding have recoveries for Lactic Acid below the lower control limit. This equates to a potential low bias in the samples. Sample reporting limits also changed from Method Reporting Limit (MRL) to Method Detection Limit (MDL). Due to this change, R2002537-002 is now "J" flagged as having a result above the MDL but below the MRL. Samples were not reanalyzed due to the expiration of the sample holding time at the when these reporting changes were made.
Method Organic Acids, 03/31/2020: The upper control criterion was exceeded for Butyric Acid in the Laboratory Control Sample (LCS). There were no detections of the analyte(s) above the MRL in the associated field samples. The error associated with elevated recovery equates to a high bias. The sample data is not significantly affected. No further corrective action was appropriate.

Method Organic Acids, 03/31/2020: The control limits for matrix spike recovery of one or more of the spiked analytes is not applicable and have been flagged with a "#". The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery. No further corrective action was required.

Method Organic Acids, 03/28/2020: Due to a change in QA Plan and therefore recovery limits for Laboratory Control Sample (LCS), Duplicate Laboratory Control Sample (DLCS), Matrix Spike (MS), and Duplicate Matrix Spike (DMS), all of the proceeding have recoveries for Lactic Acid and Acetic Acid below the lower control limit. This equates to a potential low bias in the samples. Samples were not reanalyzed due to the expiration of the sample holding time at the when these reporting changes were made.
Method Organic Acids, 03/31/2020: The upper control criterion was exceeded for Butyric Acid in the Laboratory Control Sample (LCS). There were no detections of the analyte(s) above the MRL in the associated field samples. The error associated with elevated recovery equates to a high bias. The sample data is not significantly affected. No further corrective action was appropriate.

Method Organic Acids, 03/31/2020: The control limits for matrix spike recovery of one or more of the spiked analytes is not applicable and have been flagged with a "#". The analyte concentration in the sample was significantly higher than the added spike concentration, preventing accurate evaluation of the spike recovery. No further corrective action was required.

Revision Comment:

Report revised to change to DOD method and Tier IV.

Approved by _____ Date 04/28/2020

SAMPLE DETECTION SUMMARY

CLIENT ID: 35AWW11_032420			Lab ID: R2002537-001			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Acetic Acid	5.8		0.56	4.0	mg/L	Organic Acids

CLIENT ID: 35AWW11_032420_a			Lab ID: R2002537-002			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Acetic Acid	5.5		0.56	4.0	mg/L	Organic Acids
Lactic Acid	0.67	J	0.14	2.0	mg/L	Organic Acids

CLIENT ID: 35AWW23_032420			Lab ID: R2002537-005			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Acetic Acid	97		1.2	8.0	mg/L	Organic Acids
Propionic Acid	320		0.38	4.0	mg/L	Organic Acids

Sample Receipt Information

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client: ALS Environmental - US **Service Request:**R2002537
Project: LHAAP / Site 58/NW01312.0150

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
R2002537-001	35AWW11_032420	3/24/2020	0745
R2002537-002	35AWW11_032420_a	3/24/2020	0745
R2002537-003	35AWW20_032420	3/24/2020	0905
R2002537-004	LHSMW07_032420	3/24/2020	1015
R2002537-005	35AWW23_032420	3/24/2020	1205
R2002537-006	35AWW19_032420	3/24/2020	1300

00997688

bhate ENVIRONMENTAL CONSTRUCTION ENERGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requested [5] | Quality Assurance Samples [6]

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	Volatile Fatty Acids										Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35AWW11_032420	24 MAR 2020	0745	-	N		WG	1	X													
35AWW11_032420_a	24 MAR 2020	0745	-	FD		WG	1	X													
35AWW20_032420	24 MAR 2020	0905	-	N		WG	1	X													
35AWW20_032420_MS	24 MAR 2020	0905		MS		WG	1	X													
35AWW20_032420_MSD	24 MAR 2020	0905		SD		WG	1	X													
LHSMW07_032420	24 MAR 2020	1015	-	N		WG	1	X													
~~35AWW06_032420~~	~~24 MAR 2020~~	~~1110~~	~~-~~	~~N~~		~~WG~~	~~1~~	~~X~~										Reid Hoken 3/25/2020			
35AWW23_032420	24 MAR 2020	1205	-	N		WG	1	X													
35AWW19_032420	24 MAR 2020	1300	-	N		WG	1	X													
			-																		
			-																		

COMMENTS: ____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	3/24/20	1430	1. [signature]	3/25/2020	0925
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

Fed ____ Ex ____ Airbill ____ Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Bl

R2002537 5
ALS Laboratory Group
LHAAP / Site 58

Cooler Receipt and Preservation Check Form

R2002537 5
ALS Laboratory Group
LHAAP / Site 68

Project/Client Bhate Folder Number

Cooler received on 3/25/2020 by: Q

COURIER: ALS UPS (FEDEX) VELOCITY CLIENT

1	Were **Custody seals** on outside of cooler?	(Y) N	5a	**Perchlorate** samples have required headspace?	Y N (NA)
2	**Custody papers** properly completed (ink, signed)?	(Y) N	5b	Did VOA vials, Alk,or Sulfide have sig* **bubbles**?	Y N (NA)
3	Did all bottles arrive in good **condition** (unbroken)?	Y (N)	6	Where did the bottles originate?	(ALS/ROC) CLIENT
4	Circle: (Wet Ice) **Dry Ice Gel packs** present?	(Y) N	7	Soil VOA received as: Bulk Encore 5035set	(NA)

8. Temperature Readings Date: 3/25/2020 Time: 0937 ID: IR#7 (IR#10) From: Temp Blank (Sample Bottle)

Observed Temp (°C)	5.4						
Within 0-6°C?	(Y) N	Y N	Y N	Y N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed (described below) Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R-002 by Q on 3/25/2020 at 0940
5035 samples placed in storage location: _____ by _____ on _____ at _____

Cooler Breakdown/Preservation Check**: Date: 3/25/2020 Time: 1245 by: DW

9. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? (YES) NO
10. Did all bottle labels and tags agree with custody papers? (YES) NO
11. Were correct containers used for the tests indicated? (YES) NO
12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO (N/A)
13. Air Samples: Cassettes / Tubes Intact with MS? Canisters Pressurized Tedlar® Bags Inflated (N/A)

pH	Lot of test paper	Reagent	Preserved? Yes	Preserved? No	Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
≥12		NaOH								
≤2		HNO_3								
≤2		H_2SO_4								
<4		$NaHSO_4$								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add $Na_2S_2O_3$ (625, 608, CN), ascorbic (phenol).					
		$Na_2S_2O_3$								
		ZnAcetate	-	-			**VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).			
		HCl	**	**						

Bottle lot numbers: Client

Explain all Discrepancies/ Other Comments:

Reel broken : 35A-MW06-032420

HPROD	BULK
HTR	FLDT
SUB	HGFB
ALS	LL3541

Labels secondary reviewed by: DW

PC Secondary Review: _____

*significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

Miscellaneous Forms

ALS Environmental—Rochester Laboratory
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www.alsglobal.com

ALS Environmental

REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the ñNotesò column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an ñimmediateò hold time criteria.

Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (Ó100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

Rochester Lab ID # for State Certifications[1]

Connecticut ID # PH0556	Maine ID #NY0032	Pennsylvania ID# 68-786
Delaware Approved	New Hampshire ID # 2941	Rhode Island ID # 158
DoD ELAP #65817	New York ID # 10145	Virginia #460167
Florida ID # E87674	North Carolina #676	

[1] Analyses were performed according to our laboratoryôs NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental

ALS Laboratory Group

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: ALS Environmental - US
Project: LHAAP / Site 58/NW01312.0150
Service Request: R2002537

Sample Name: 35AWW11_032420
Lab Code: R2002537-001
Sample Matrix: Water
Date Collected: 03/24/20
Date Received: 03/25/20

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name: 35AWW11_032420_a
Lab Code: R2002537-002
Sample Matrix: Water
Date Collected: 03/24/20
Date Received: 03/25/20

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name: 35AWW20_032420
Lab Code: R2002537-003
Sample Matrix: Water
Date Collected: 03/24/20
Date Received: 03/25/20

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name: LHSMW07_032420
Lab Code: R2002537-004
Sample Matrix: Water
Date Collected: 03/24/20
Date Received: 03/25/20

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name: 35AWW23_032420
Lab Code: R2002537-005
Sample Matrix: Water
Date Collected: 03/24/20
Date Received: 03/25/20

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

ALS Group USA, Corp.
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Analyst Summary report

Client:	ALS Environmental - US	**Service Request:**	R2002537
Project:	LHAAP / Site 58/NW01312.0150		

Sample Name:	35AWW19_032420	**Date Collected:**	03/24/20
Lab Code:	R2002537-006	**Date Received:**	03/25/20
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	

Sample Results

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
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Semivolatile Organic Compounds by GC

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2002537
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	03/24/20 07:45
Sample Matrix:	Water	**Date Received:**	03/25/20 09:25
Sample Name:	35AWW11_032420	**Units:**	mg/L
Lab Code:	R2002537-001	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.20	0.10	0.016	1	03/27/20 16:39	
Acetic Acid	**5.8**		4.0	2.0	0.56	1	03/27/20 16:39	
Butanoic Acid (Butyric Acid)	ND	U	2.0	1.0	0.32	1	03/27/20 16:39	
Lactic Acid	ND	U	2.0	1.0	0.14	1	03/27/20 16:39	
Propionic Acid	ND	U	2.0	1.0	0.19	1	03/27/20 16:39	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2002537
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	03/24/20 07:45
Sample Matrix:	Water	**Date Received:**	03/25/20 09:25
Sample Name:	35AWW11_032420_a	**Units:**	mg/L
Lab Code:	R2002537-002	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.20	0.10	0.016	1	03/27/20 17:39	
Acetic Acid	**5.5**		4.0	2.0	0.56	1	03/27/20 17:39	
Butanoic Acid (Butyric Acid)	ND	U	2.0	1.0	0.32	1	03/27/20 17:39	
Lactic Acid	**0.67**	**J**	2.0	1.0	0.14	1	03/27/20 17:39	
Propionic Acid	ND	U	2.0	1.0	0.19	1	03/27/20 17:39	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2002537
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	03/24/20 09:05
Sample Matrix:	Water	**Date Received:**	03/25/20 09:25
Sample Name:	35AWW20_032420	**Units:**	mg/L
Lab Code:	R2002537-003	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.20	0.10	0.016	1	03/27/20 19:48	
Acetic Acid	ND	U	4.0	2.0	0.56	1	03/27/20 19:48	
Butanoic Acid (Butyric Acid)	ND	U	2.0	1.0	0.32	1	03/27/20 19:48	
Lactic Acid	ND	U	2.0	1.0	0.14	1	03/27/20 19:48	
Propionic Acid	ND	U	2.0	1.0	0.19	1	03/27/20 19:48	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2002537
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	03/24/20 10:15
Sample Matrix:	Water	**Date Received:**	03/25/20 09:25
Sample Name:	LHSMW07_032420	**Units:**	mg/L
Lab Code:	R2002537-004	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	03/27/20 22:57	
Acetic Acid	ND U	4.0	2.0	0.56	1	03/27/20 22:57	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	03/27/20 22:57	
Lactic Acid	ND U	2.0	1.0	0.14	1	03/27/20 22:57	
Propionic Acid	ND U	2.0	1.0	0.19	1	03/27/20 22:57	

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2002537
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	03/24/20 12:05
Sample Matrix:	Water	**Date Received:**	03/25/20 09:25
Sample Name:	35AWW23_032420	**Units:**	mg/L
Lab Code:	R2002537-005	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.40	0.20	0.031	2	03/31/20 18:02	
Acetic Acid	**97**		8.0	4.0	1.2	2	03/31/20 18:02	
Butanoic Acid (Butyric Acid)	ND	U	4.0	2.0	0.63	2	03/31/20 18:02	
Lactic Acid	ND	U	4.0	2.0	0.27	2	03/31/20 18:02	
Propionic Acid	**320**		4.0	2.0	0.38	2	03/31/20 18:02	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2002537
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	03/24/20 13:00
Sample Matrix:	Water	**Date Received:**	03/25/20 09:25
Sample Name:	35AWW19_032420	**Units:**	mg/L
Lab Code:	R2002537-006	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	03/28/20 02:04	
Acetic Acid	ND U	4.0	2.0	0.56	1	03/28/20 02:04	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	03/28/20 02:04	
Lactic Acid	ND U	2.0	1.0	0.14	1	03/28/20 02:04	
Propionic Acid	ND U	2.0	1.0	0.19	1	03/28/20 02:04	

QC Summary Forms

ALS Environmental—Rochester Laboratory
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Semivolatile Organic Compounds by GC

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	R2002537
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	03/24/20
Sample Matrix:	Water	**Date Received:**	03/25/20
		Date Analyzed:	03/27/20

Duplicate Matrix Spike Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Sample Name:	35AWW20_032420	**Units:**	mg/L
Lab Code:	R2002537-003	**Basis:**	NA
Analysis Method:	Organic Acids		

		Matrix Spike RQ2004131-06			Duplicate Matrix Spike RQ2004131-07					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	ND U	1.68	2.00	84	1.51	2.00	75	73-122	11	30
Acetic Acid	ND U	20.9	20.1	104	18.9	20.1	94	80-130	10	30
Butanoic Acid (Butyric Acid)	ND U	19.6	20.0	98	20.7	20.0	104	86-128	5	30
Lactic Acid	ND U	16.1	20.0	80 *	14.1	20.0	70 *	81-114	13	30
Propionic Acid	ND U	23.0	20.0	115	21.0	20.0	105	63-153	9	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	R2002537
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	03/24/20
Sample Matrix:	Water	**Date Received:**	03/25/20
		Date Analyzed:	03/31/20

Duplicate Matrix Spike Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Sample Name:	35AWW23_032420	**Units:**	mg/L
Lab Code:	R2002537-005	**Basis:**	NA
Analysis Method:	Organic Acids		

		Matrix Spike RQ2004133-05			**Duplicate Matrix Spike** RQ2004133-06					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	ND U	3.32	3.99	83	3.30	3.99	83	73-122	<1	30
Acetic Acid	97	126	40.1	73 *	125	40.1	70 *	80-130	<1	30
Butanoic Acid (Butyric Acid)	ND U	39.4	40.0	99	39.4	40.0	98	86-128	<1	30
Lactic Acid	ND U	30.9	40.1	77 *	31.1	40.1	78 *	81-114	<1	30
Propionic Acid	320	329	40.1	15 #	325	40.1	5 #	63-153	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2002537
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	mg/L
Lab Code:	RQ2004131-02	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	03/27/20 13:30	
Acetic Acid	ND U	4.0	2.0	0.56	1	03/27/20 13:30	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	03/27/20 13:30	
Lactic Acid	ND U	2.0	1.0	0.14	1	03/27/20 13:30	
Propionic Acid	ND U	2.0	1.0	0.19	1	03/27/20 13:30	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2002537
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	mg/L
Lab Code:	RQ2004133-02	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	03/31/20 14:56	
Acetic Acid	ND U	4.0	2.0	0.56	1	03/31/20 14:56	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	03/31/20 14:56	
Lactic Acid	ND U	2.0	1.0	0.14	1	03/31/20 14:56	
Propionic Acid	ND U	2.0	1.0	0.19	1	03/31/20 14:56	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58/NW01312.0150
Sample Matrix: Water

Service Request: R2002537
Date Analyzed: 03/27/20

Duplicate Lab Control Sample Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Units:mg/L
Basis:NA

		Lab Control Sample			Duplicate Lab Control Sample					
		RQ2004131-03			RQ2004131-04					
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	Organic Acids	1.71	2.00	85	1.72	2.00	86	73-122	<1	30
Acetic Acid	Organic Acids	19.8	20.1	99	19.8	20.1	98	80-130	<1	30
Butanoic Acid (Butyric Acid)	Organic Acids	18.2	20.0	91	20.5	20.0	103	86-128	12	30
Lactic Acid	Organic Acids	15.4	20.0	77 *	15.3	20.0	76 *	81-114	<1	30
Propionic Acid	Organic Acids	22.6	20.0	113	22.9	20.0	114	63-153	2	30

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58/NW01312.0150
Sample Matrix: Water

Service Request: R2002537
Date Analyzed: 03/31/20

Duplicate Lab Control Sample Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Units:mg/L
Basis:NA

		Lab Control Sample			Duplicate Lab Control Sample					
		RQ2004133-03			RQ2004133-04					
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	Organic Acids	1.79	2.00	90	1.74	2.00	87	73-122	3	30
Acetic Acid	Organic Acids	20.7	20.1	103	20.5	20.1	102	80-130	1	30
Butanoic Acid (Butyric Acid)	Organic Acids	25.9	20.0	129 *	20.6	20.0	103	86-128	23	30
Lactic Acid	Organic Acids	15.9	20.0	79 *	15.8	20.0	79 *	81-114	<1	30
Propionic Acid	Organic Acids	22.4	20.0	112	22.9	20.0	114	63-153	2	30

LABORATORY REPORT

April 7, 2020

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

RE: HS20031084

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on March 26, 2020. For your reference, these analyses have been assigned our service request number P2001715.

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 3:55 pm, Apr 07, 2020

Hayden Akers
Project Manager

Client: ALS Laboratory Group Service Request No: P2001715
Project: HS20031084

CASE NARRATIVE

The samples were received intact under chain of custody on March 26, 2020 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.

The recoveries for the matrix spike and its duplicate were outside of the DoD control limits due to matrix interference. However all quality control parameters were met with the laboratory control sample and its duplicate.

Methane, Ethene and Ethane Analysis

The samples were also 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 recoveries for methane and ethene did not pass the DoD control limit criteria for the matrix sample and its duplicate. The sample, matrix spike, matrix spike duplicate were re-prepped a couple of days later and had similar results. However the same spiking standard was used for the laboratory control sample and its duplicate and all quality control criteria were met.

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	4068-007
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: P2001715
Project ID: HS20031084

Date Received: 3/26/2020
Time Received: 09:15

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
35AWW11_032420	P2001715-001	Water	3/24/2020	07:45	X	X
35AWW11_032420-a	P2001715-002	Water	3/24/2020	07:45	X	X
35AWW20_032420	P2001715-003	Water	3/24/2020	09:05	X	X
LHSMW07_032420	P2001715-004	Water	3/24/2020	10:15	X	X
35AWW06_032420	P2001715-005	Water	3/24/2020	11:10	X	X
35AWW23_032420	P2001715-006	Water	3/24/2020	12:05	X	X
35AWW19_032420	P2001715-007	Water	3/24/2020	13:00	X	X

P200171F

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: Texas

COC ID: 13580

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:
Email:

INVOICE INFORMATION:

Company: ALS Houston
Contact: Accounts Payable
Address: 10450 Stancliff Rd, Ste 210
Phone: +1 281 530 5656
Reference: HS20031084
TSR: Danielle Winnings

	LAB SAMPLE ID / ANALYSIS REQUESTED	CLIENT SAMPLE ID	MATRIX	COLLECT DATE / DUE DATE
1.	HS20031084-01	35AWW11_032420	Groundwater	24 Mar 2020 07:45
	MEE plus CO2 Sub to ALS SimiValley			08 Apr 2020
2.	HS20031084-02	35AWW11_032420-a	Groundwater	24 Mar 2020 07:45
	MEE plus CO2 Sub to ALS SimiValley			08 Apr 2020
3.	HS20031084-03	35AWW20_032420	Groundwater	24 Mar 2020 09:05
	MEE plus CO2 Sub to ALS SimiValley			08 Apr 2020
4.	HS20031084-04	LHSMW07_032420	Groundwater	24 Mar 2020 10:15
	MEE plus CO2 Sub to ALS SimiValley			08 Apr 2020
5.	HS20031084-05	35AWW06_032420	Groundwater	24 Mar 2020 11:10
	MEE plus CO2 Sub to ALS SimiValley			08 Apr 2020
6.	HS20031084-06	35AWW23_032420	Groundwater	24 Mar 2020 12:05
	MEE plus CO2 Sub to ALS SimiValley			08 Apr 2020
7.	HS20031084-07	35AWW19_032420	Groundwater	24 Mar 2020 13:00
	MEE plus CO2 Sub to ALS SimiValley			08 Apr 2020

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.
HS20031084-03 = MS/MSD

RIGHT SOLUTIONS | RIGHT PARTNER

Neat & HCL Vials

P200171F

Subcontract Chain of Custody

SAMPLING STATE: **Texas**

QC Level: DOD IV (DoD Data Package)

COC ID: **13580**

Relinquished By:	J. Mangum	Date/Time:	3/25/20 18:00
Received By:		Date/Time:	3/26/20 0911
Cooler ID(s):		Temperature(s):	

2° wet

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P2001715

Project: HS20031084

Sample(s) received on: 03/26/20 Date opened: 03/26/20 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 Thermometer ID T-111 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
P2001715-001.01	40mL VOA NP		7		A	wh 3/31/20
P2001715-001.02	40mL VOA NP				A	
P2001715-001.04	40ml VOA HCL		1		A	LD 03/30/2020
P2001715-001.05	40ml VOA HCL				A	
P2001715-001.06	40ml VOA HCL				A	
P2001715-002.01	40mL VOA NP		7		A	wh 3/31/20
P2001715-002.02	40mL VOA NP				A	
P2001715-002.04	40ml VOA HCL		1		A	LD 03/30/2020
P2001715-002.05	40ml VOA HCL				A	
P2001715-002.06	40ml VOA HCL				A	
P2001715-003.01	40mL VOA NP		7		A	wh 3/31/20
P2001715-003.02	40mL VOA NP		7		A	wh 3/31/20
P2001715-003.03	40mL VOA NP		7		A	wh 3/31/20
P2001715-003.04	40ml VOA HCL		1		A	LD 03/30/2020
P2001715-003.05	40ml VOA HCL		1		A	LD 03/30/2020

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: P2001715

Project: HS20031084

Sample(s) received on: 03/26/20 Date opened: 03/26/20 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2001715-003.06	40ml VOA HCL		1		A	LD 03/30/2020
P2001715-003.07	40mL VOA NP				A	
P2001715-003.08	40mL VOA NP				A	
P2001715-003.09	40mL VOA NP				A	
P2001715-003.10	40ml VOA HCL		1		A	LD 04/01/2020
P2001715-003.11	40ml VOA HCL		1		A	LD 04/01/2020
P2001715-003.12	40ml VOA HCL		1		A	LD 04/01/2020
P2001715-003.13	40ml VOA HCL				A	
P2001715-003.14	40ml VOA HCL				A	
P2001715-003.15	40ml VOA HCL				A	
P2001715-004.01	40mL VOA NP		7		A	wh 3/31/20
P2001715-004.02	40mL VOA NP				A	
P2001715-004.04	40ml VOA HCL		1		A	LD 03/30/2020
P2001715-004.05	40ml VOA HCL				A	
P2001715-004.06	40ml VOA HCL				A	
P2001715-005.01	40mL VOA NP		7		A	wh 3/31/20
P2001715-005.02	40mL VOA NP				A	
P2001715-005.04	40ml VOA HCL		1		A	LD 03/30/2020
P2001715-005.05	40ml VOA HCL				A	
P2001715-005.06	40ml VOA HCL				A	
P2001715-006.01	40mL VOA NP		7		A	wh 3/31/20
P2001715-006.02	40mL VOA NP				A	
P2001715-006.04	40ml VOA HCL		1		A	LD 03/30/2020
P2001715-006.05	40ml VOA HCL				A	
P2001715-006.06	40ml VOA HCL				A	
P2001715-007.01	40mL VOA NP		6		A	wh 3/31/20
P2001715-007.02	40mL VOA NP				A	
P2001715-007.04	40ml VOA HCL		1		A	LD 03/30/2020
P2001715-007.05	40ml VOA HCL				A	
P2001715-007.06	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 Laboratory Group**
Client Project ID: **HS20031084** ALS Project ID: P2001715

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Li Donghao
Matrix: Liquid
Test Notes:

Date(s) Collected: 3/24/20
Date Received: 3/26/20
Date Analyzed: 3/31/20

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
35AWW11_032420	P2001715-001	0.10	**450,000**	1,000	860	370	
35AWW11_032420-a	P2001715-002	0.10	**510,000**	1,000	860	370	
35AWW20_032420	P2001715-003	0.10	**260,000**	1,000	860	370	
LHSMW07_032420	P2001715-004	0.10	**250,000**	1,000	860	370	
35AWW06_032420	P2001715-005	0.10	**360,000**	1,000	860	370	
35AWW23_032420	P2001715-006	0.10	**600,000**	1,000	860	370	
35AWW19_032420	P2001715-007	0.10	**200,000**	1,000	860	370	
Method Control Sample	P200331-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: **35AWW20_032420**
Client Project ID: **HS20031084**

ALS Project ID: P2001715
ALS Sample ID: P2001715-003MS
P2001715-003DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Li Donghao
Matrix: Liquid
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	22,900	264,000	316,000	304,000	**200**	**175**	80-122	13	30	**N**

N = The matrix spike sample 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** ALS Project ID: P2001715
Client Project ID: **HS20031084** ALS Sample ID: P200331-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Li Donghao Date Analyzed: 3/31/20
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	24,200	22,500	**106**	**98**	80-122	8	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: **35AWW11_032420**
Client Project ID: **HS20031084**

ALS Project ID: P2001715
ALS Sample ID: P2001715-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 03/24/20
Date Received: 03/26/20
Date Analyzed: 03/30/20
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	**850**	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: **35AWW11_032420-a**
Client Project ID: **HS20031084**

ALS Project ID: P2001715
ALS Sample ID: P2001715-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 03/24/20
Date Received: 03/26/20
Date Analyzed: 03/30/20
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	**860**	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: **35AWW20_032420**
Client Project ID: **HS20031084**

ALS Project ID: P2001715
ALS Sample ID: P2001715-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 03/24/20
Date Received: 03/26/20
Date Analyzed: 03/30/20
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	**410**	1.3	1.0	0.51	
74-85-1	Ethene	**6.0**	1.0	0.55	0.24	
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: **LHSMW07_032420**
Client Project ID: **HS20031084**

ALS Project ID: P2001715
ALS Sample ID: P2001715-004

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 03/24/20
Date Received: 03/26/20
Date Analyzed: 03/30/20
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	**77**	1.3	1.0	0.51	
74-85-1	Ethene	**2.3**	1.0	0.55	0.24	
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: **35AWW06_032420**
Client Project ID: **HS20031084**

ALS Project ID: P2001715
ALS Sample ID: P2001715-005

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 03/24/20
Date Received: 03/26/20
Date Analyzed: 03/30/20
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	**1,300**	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: **35AWW23_032420**
Client Project ID: **HS20031084**

ALS Project ID: P2001715
ALS Sample ID: P2001715-006

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 03/24/20
Date Received: 03/26/20
Date Analyzed: 03/30/20
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	**1,400**	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: **35AWW19_032420**
Client Project ID: **HS20031084**

ALS Project ID: P2001715
ALS Sample ID: P2001715-007

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 03/24/20
Date Received: 03/26/20
Date Analyzed: 03/30/20
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	**3.1**	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: **Method Control Sample** ALS Project ID: P2001715
Client Project ID: **HS20031084** ALS Sample ID: P200330-MB

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Li Donghao Date Analyzed: 3/30/20
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: **35AWW20_032420**
Client Project ID: **HS20031084**

ALS Project ID: P2001715
ALS Sample ID: P2001715-003MS
P2001715-003DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 3/24/20
Date Received: 3/26/20
Date Analyzed: 3/30/20
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	2.52	412	1,750	1,810	**200**	**200**	73-125	0	30	**N**
74-85-1	Ethene	4.40	6.00	26.3	27.2	**200**	**200**	72-133	0	30	**N**
74-84-0	Ethane	4.72	ND	3.52	3.56	**75**	**75**	74-131	0	30	

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: **HS20031084**

ALS Project ID: P2001715
ALS Sample ID: P200330-LCS
P200330-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 3/30/20
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	3.00	2.93	**119**	**116**	73-125	3	26	
74-85-1	Ethene	4.40	4.96	4.84	**113**	**110**	72-133	3	11	
74-84-0	Ethane	4.72	4.83	4.85	**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.

Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310107.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 14:16:14
Operator : LD
Sample : P2001715-001 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 15:11:29 2020
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	1.915f	252767	0.053	ppm
2)	Carbon monoxide	1.915f	252767	N.D.	ppm
3)	Methane (TCD)	4.087f	252081	26654.541	ppm
4)	Carbon dioxide	5.911	4867966	20738.647	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

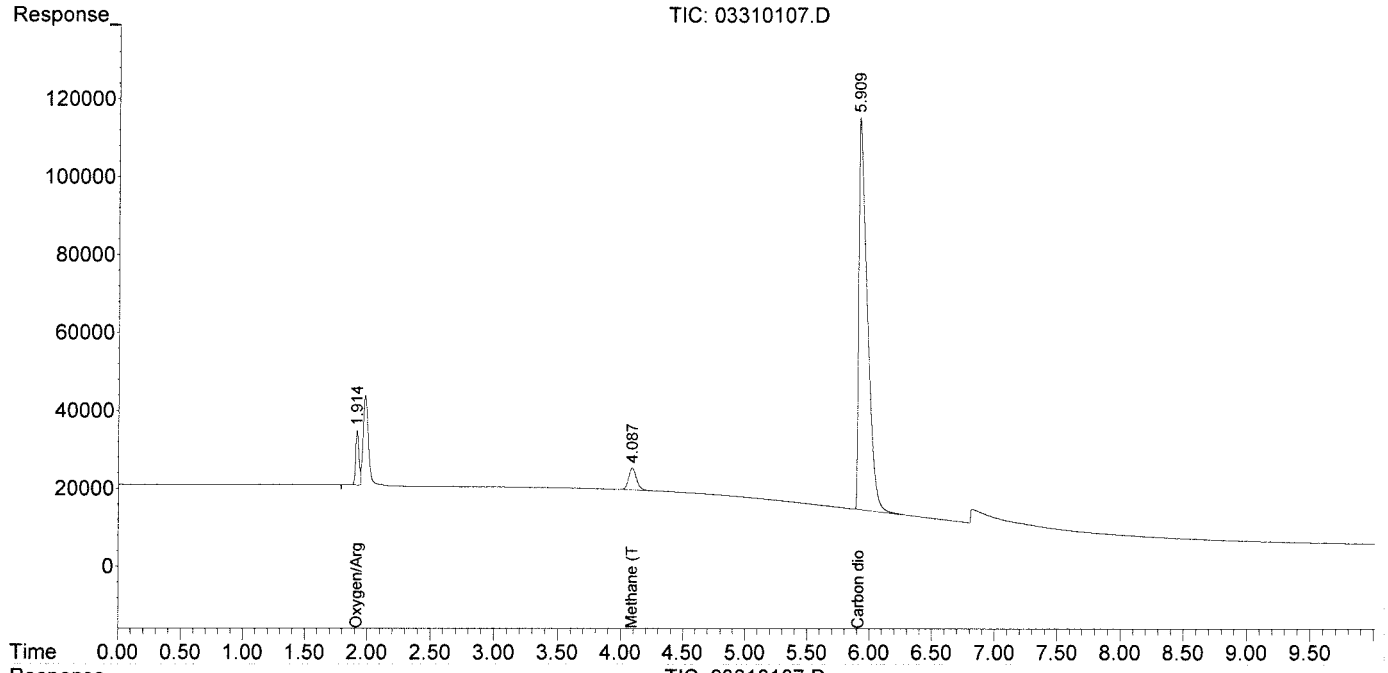
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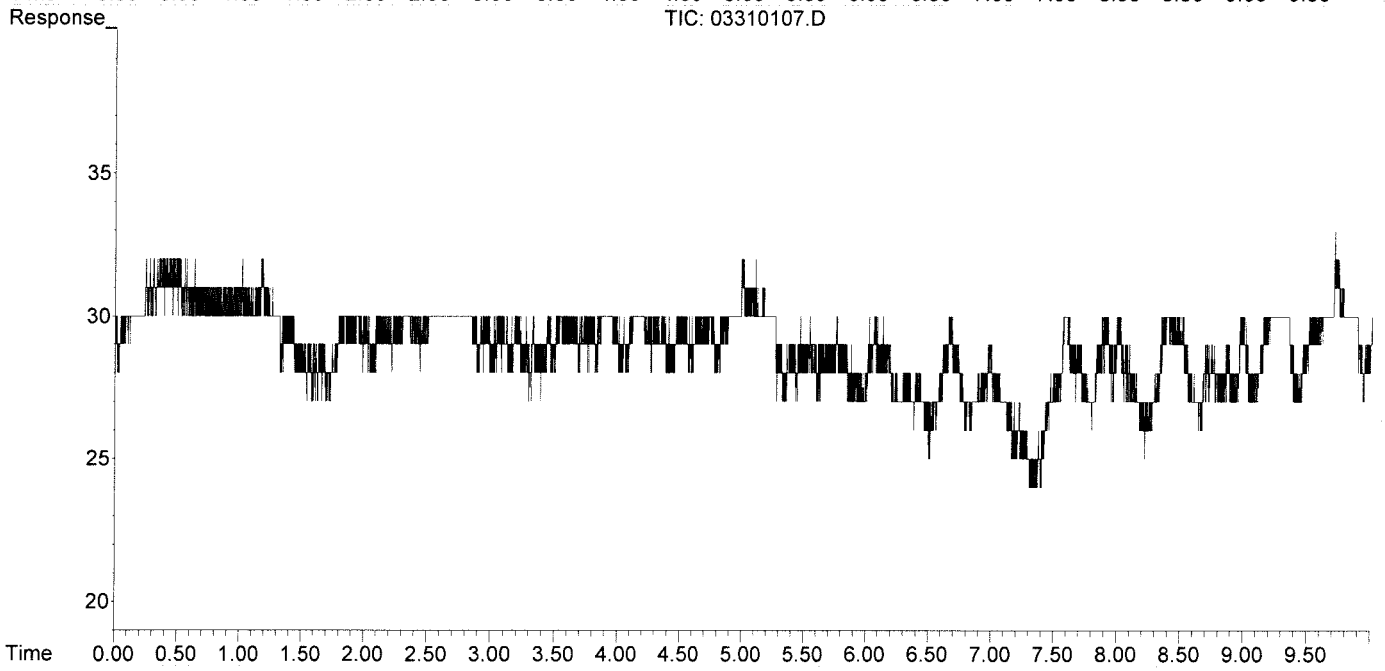
Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310107.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 14:16:14
Operator : LD
Sample : P2001715-001 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 15:11:29 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 14:37:56
Operator : LD
Sample : P2001715-002 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 15:11:42 2020
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	1.912f	141930	0.030	ppm
2)	Carbon monoxide	1.912f	141930	N.D.	ppm
3)	Methane (TCD)	4.080f	342465	36211.505	ppm
4)	Carbon dioxide	5.901	5507798	23464.477	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

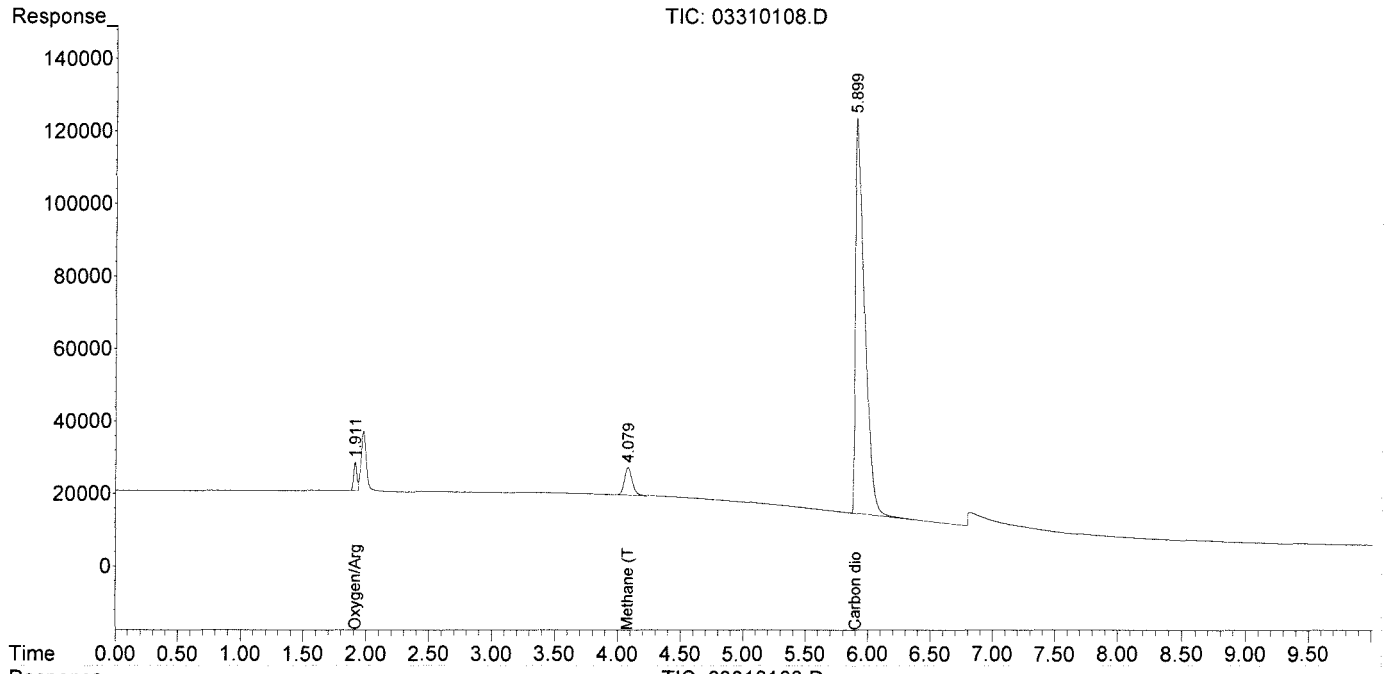
(f)=RT Delta > 1/2 Window (m)=manual int.

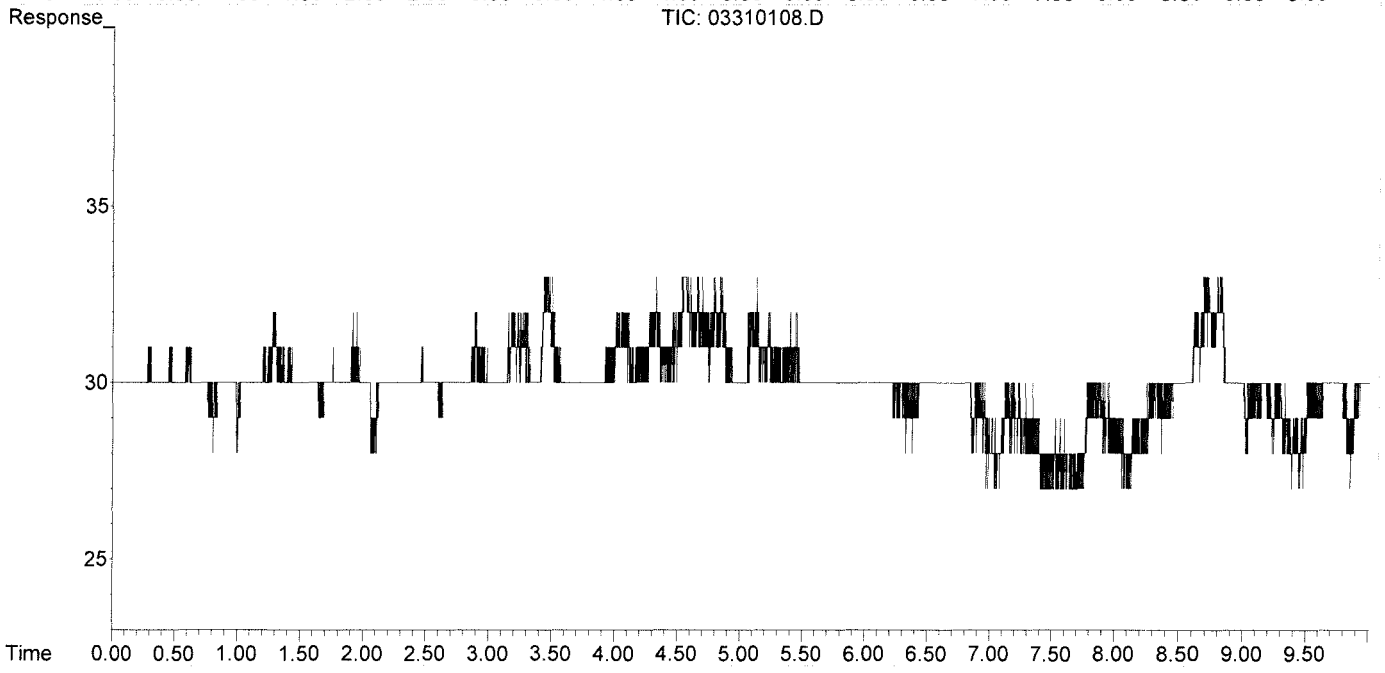
Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 14:37:56
Operator : LD
Sample : P2001715-002 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 15:11:42 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310109.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 14:55:05
Operator : LD
Sample : P2001715-003 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 15:11:55 2020
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	1.914f	336009	0.071	ppm
2)	Carbon monoxide	1.914f	336009	N.D.	ppm
3)	Methane (TCD)	4.089f	138278	14621.208	ppm
4)	Carbon dioxide	5.935	2840988	12103.260	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

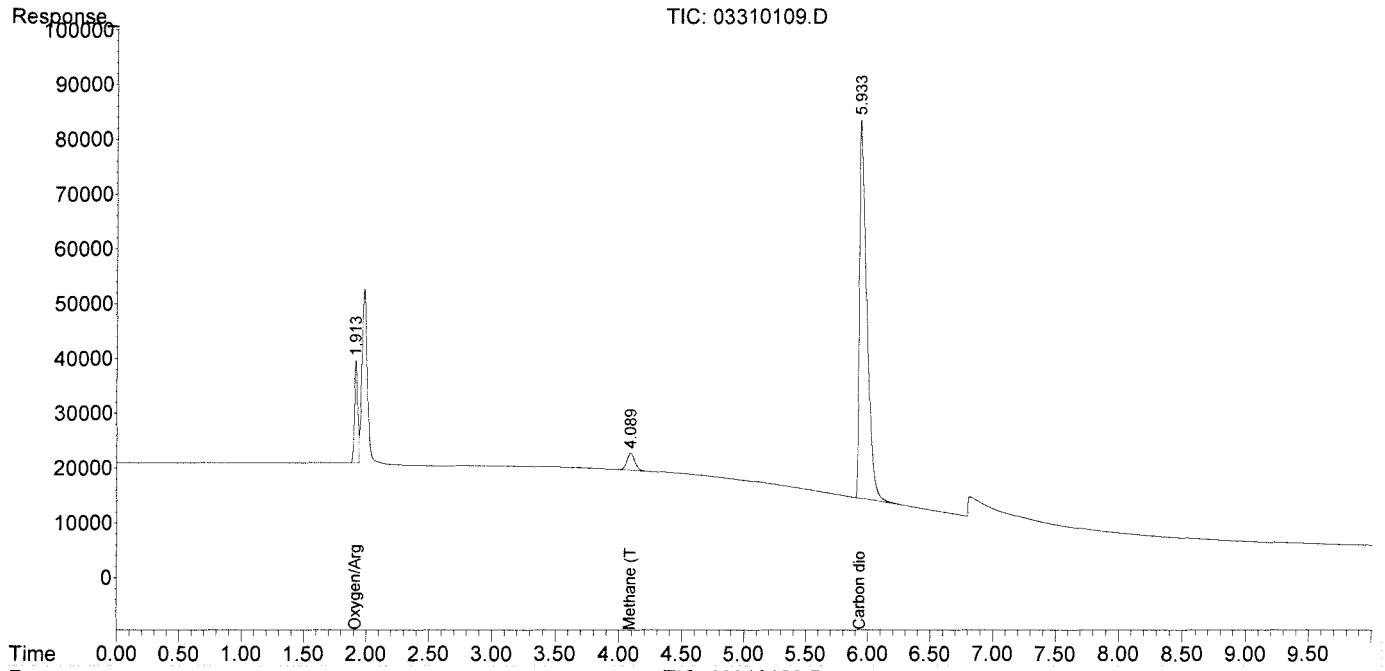
(f)=RT Delta > 1/2 Window (m)=manual int.

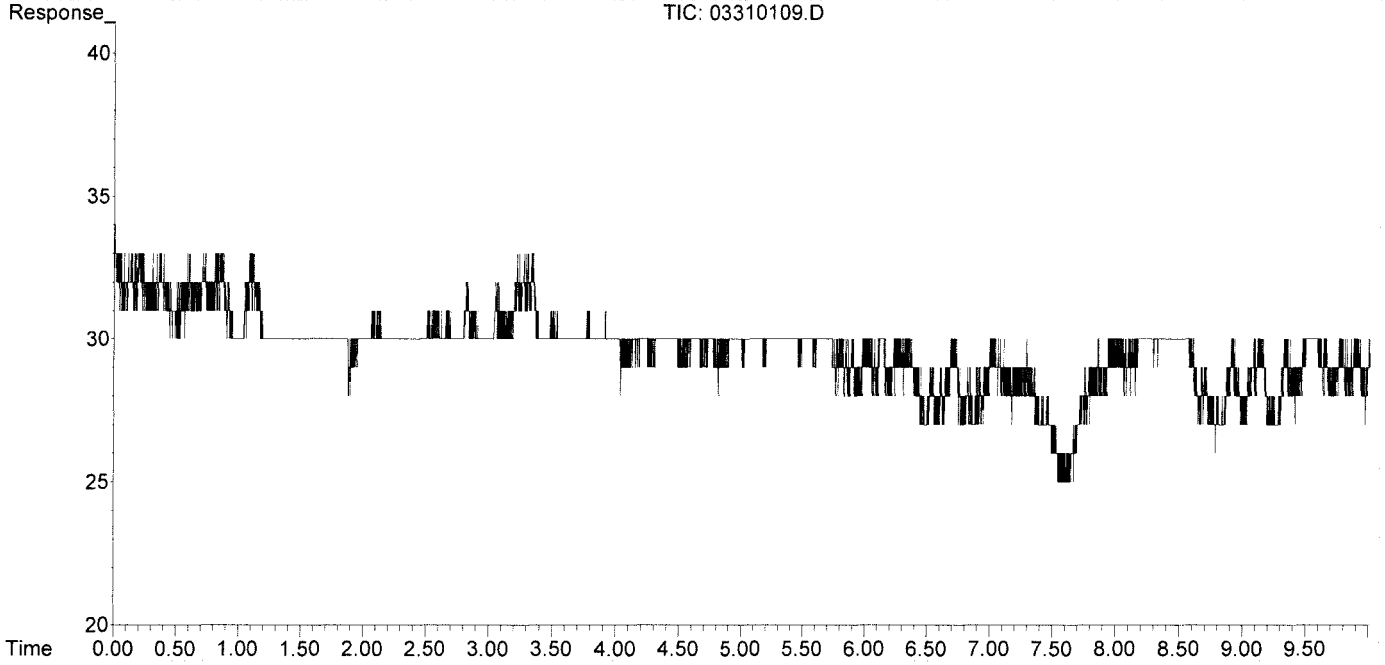
Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310109.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 14:55:05
Operator : LD
Sample : P2001715-003 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 15:11:55 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 15:10:58
Operator : LD
Sample : P2001715-003ms 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 15:21:14 2020
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	1.904	694650	0.146	ppm
2)	Carbon monoxide	1.904	694650	N.D.	ppm
3)	Methane (TCD)	4.076f	655461	69307.020	ppm
4)	Carbon dioxide	5.925	3395578	14465.939	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

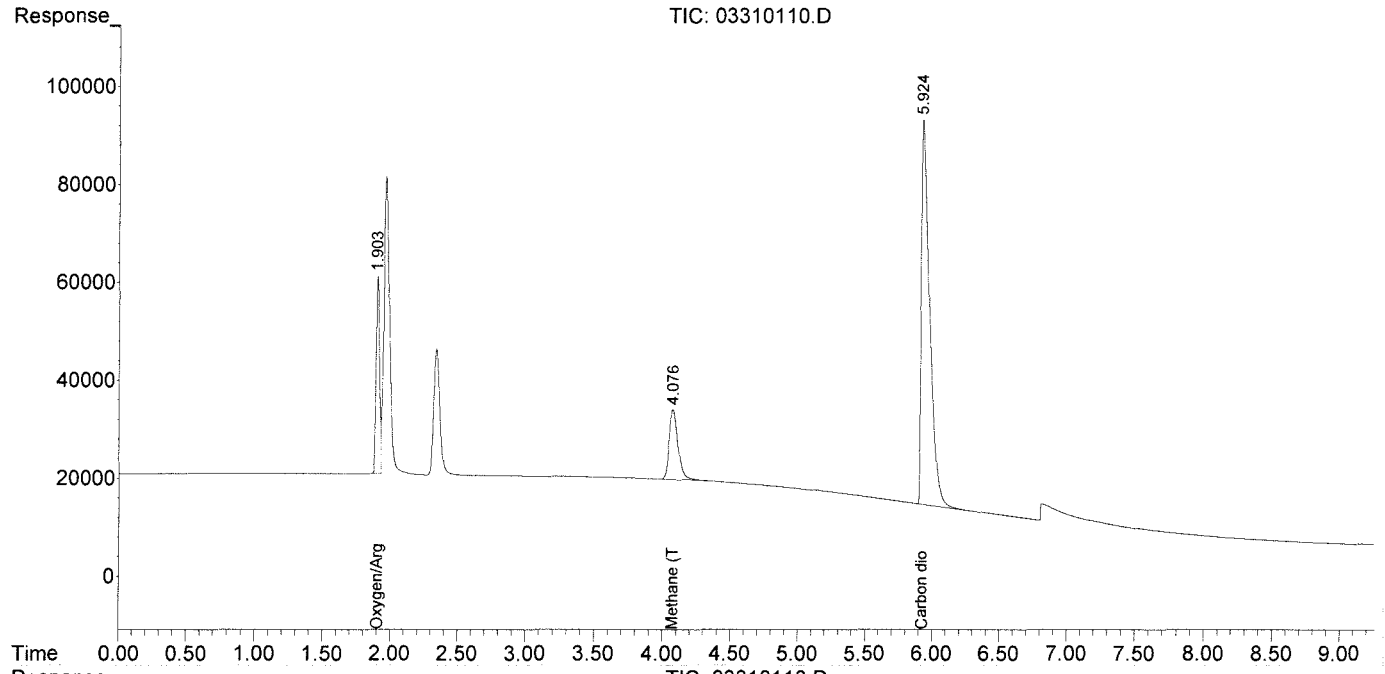
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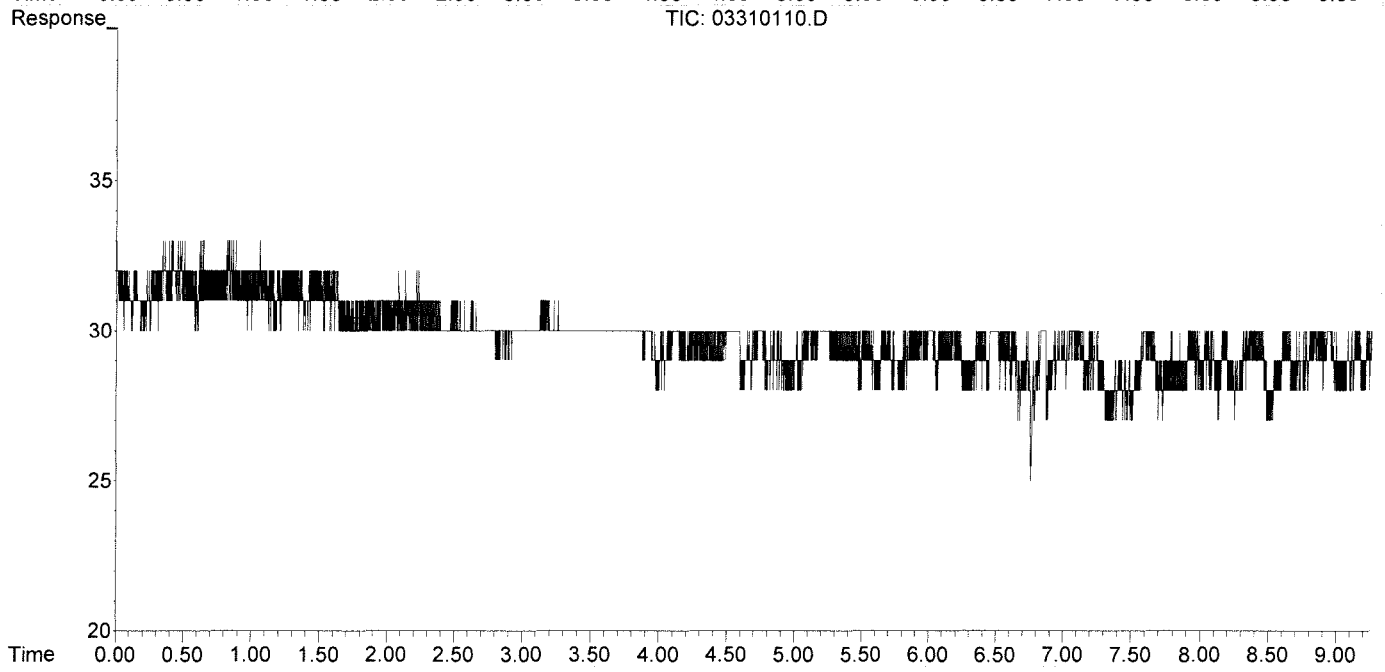
Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 15:10:58
Operator : LD
Sample : P2001715-003ms 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 15:21:14 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310111.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 15:23:05
Operator : LD
Sample : P2001715-003msd 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 16:00:14 2020
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	1.906f	710098	0.149	ppm
2)	Carbon monoxide	1.906f	710098	N.D.	ppm
3)	Methane (TCD)	4.082f	661522	69947.869	ppm
4)	Carbon dioxide	5.930	3265148	13910.275	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

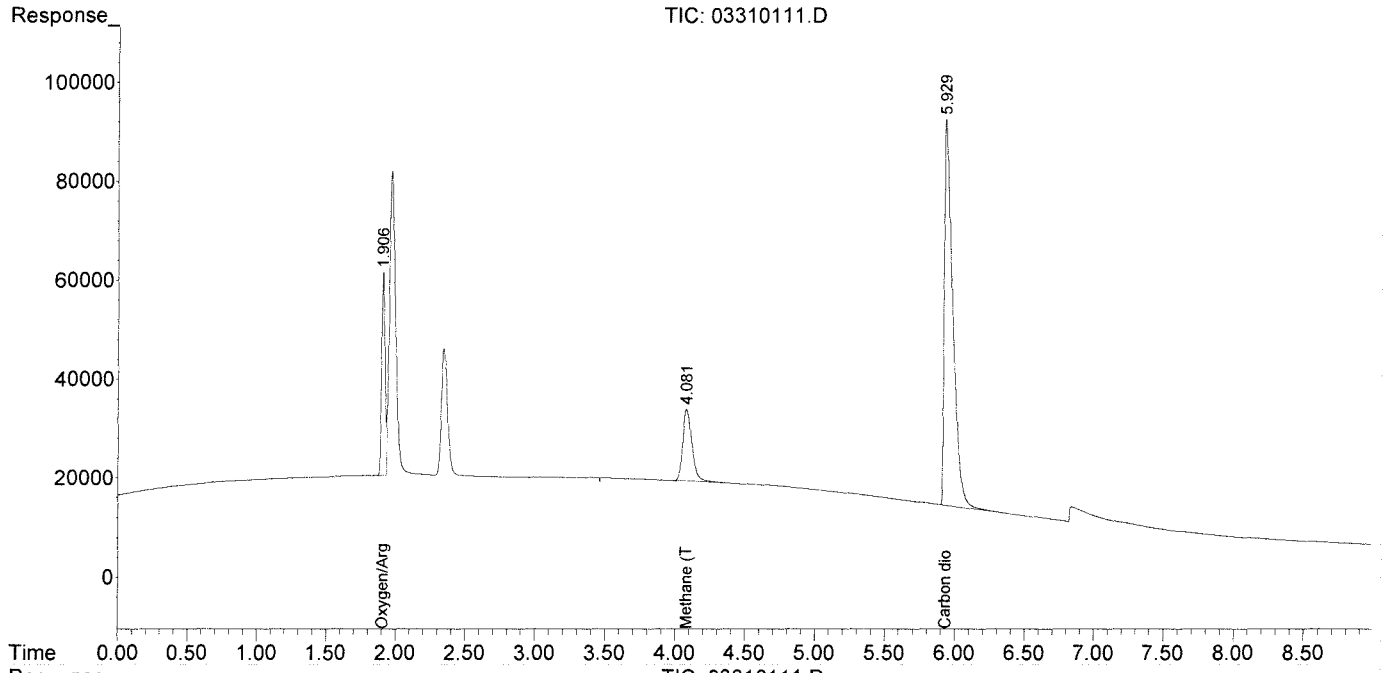
(f)=RT Delta > 1/2 Window (m)=manual int.

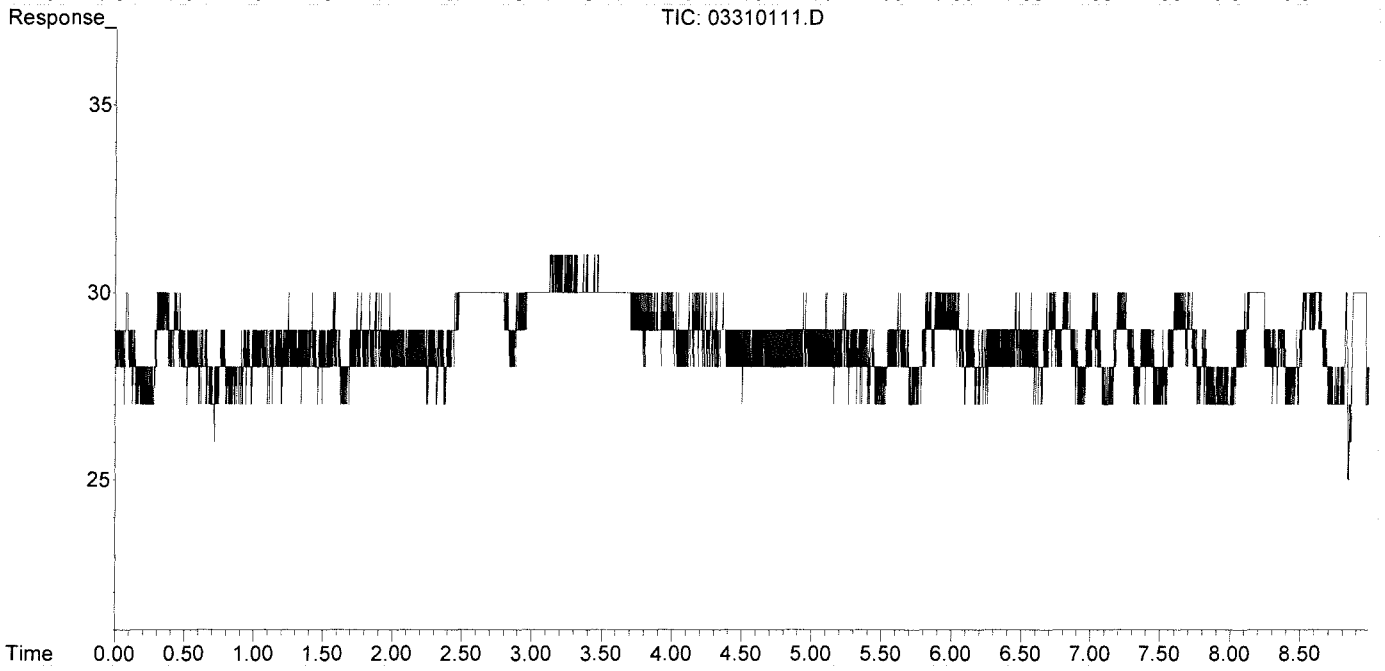
Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310111.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 15:23:05
Operator : LD
Sample : P2001715-003msd 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 16:00:14 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310112.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 15:55:00
Operator : LD
Sample : P2001715-004 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 16:37:11 2020
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	1.910f	345680	0.073	ppm
2)	Carbon monoxide	1.910f	345680	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.933	2674347	11393.330	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

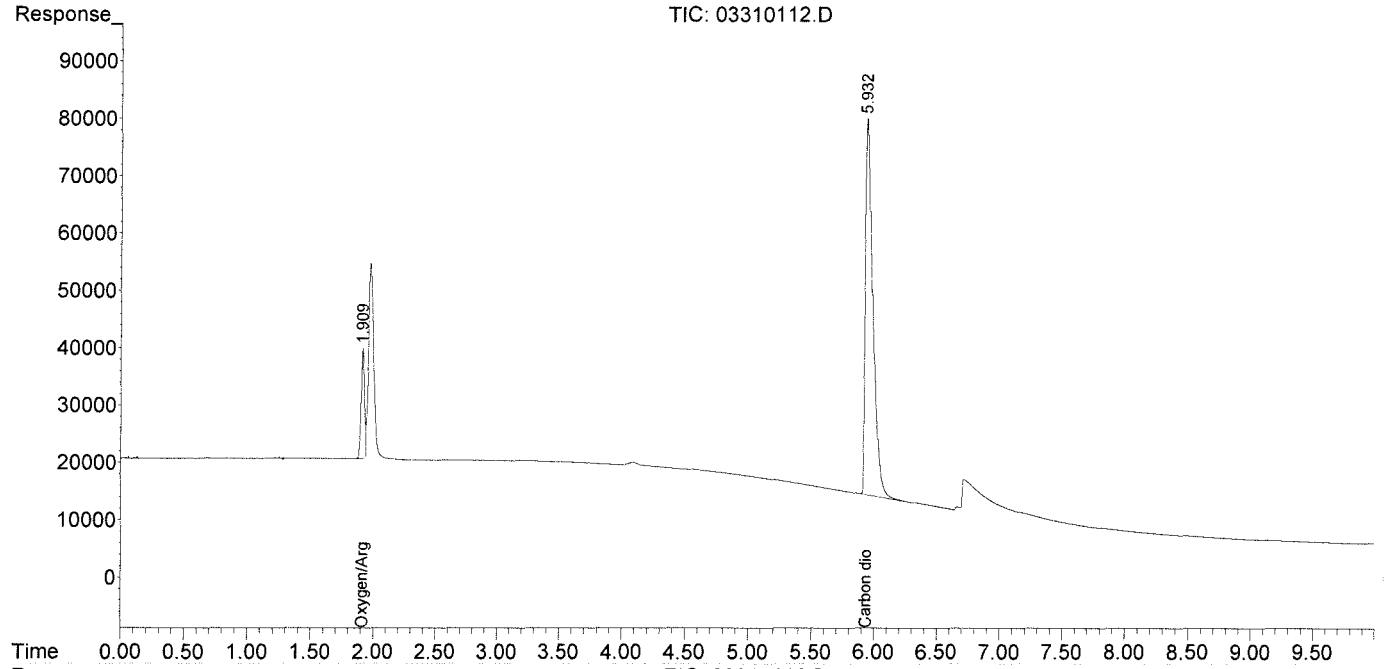
(f)=RT Delta > 1/2 Window (m)=manual int.

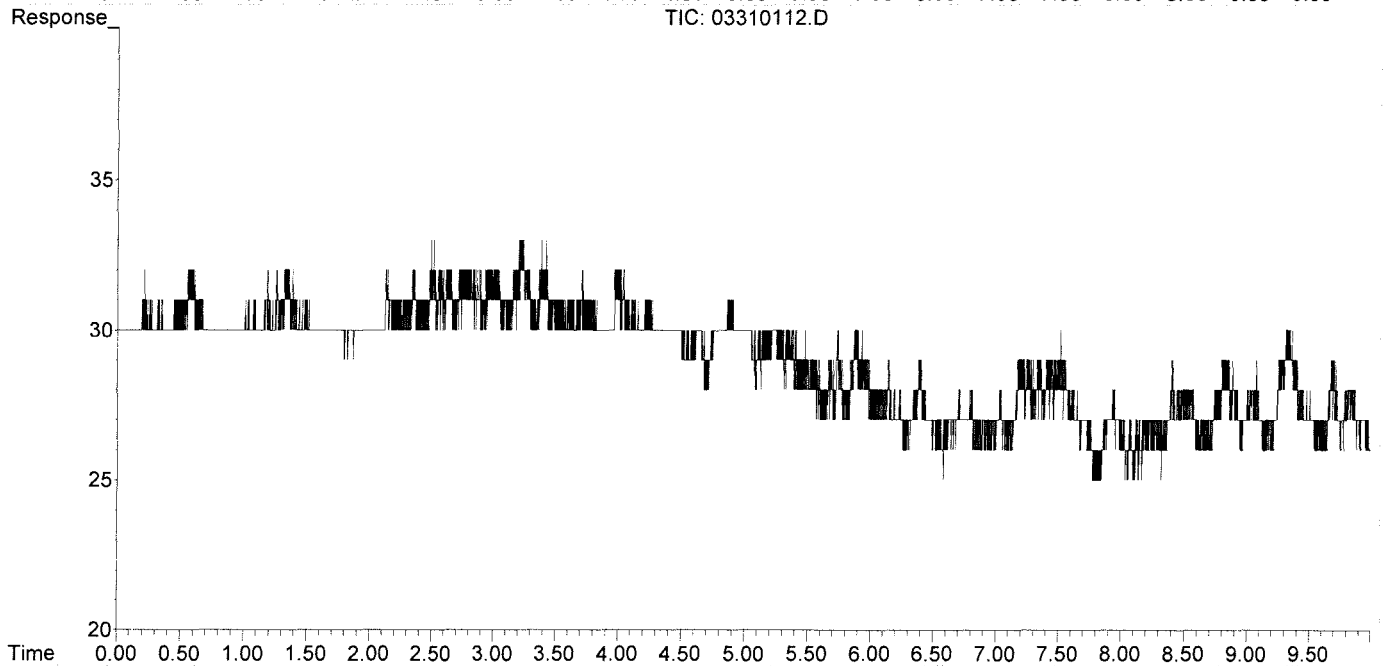
Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310112.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 15:56:00
Operator : LD
Sample : P2001715-004 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 16:37:11 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310113.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 16:26:21
Operator : LD
Sample : P2001715-005 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 17:07:31 2020
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	1.918f	143841	0.030	ppm
2)	Carbon monoxide	1.918f	143841	N.D.	ppm
3)	Methane (TCD)	4.079f	563985	59634.579	ppm
4)	Carbon dioxide	5.920	3904815	16635.406	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

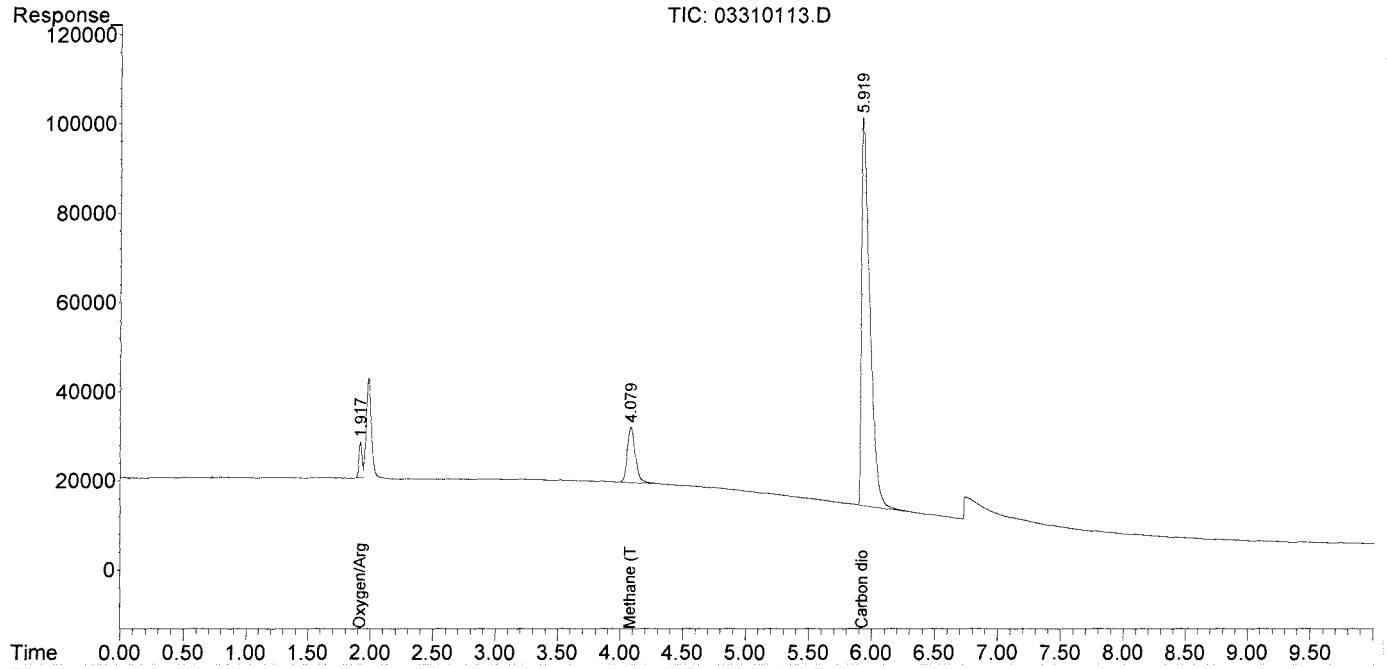
(f)=RT Delta > 1/2 Window (m)=manual int.

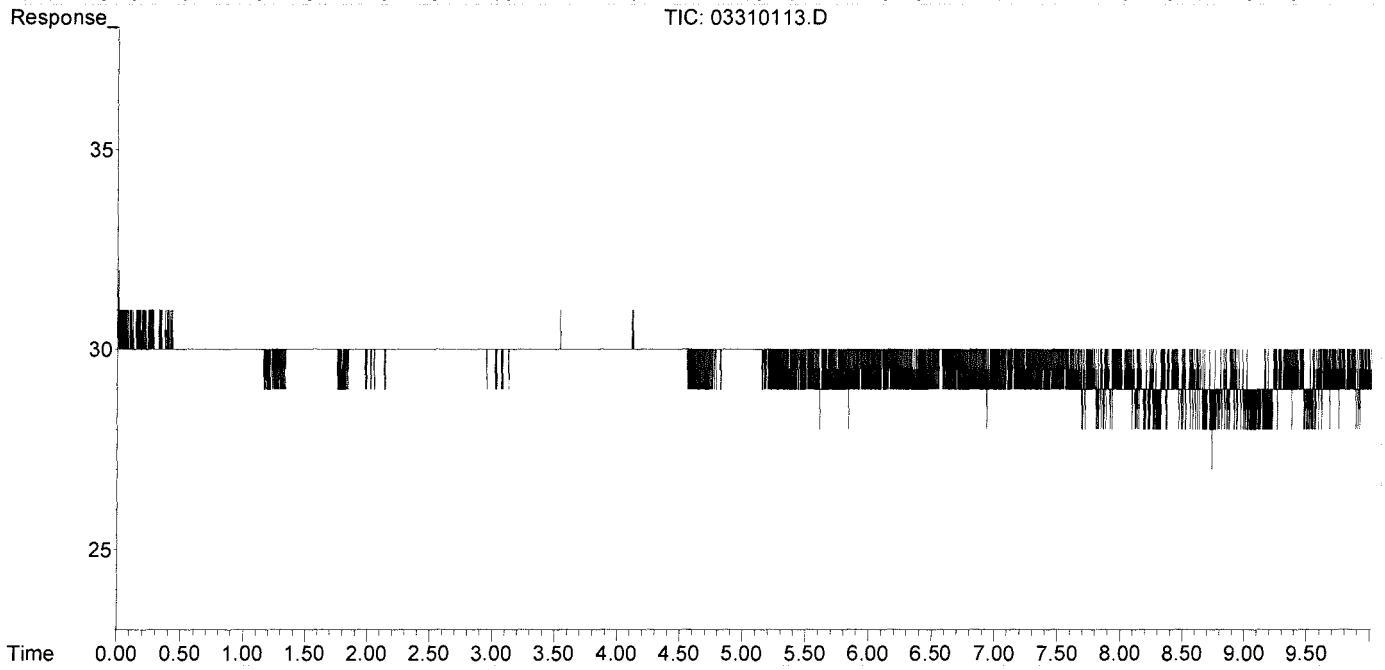
Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310113.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 16:26:21
Operator : LD
Sample : P2001715-005 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 17:07:31 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310116.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 17:09:23
Operator : LD
Sample : P2001715-006 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 17:38:17 2020
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	100272	0.021	ppm
2)	Carbon monoxide	1.920f	100272	N.D.	ppm
3)	Methane (TCD)	4.040f	8697	919.606	ppm
4)	Carbon dioxide	5.928	3236837	13789.664	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

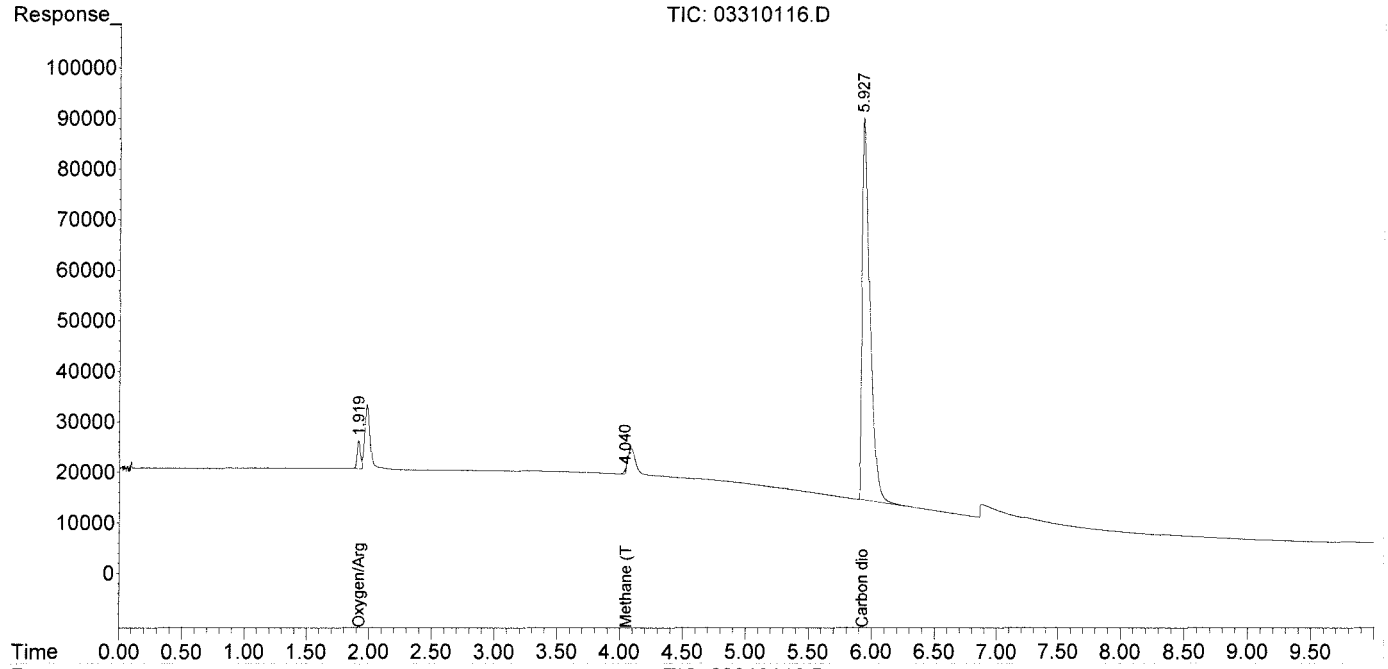
(f)=RT Delta > 1/2 Window (m)=manual int.

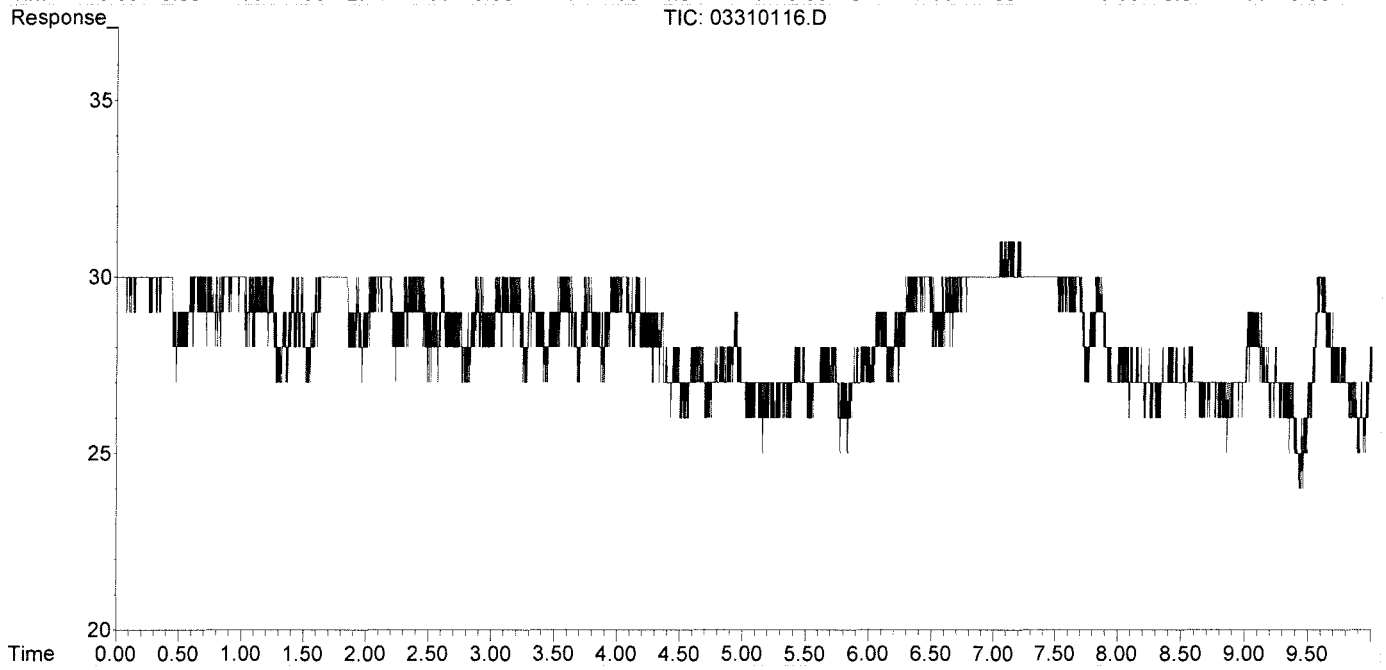
Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310116.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 17:09:23
Operator : LD
Sample : P2001715-006 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 17:38:17 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310115.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 16:51:33
Operator : LD
Sample : P2001715-007 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 17:08:03 2020
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	1.909f	1670880	0.351	ppm
2)	Carbon monoxide	1.909f	1670880	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.943	2114432	9007.963	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

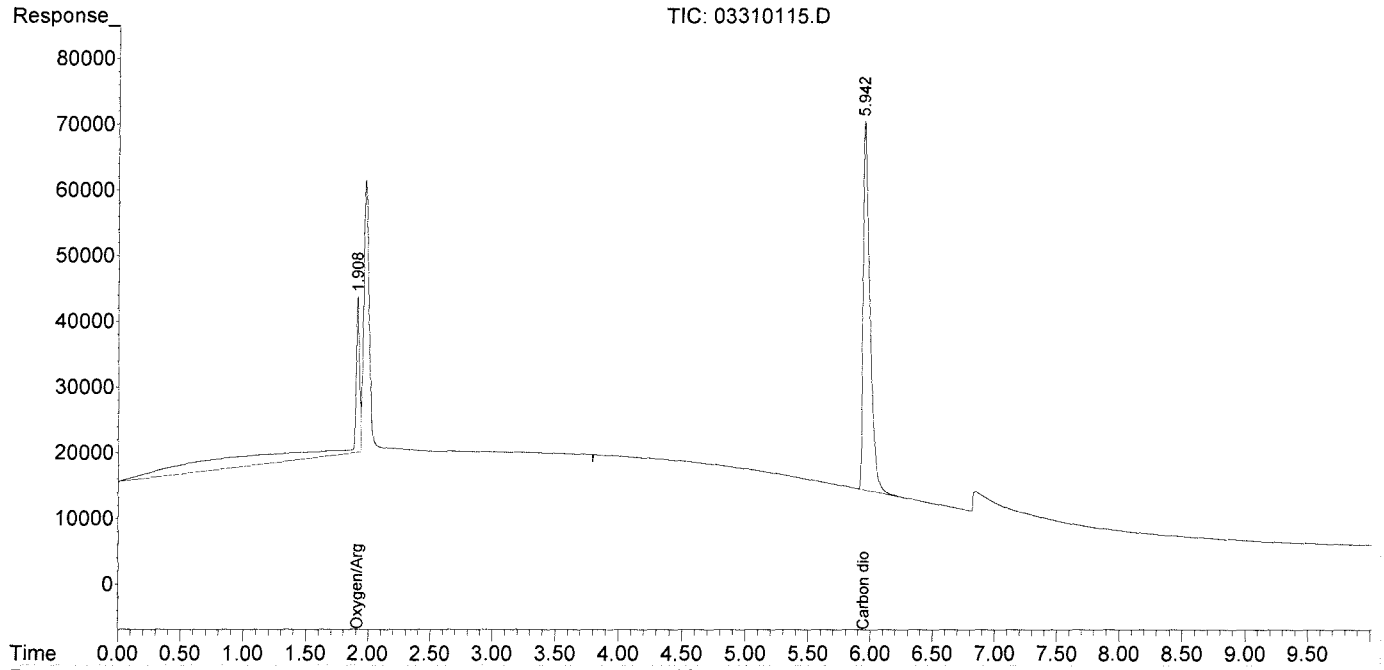
(f)=RT Delta > 1/2 Window (m)=manual int.

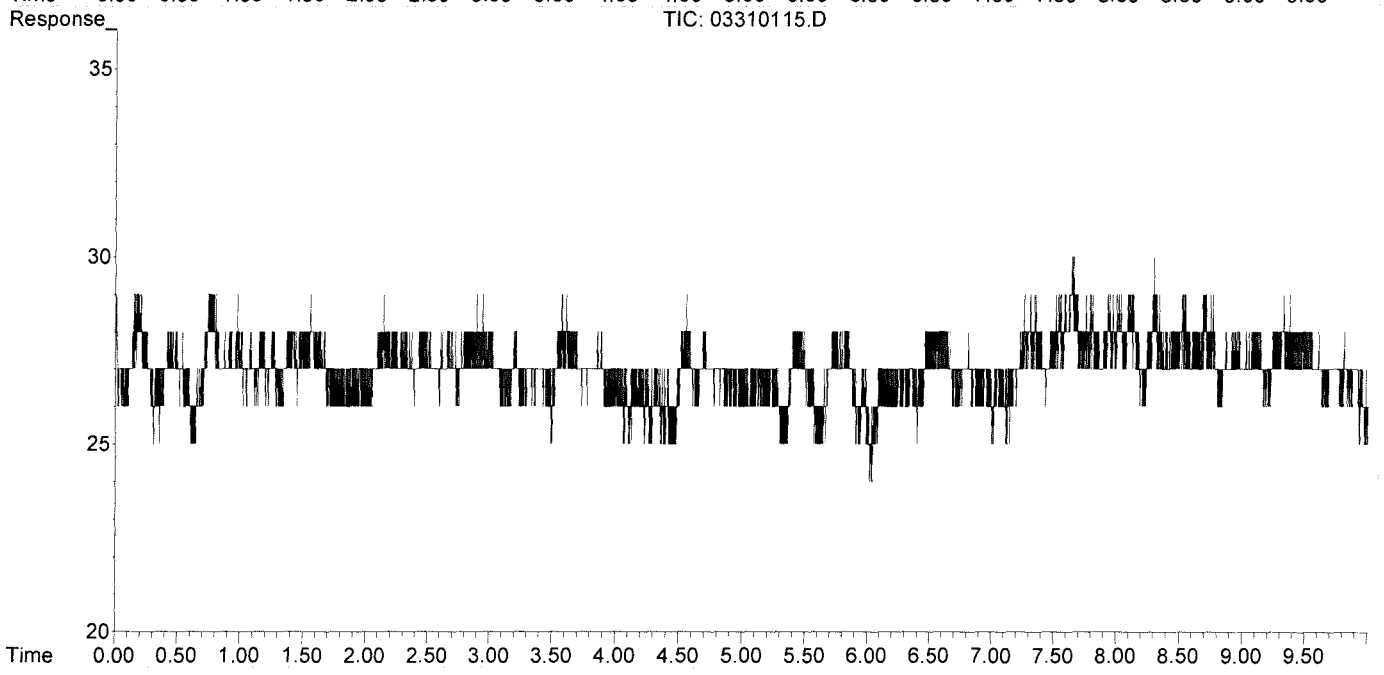
Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310115.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 16:51:33
Operator : LD
Sample : P2001715-007 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 17:08:03 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 13:30:56
Operator : LD
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 13:54:18 2020
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	1.910f	1428108	0.300	ppm
2)	Carbon monoxide	1.910f	1428108	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

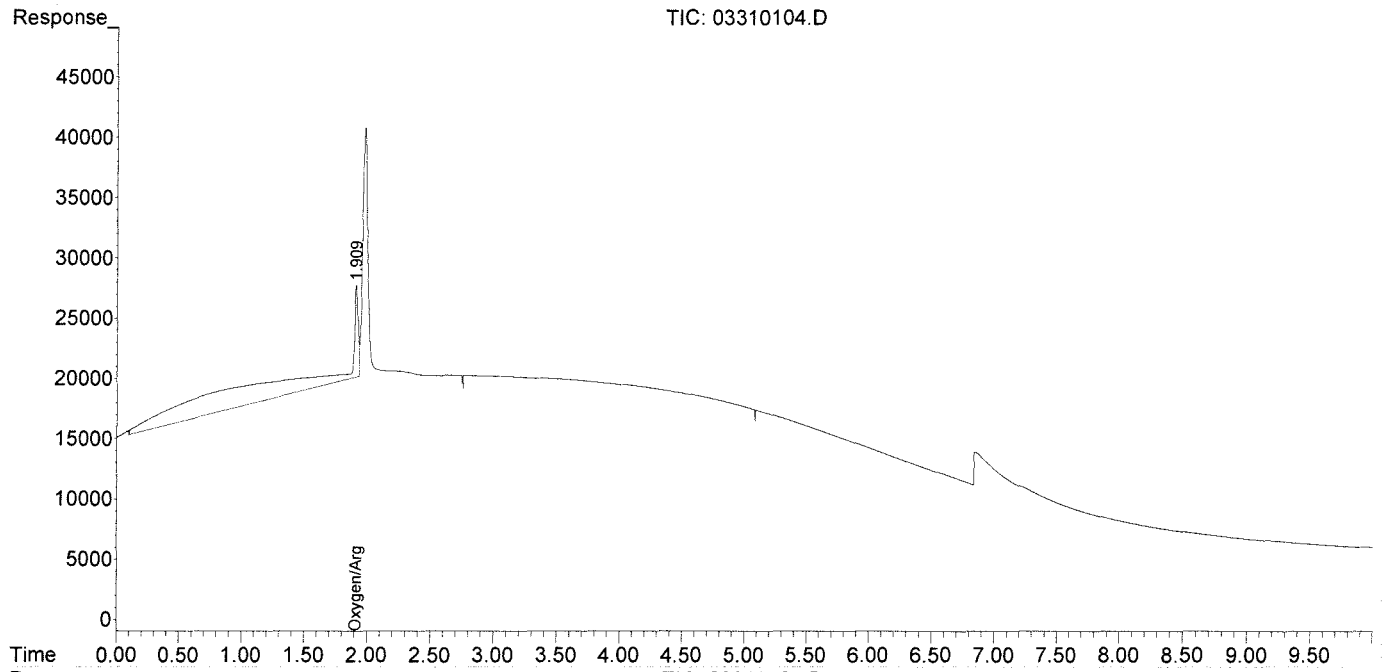
(f)=RT Delta > 1/2 Window (m)=manual int.

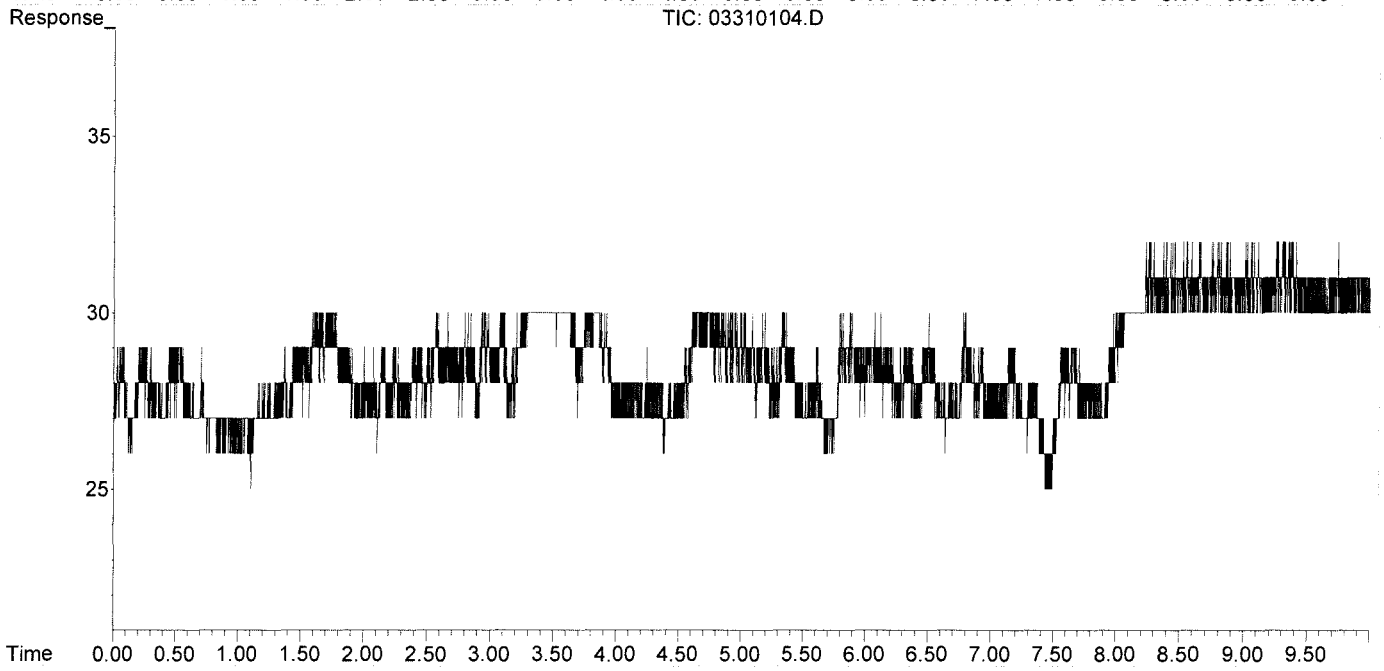
Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 13:30:56
Operator : LD
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 13:54:18 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 13:43:55
Operator : LD
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: Mar 31 13:54:29 2020
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	1.906f	1871628	0.393	ppm	
2)	Carbon monoxide	1.906f	1871628	N.D.	ppm	
3)	Methane (TCD)	4.084f	576905	61000.656	ppm	
4)	Carbon dioxide	5.983	260552	1110.013	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	

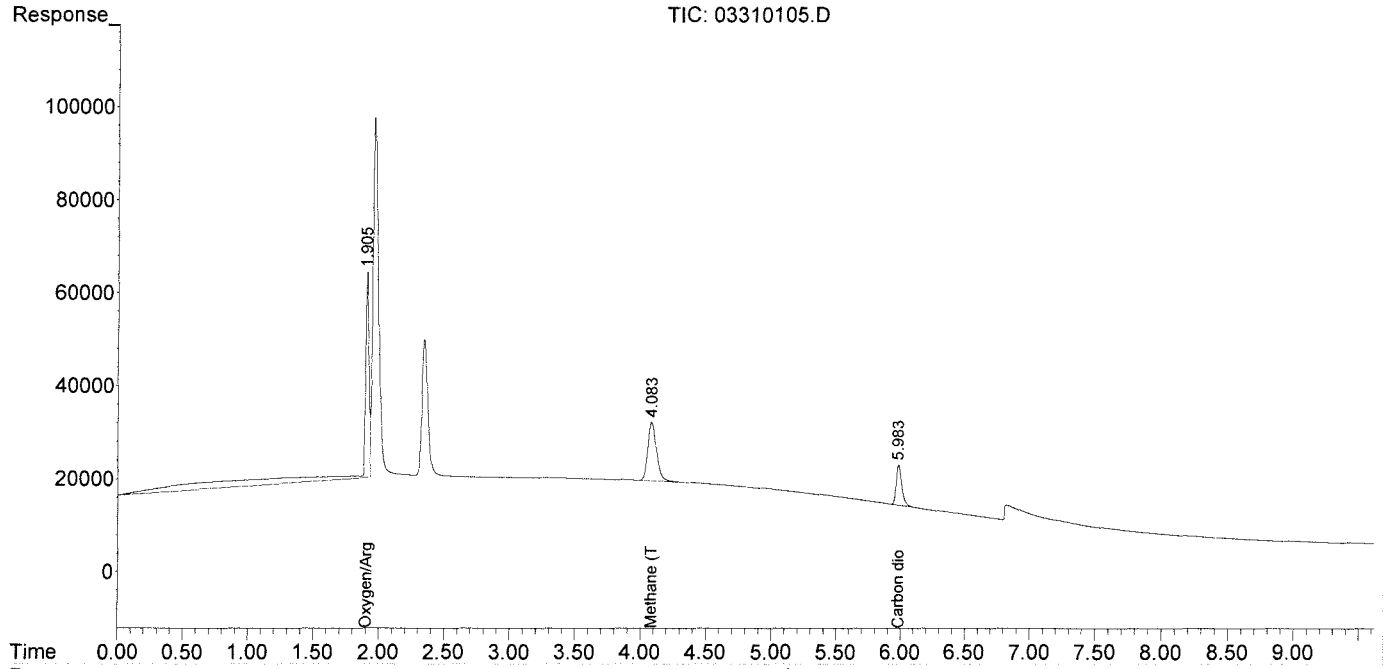
(f)=RT Delta > 1/2 Window (m)=manual int.

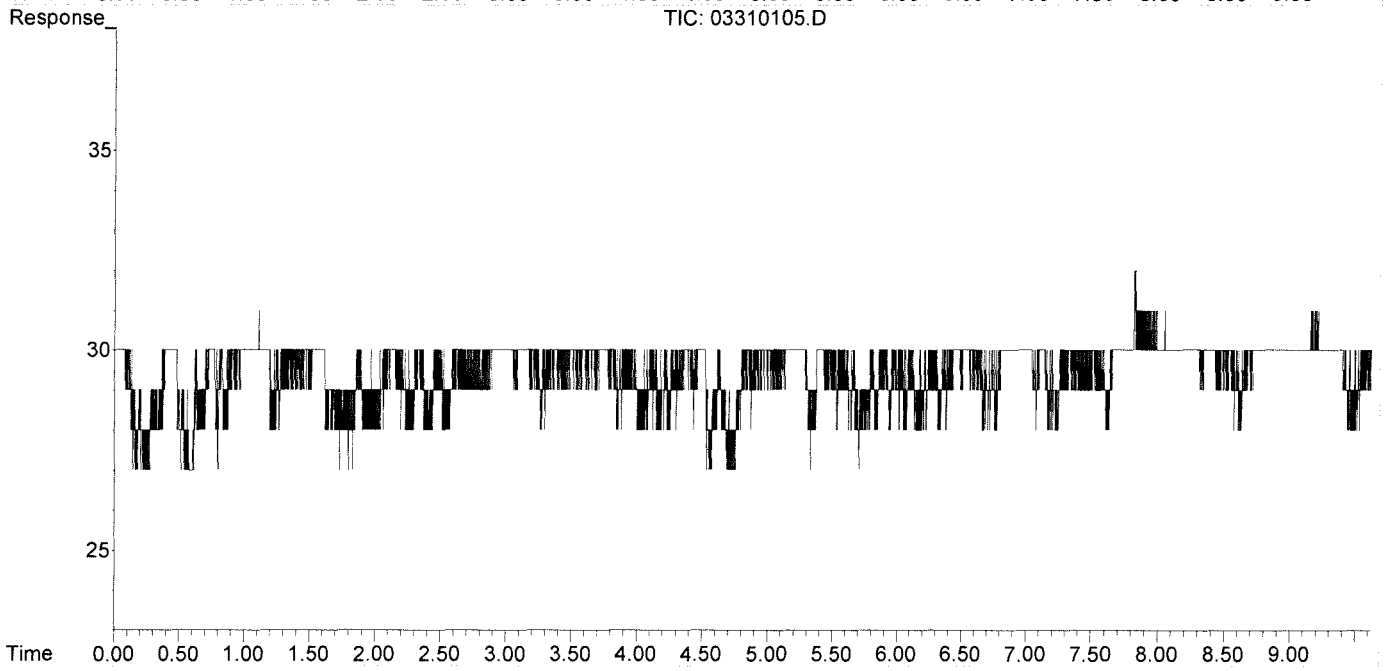
Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 13:43:55
Operator : LD
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: Mar 31 13:54:29 2020
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 :





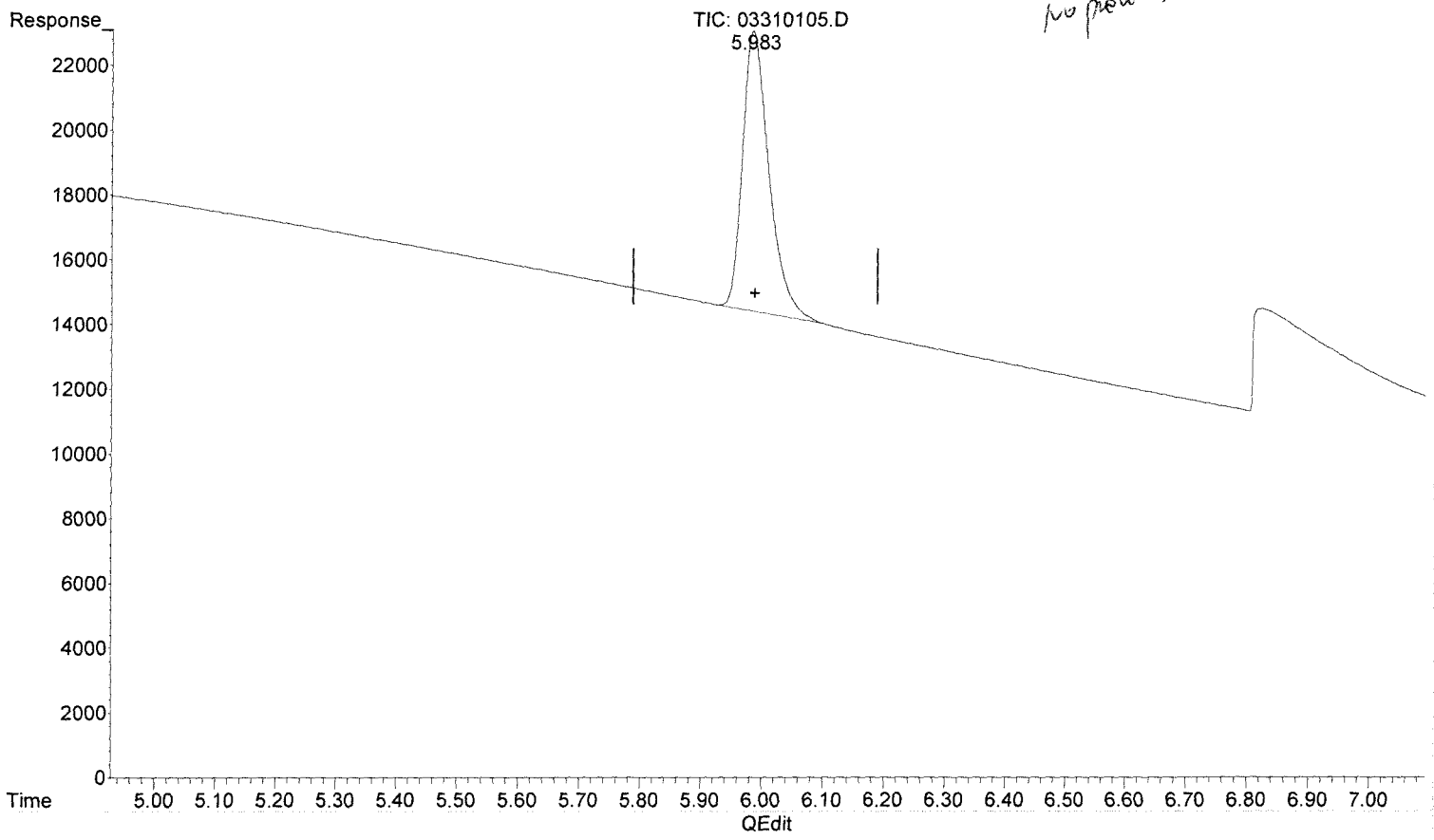
Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 13:43:55
Operator : LD
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: Mar 31 13:54:29 2020
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

LD
BLC
04/01
no previous

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



(4) Carbon dioxide

5.983min 1110.013 ppm m

response 260552

no Previous BLC

(+) = Expected Retention Time
RS082817_CO2.M Wed Apr 01 15:03:06 2020 Page: 1

Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310106.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 13:58:57
Operator : LD
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: Mar 31 14:09:36 2020
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	1.903	787537	0.165	ppm	
2)	Carbon monoxide	1.903	787537	N.D.	ppm	
3)	Methane (TCD)	4.081f	562585	59486.565	ppm	
4)	Carbon dioxide	5.981	242178	1031.735	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	

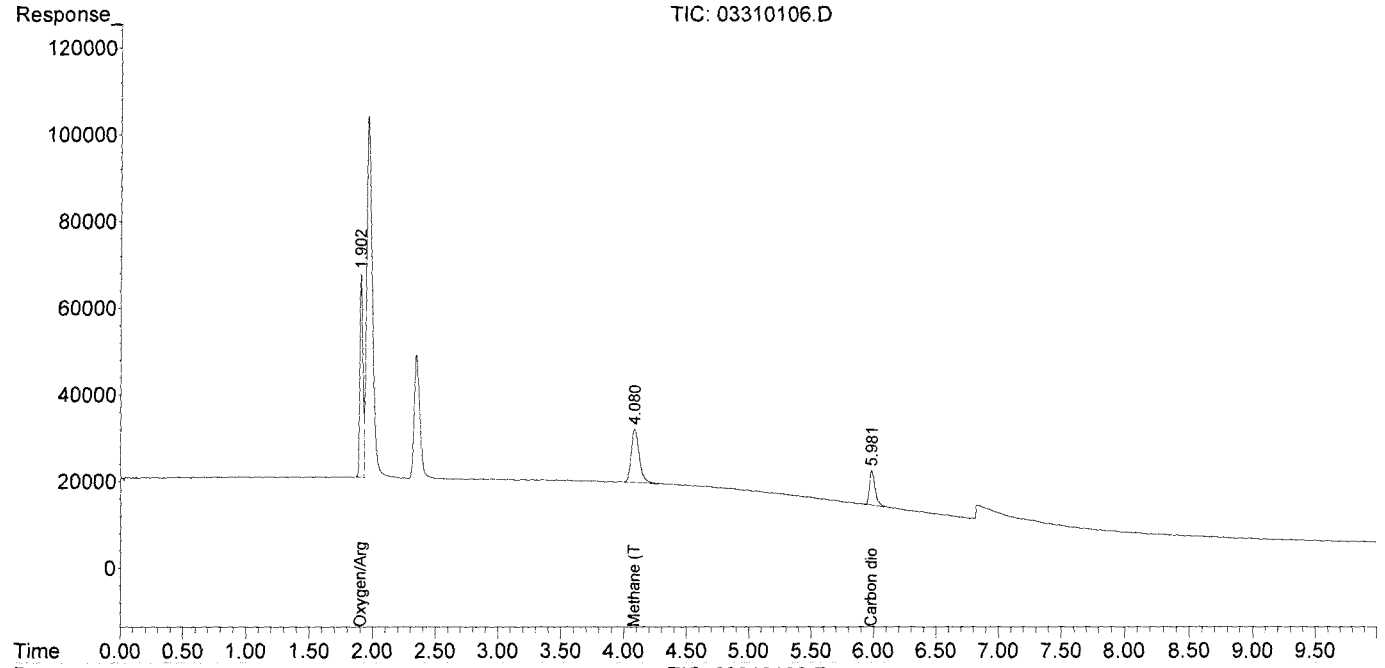
(f)=RT Delta > 1/2 Window (m)=manual int.

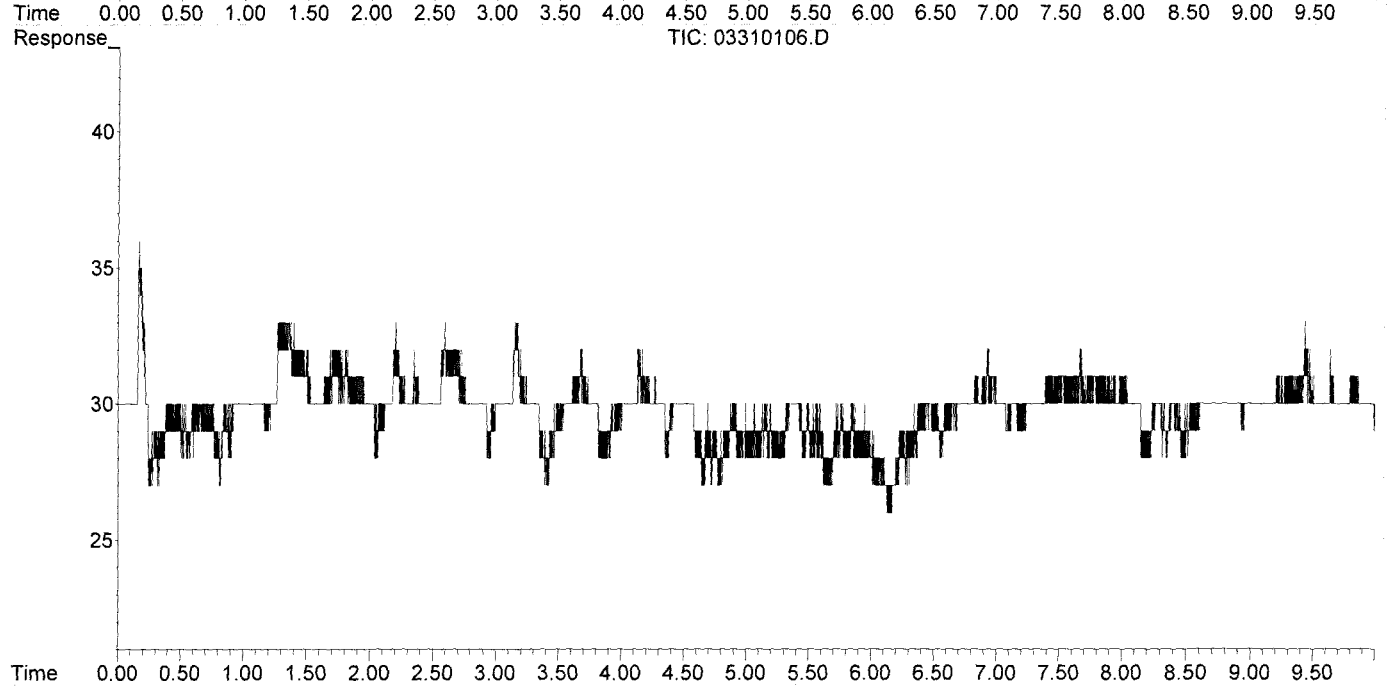
Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310106.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 13:58:57
Operator : LD
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: Mar 31 14:09:36 2020
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 :



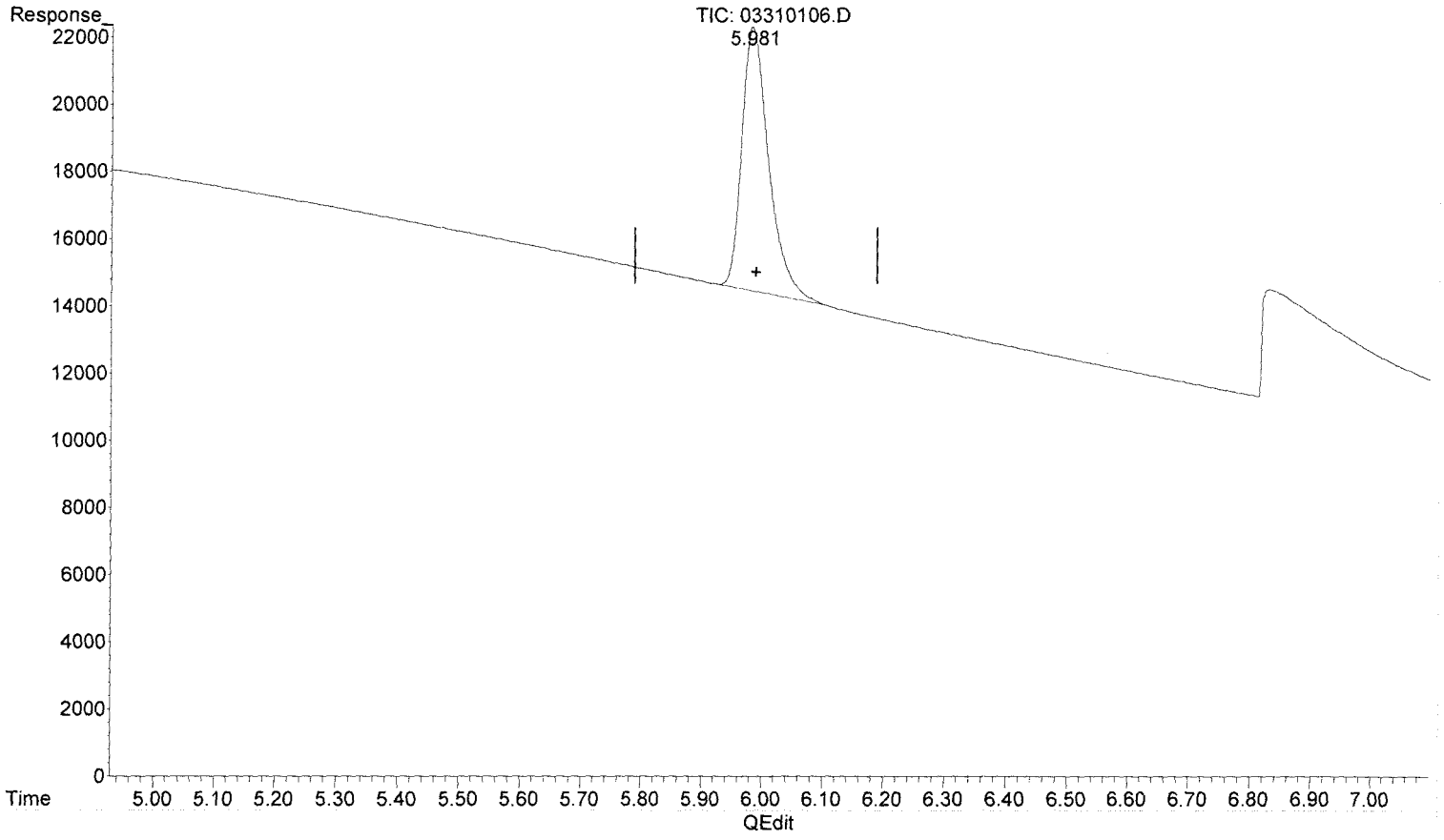


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310106.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 13:58:57
Operator : LD
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: Mar 31 14:09:36 2020
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

5.981min 1031.735 ppm m

response 242178

CO
BLC
04/01
W previous

(+) = Expected Retention Time
RS082817_CO2.M Wed Apr 01 15:03:20 2020 Page: 1

Response Factor Report HP5890

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

dit Compounds -- Compound #4 -- Carbon dioxide

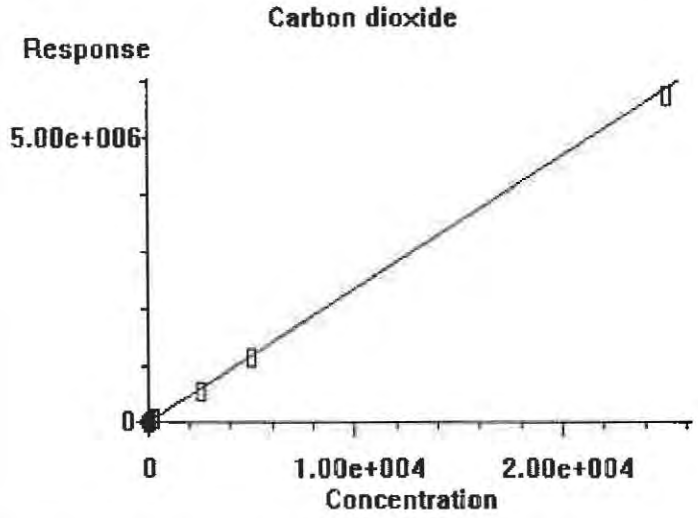
Search by: Ret Time | Name | Index — Find Compound

- 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

Calibration Status Report HP5890

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

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 :

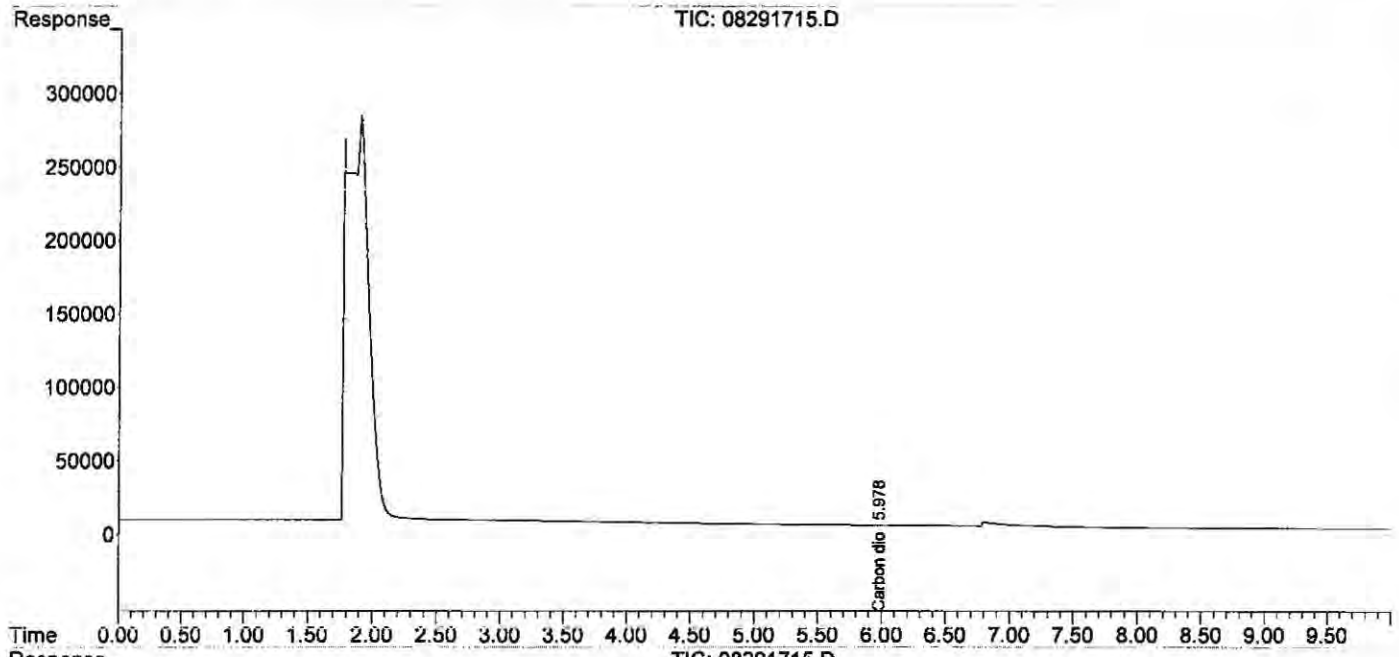
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	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	

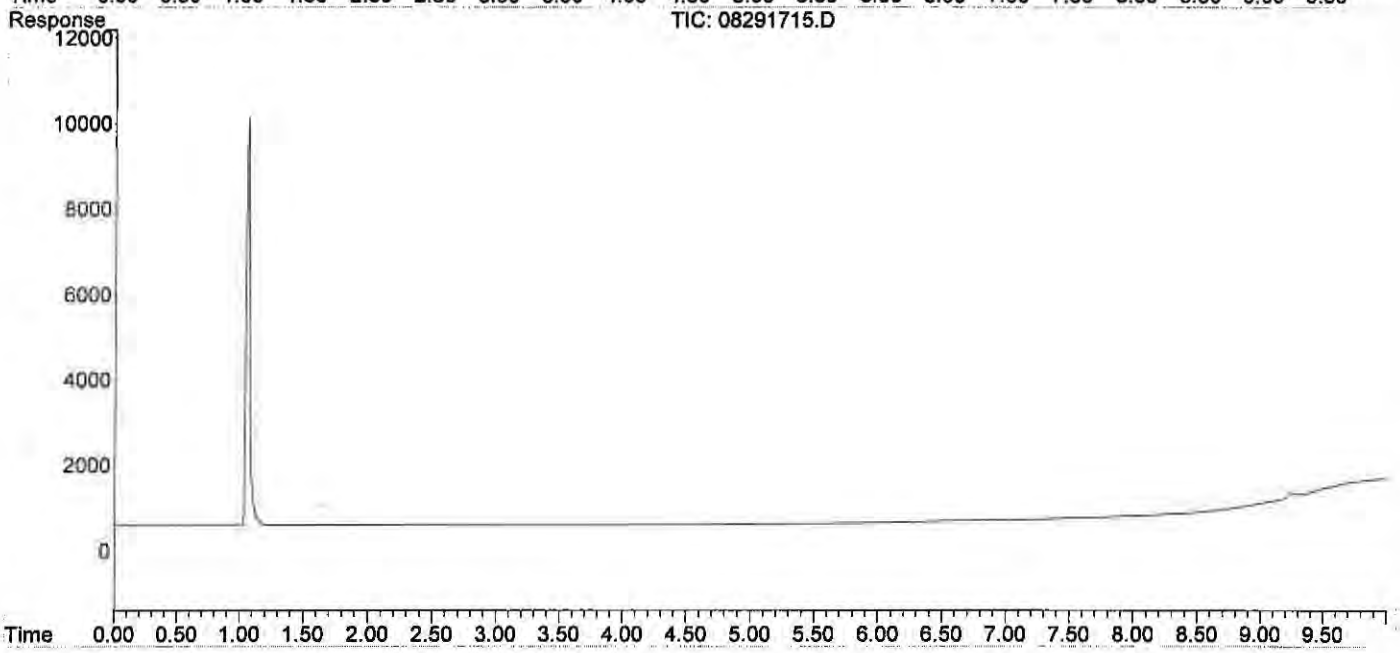
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



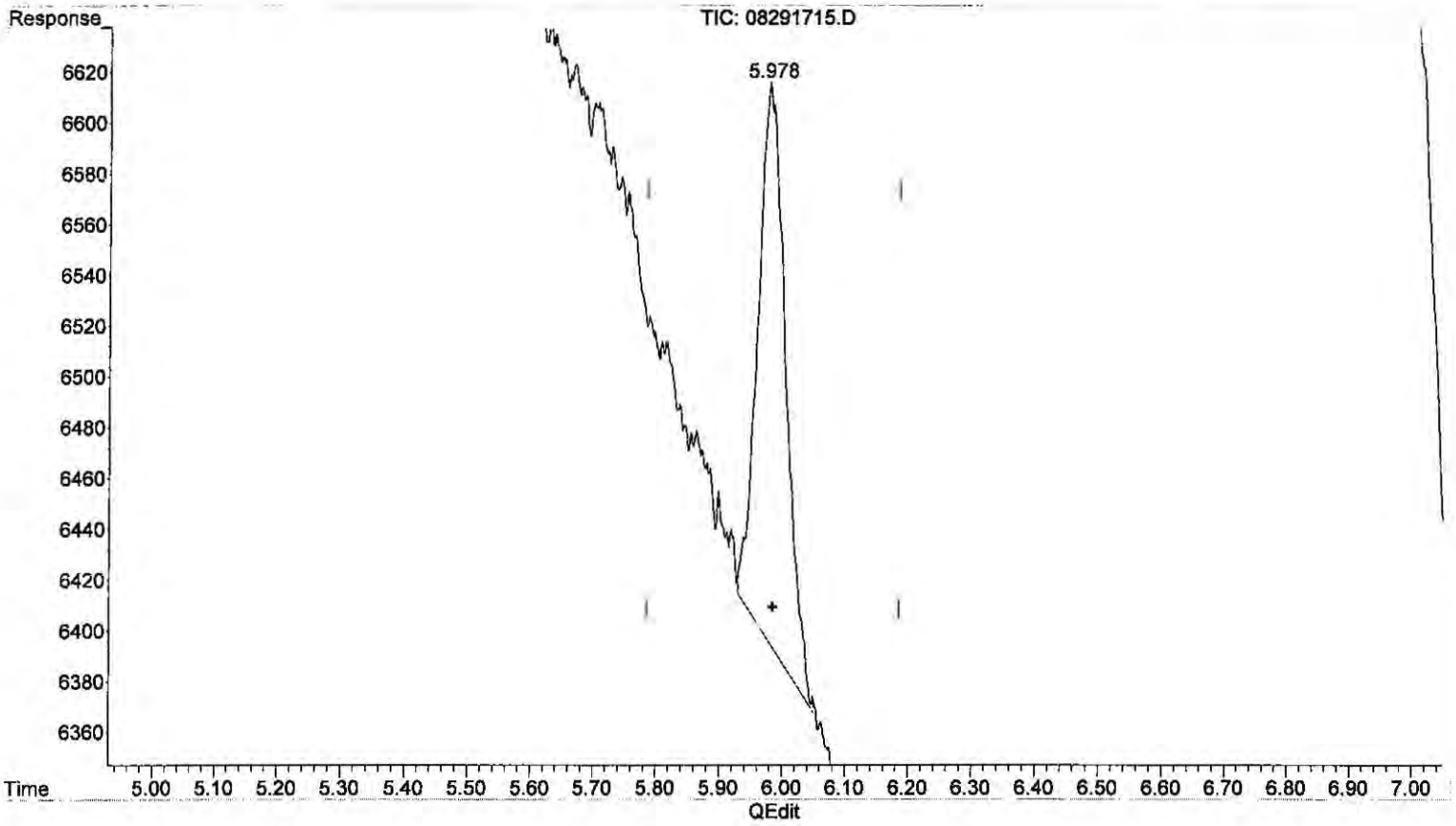


Quantitation Report (Qedit)

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

(+) = Expected Retention Time

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

Quantitation Report (QT Reviewed)

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 :

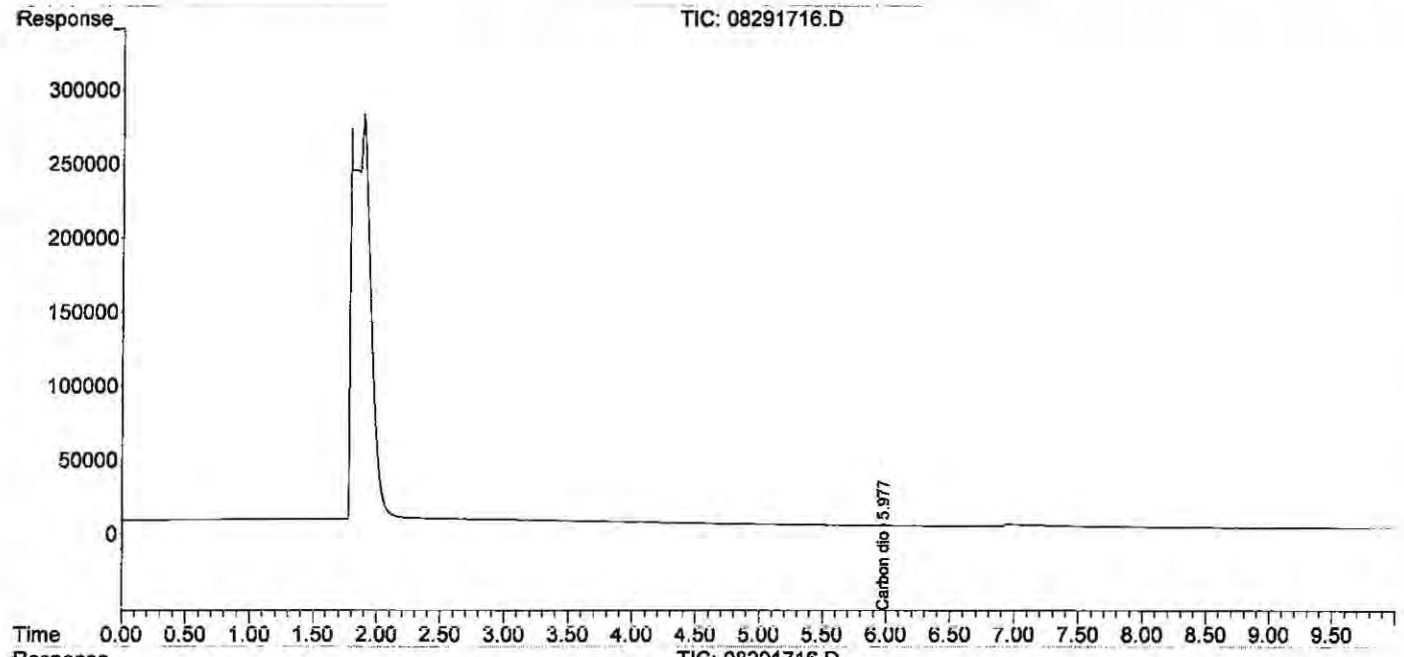
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	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	

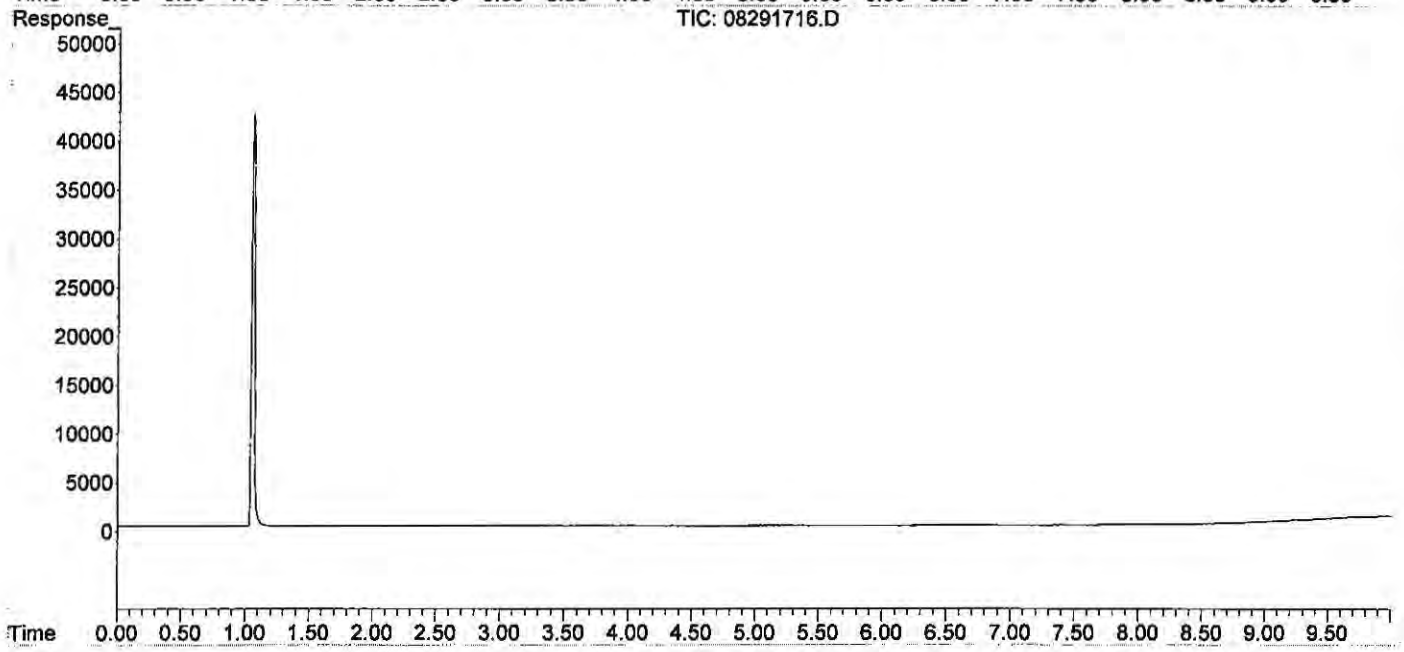
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

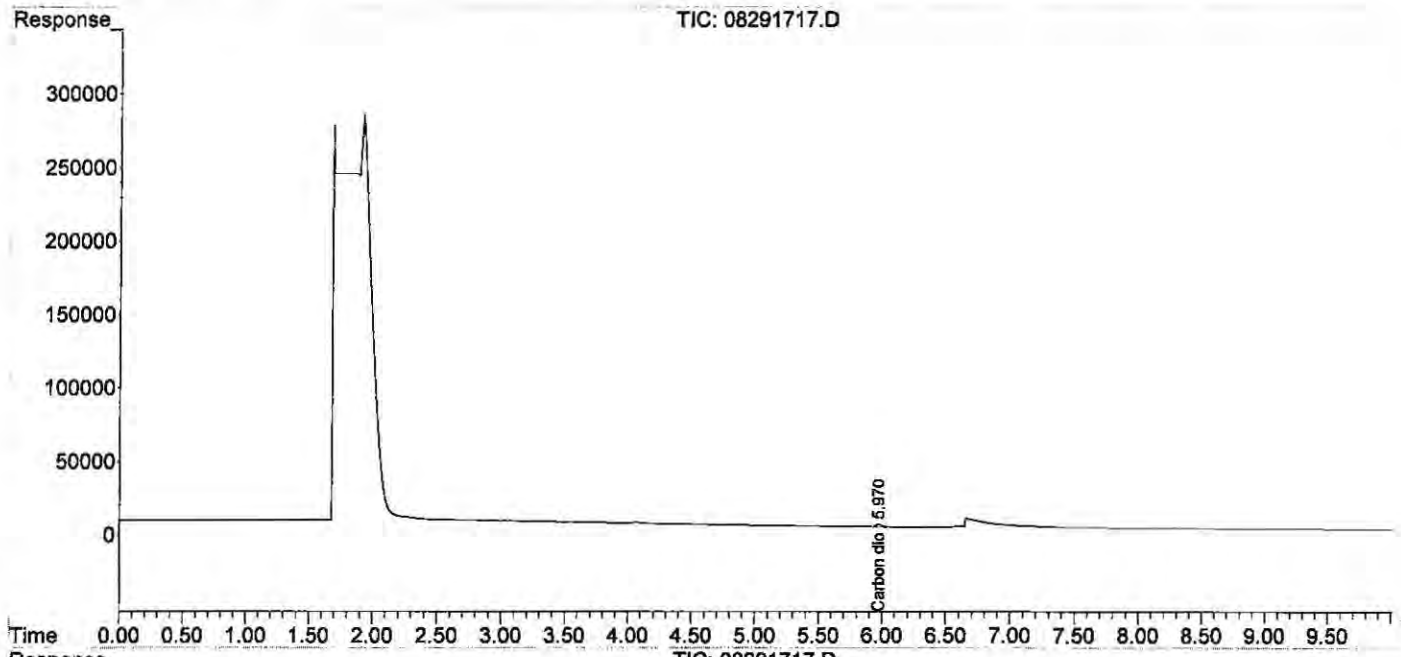
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	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	

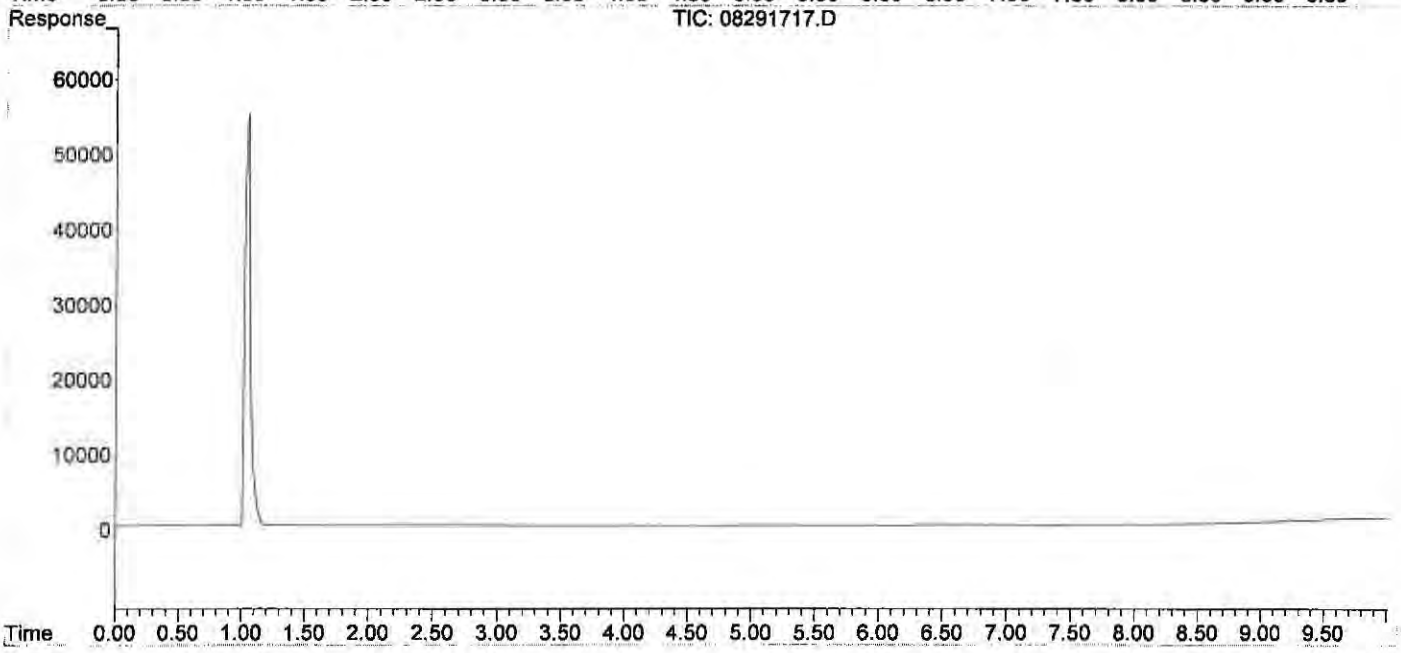
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



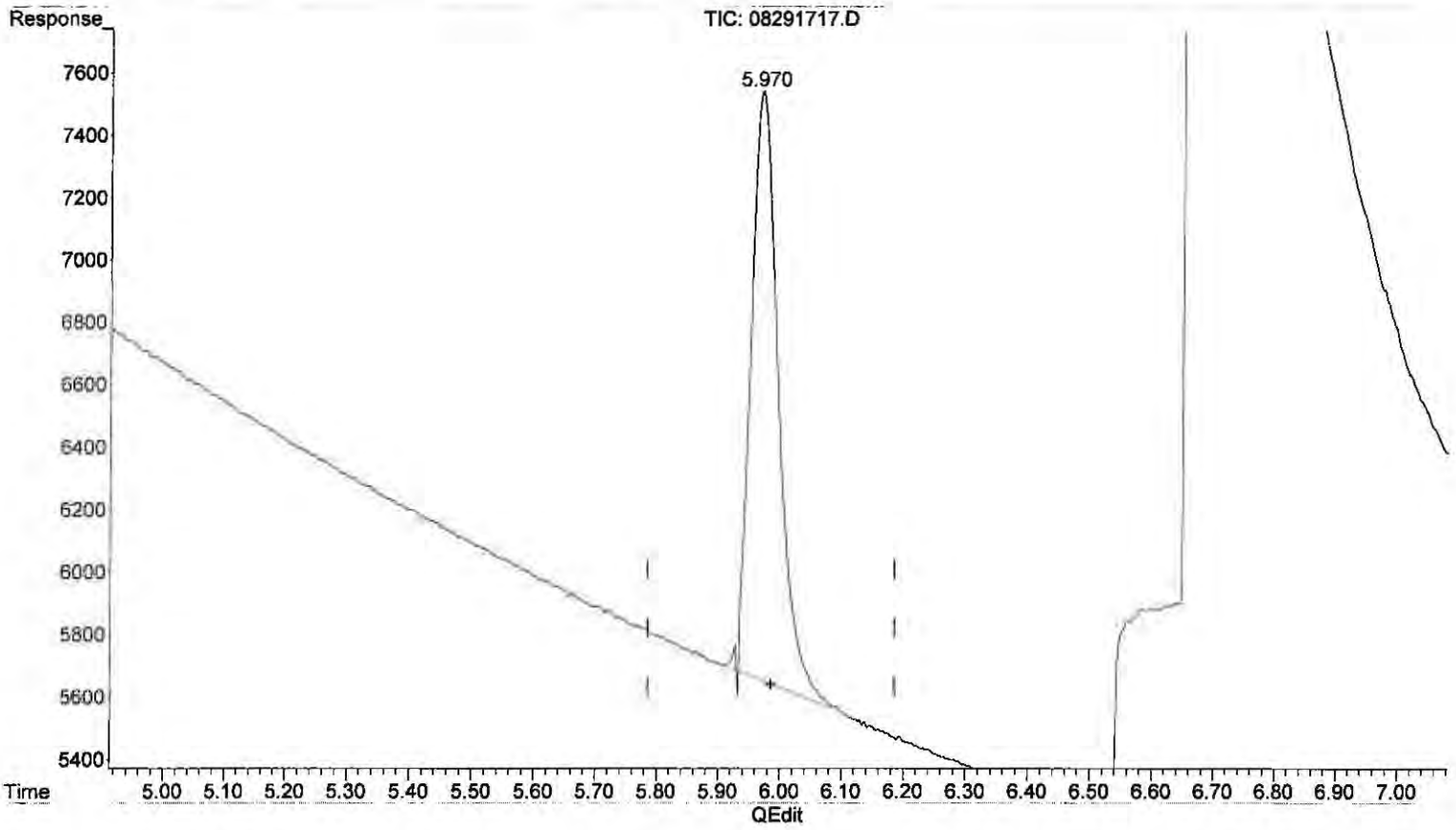


00997770

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 #1 Info :
Signal #2 Phase:
Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

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 :

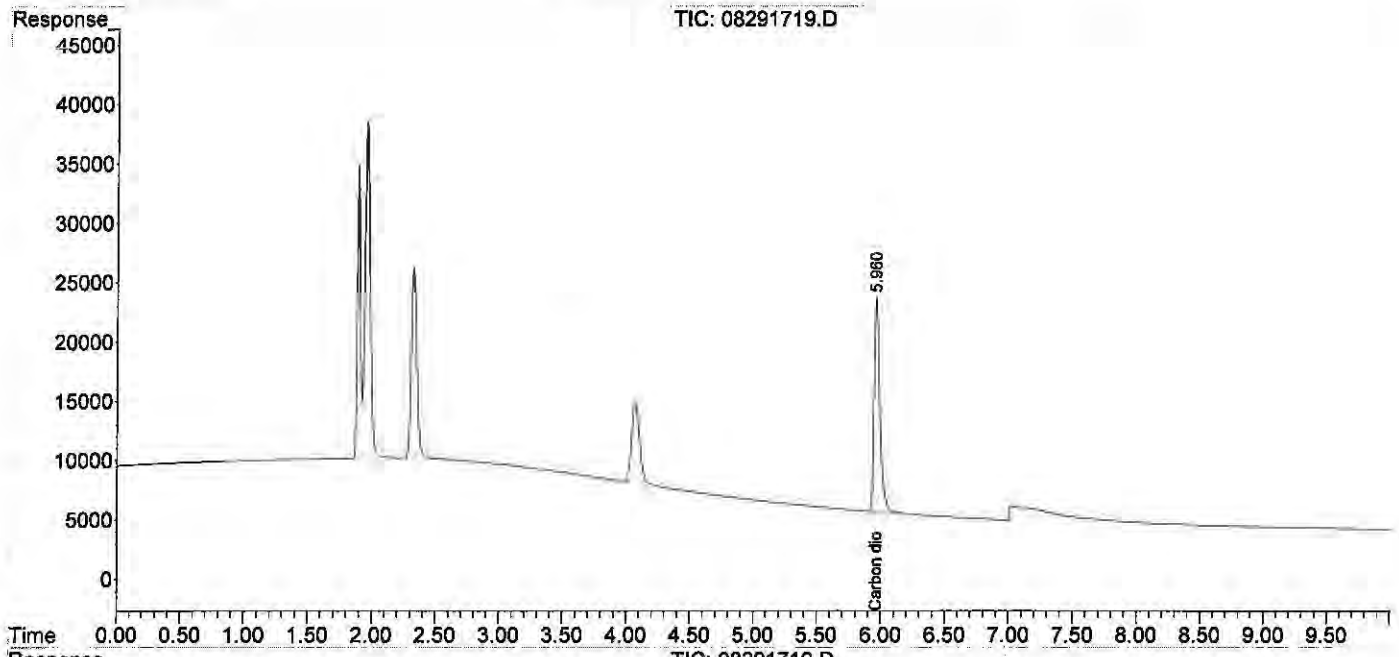
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.891	425113	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.962	568043	2369.673	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	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	

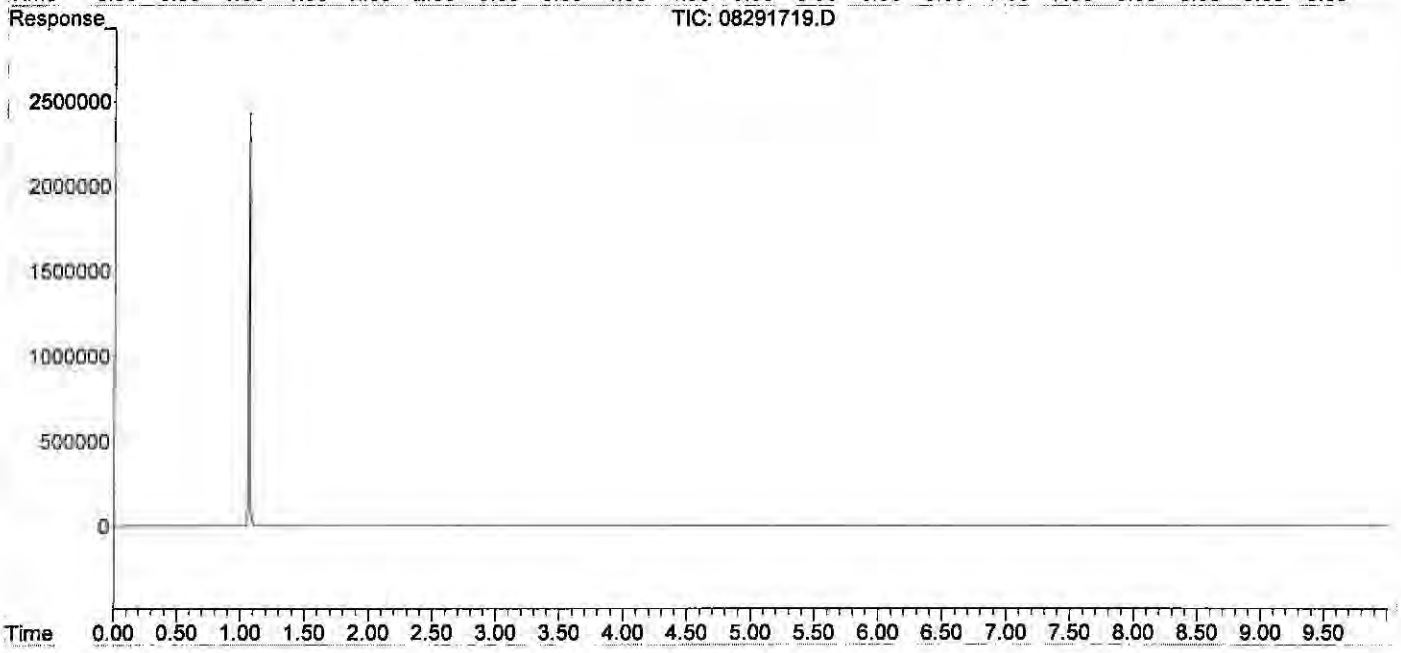
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :





Quantitation Report (QT Reviewed)

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 :

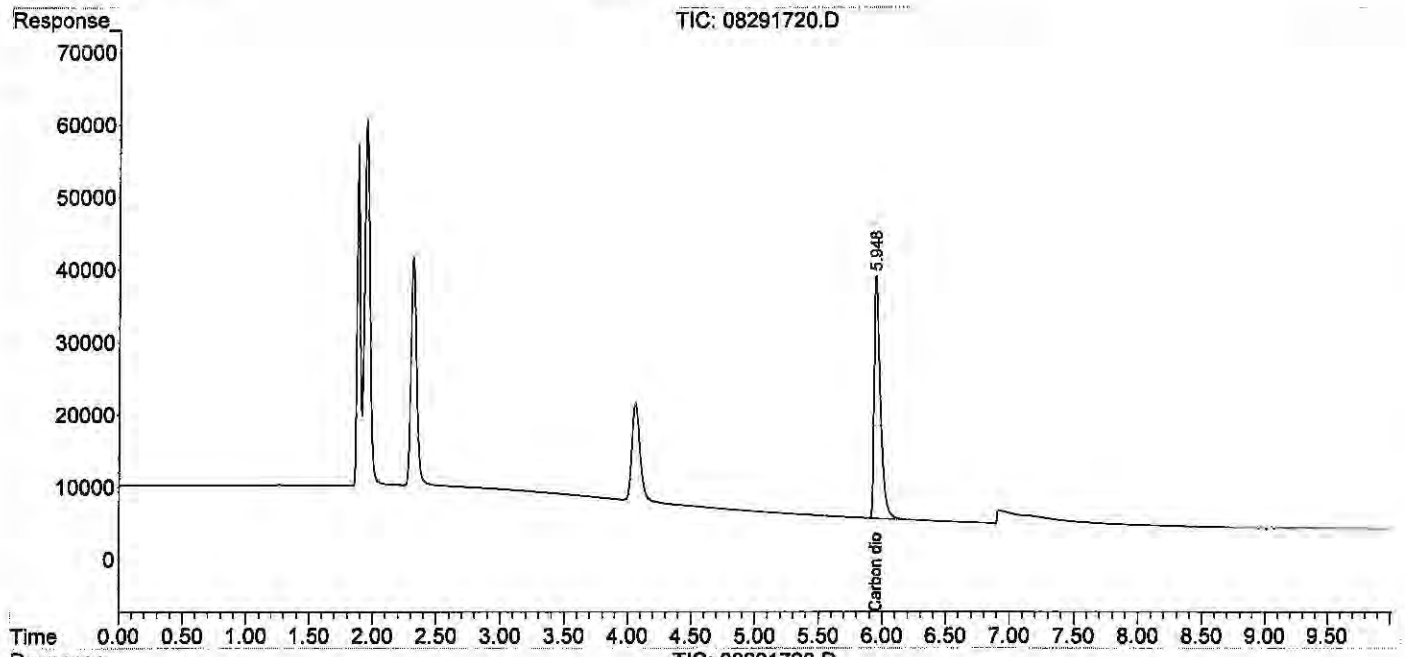
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	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	

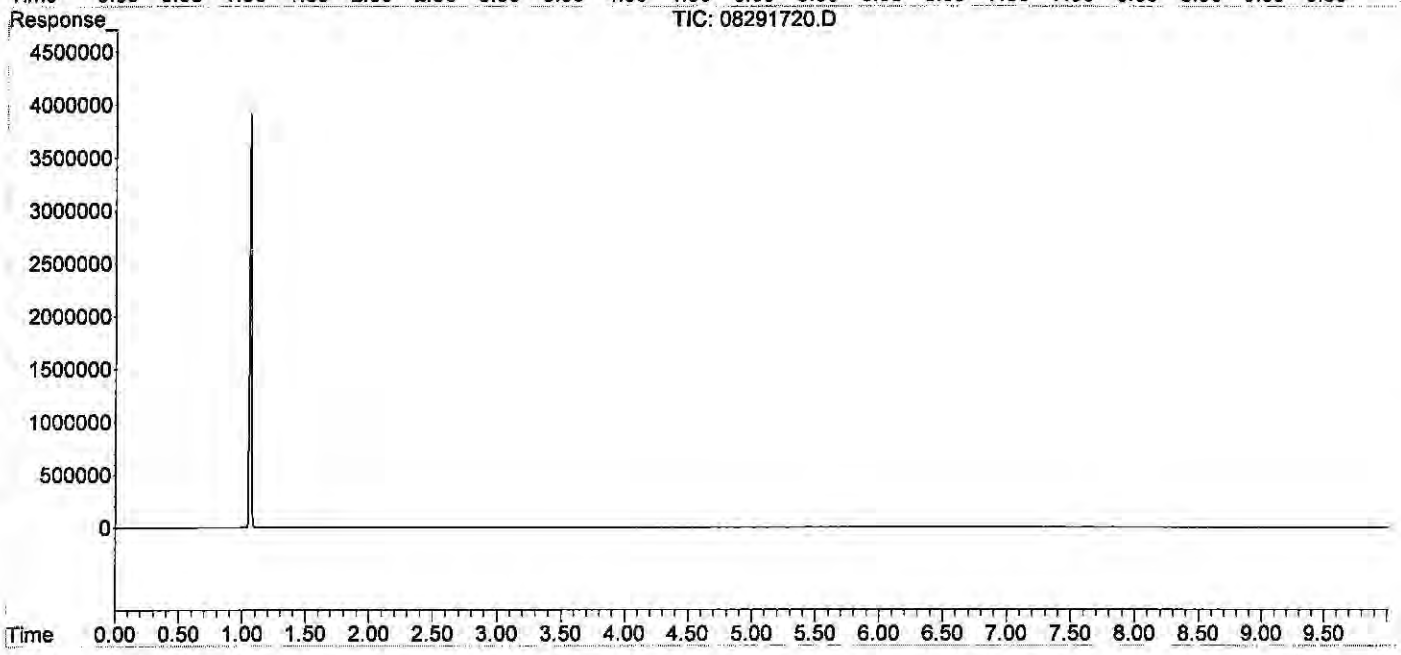
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :





Quantitation Report (QT Reviewed)

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 :

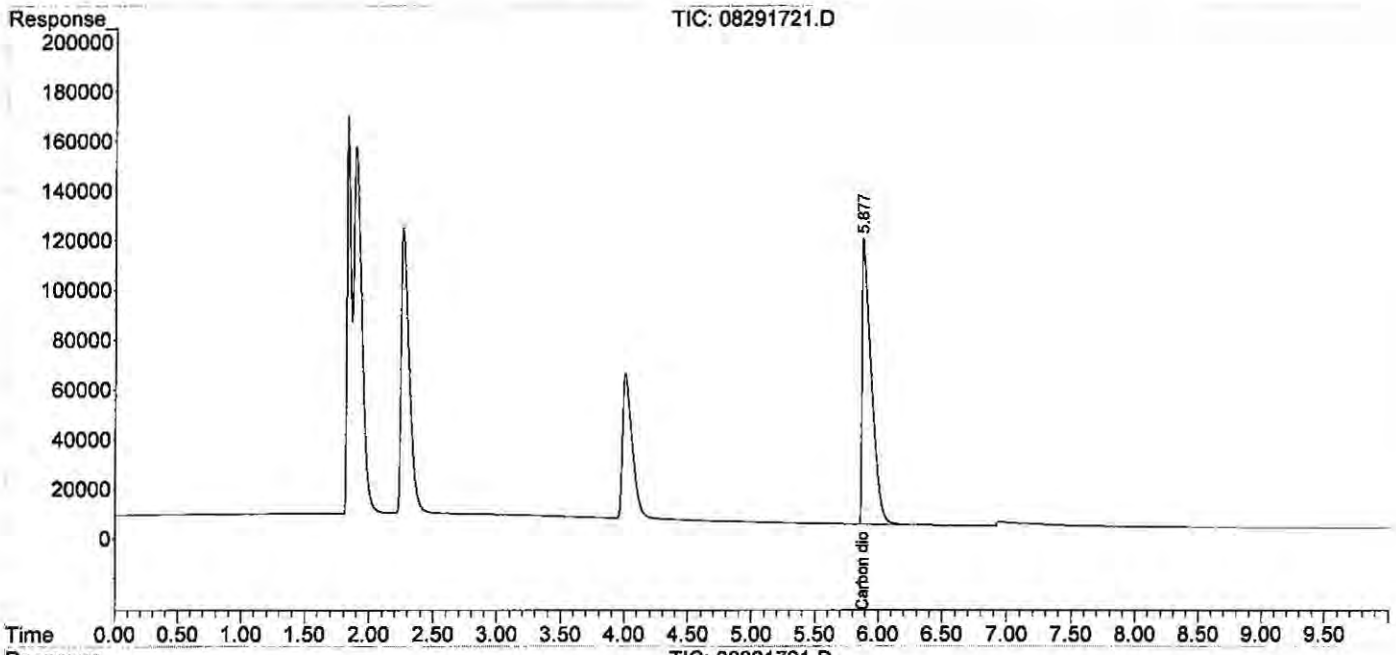
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	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	

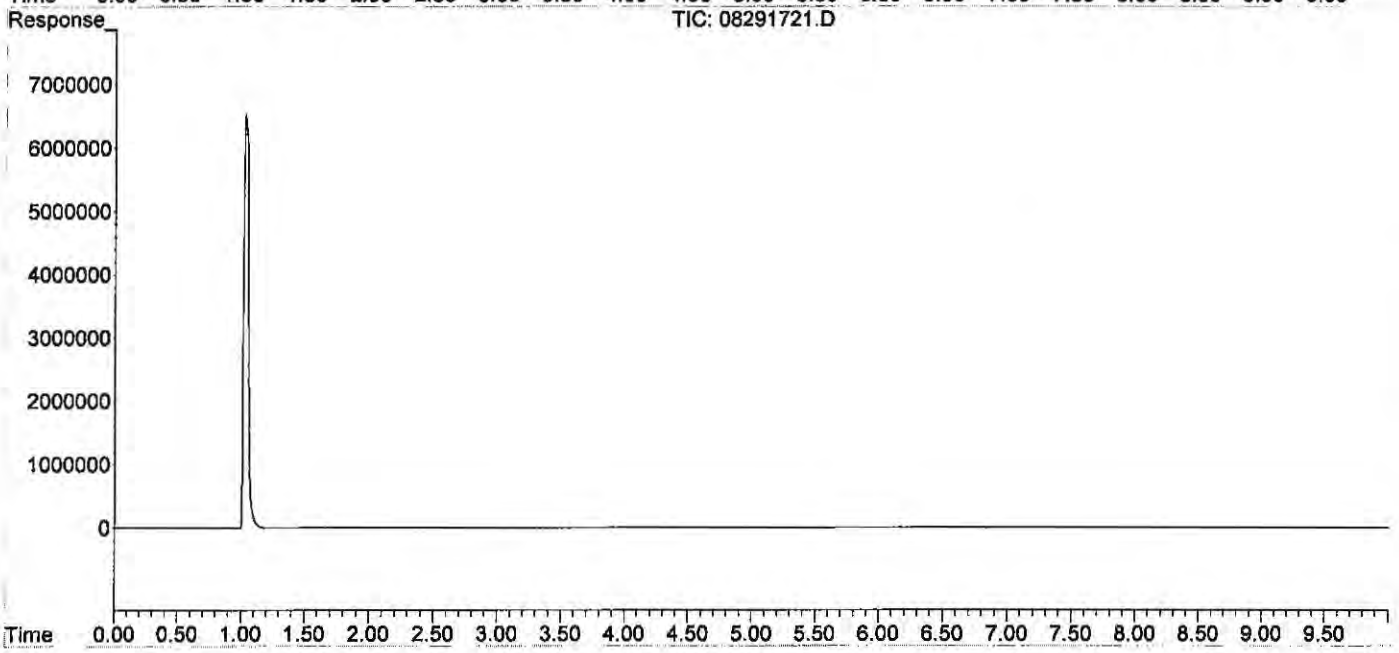
(f)=RT Delta > 1/2 Window (m)=manual int.

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	

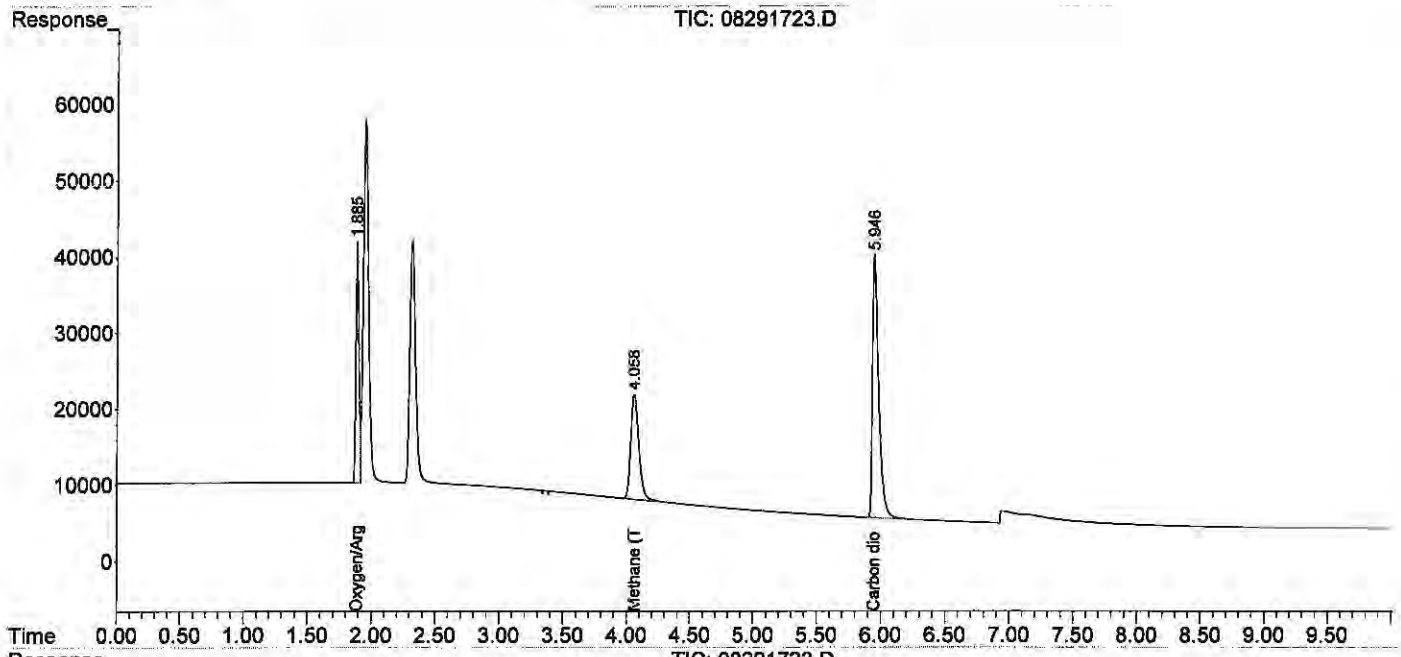
(f)=RT Delta > 1/2 Window (m)=manual int.

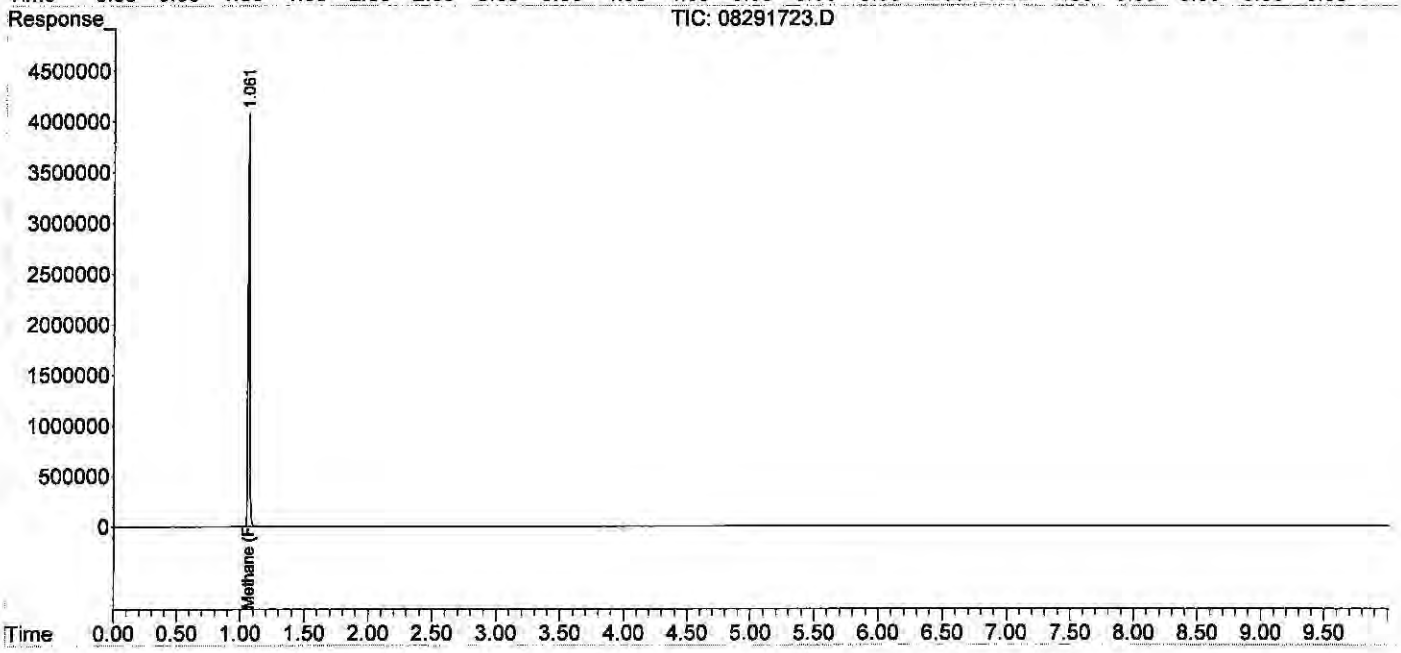
WC 9/4/17

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 :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P2001715
Sample Vol. (ml) : 32.00 ml
Analyst : LD
Date Analysis : 03/31/20
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	Ini. Vol.	Carbon Dioxide
STD S32-01312001	0.100	4769.306
ACTUAL		5000.00
%Difference		4.6%
mcs 0.1ml	0.100	0.000
rb 0.1ml	0.100	0.000
lcs tcd 0.1ml	0.100	1110.013
lcsd tcd 0.1ml	0.100	1031.735
P2001715-001 0.1ml	0.100	20738.65
P2001715-002 0.1ml	0.100	23464.48
P2001715-003 0.1ml	0.100	12103.26
P2001715-004 0.1ml	0.100	11393.33
P2001715-005 0.1ml	0.100	16635.41
P2001715-006 0.05ml	0.050	13789.66
P2001715-007 0.1ml	0.100	9007.963
P2001715-003ms 0.1ml	0.100	14465.94
P2001715-003msd 0.1ml	0.100	13910.28
STD S32-01312001		4940.878
ACTUAL		5000.00
%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 tcd 0.1ml	11100.130
lcsd tcd 0.1ml	10317.350
P2001715-001 0.1ml	207386.47
P2001715-002 0.1ml	234644.77
P2001715-003 0.1ml	121032.60
P2001715-004 0.1ml	113933.30
P2001715-005 0.1ml	166354.06
P2001715-006 0.05ml	275793.28
P2001715-007 0.1ml	90079.630
P2001715-003ms 0.1ml	144659.39
P2001715-003msd 0.1ml	139102.75
P2001715-003ms 0.1ml	17:09:23

LD 04/01

00997779

Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 02310102.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 13:03:45
Operator : LD
Sample : STD S32-01312001
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:13:12 2020
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

04/01
LD

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	1.908f	824764	0.173	ppm
2)	Carbon monoxide	1.908f	824764	N.D.	ppm
3)	Methane (TCD)	4.081f	637800	67439.582	ppm
4)	Carbon dioxide	5.964	1119495	4769.306	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

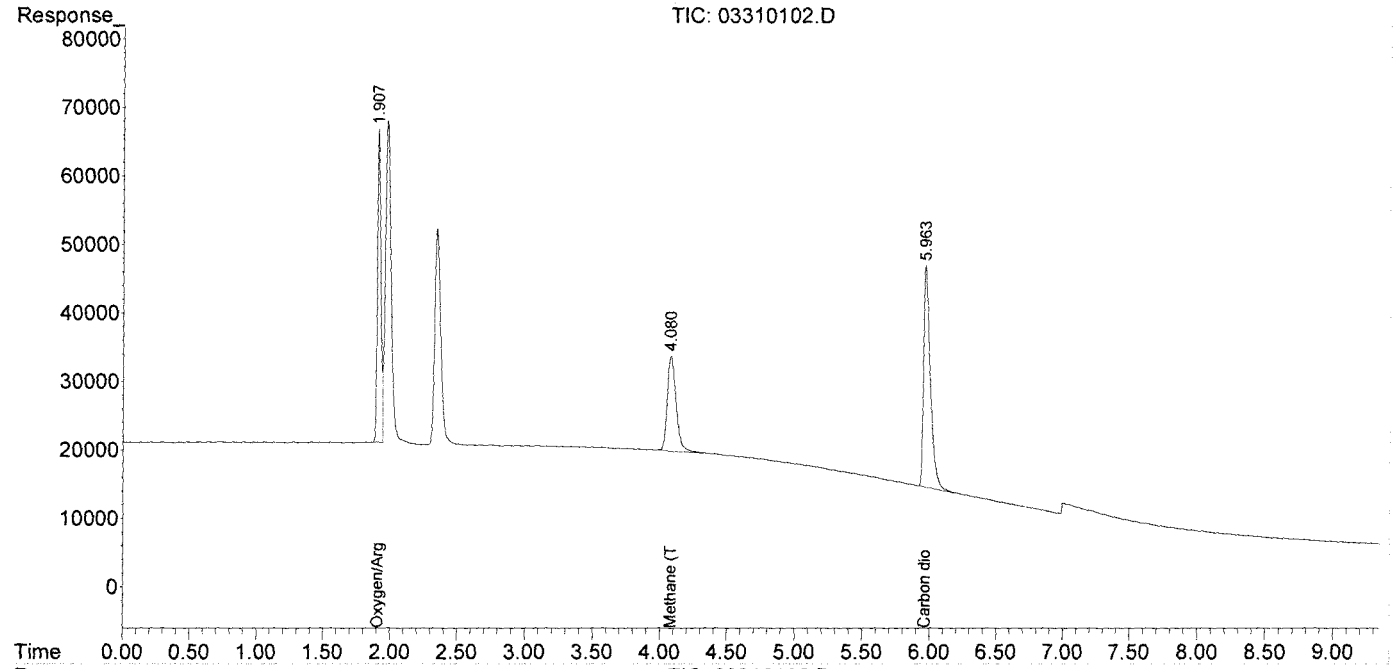
(f)=RT Delta > 1/2 Window (m)=manual int.

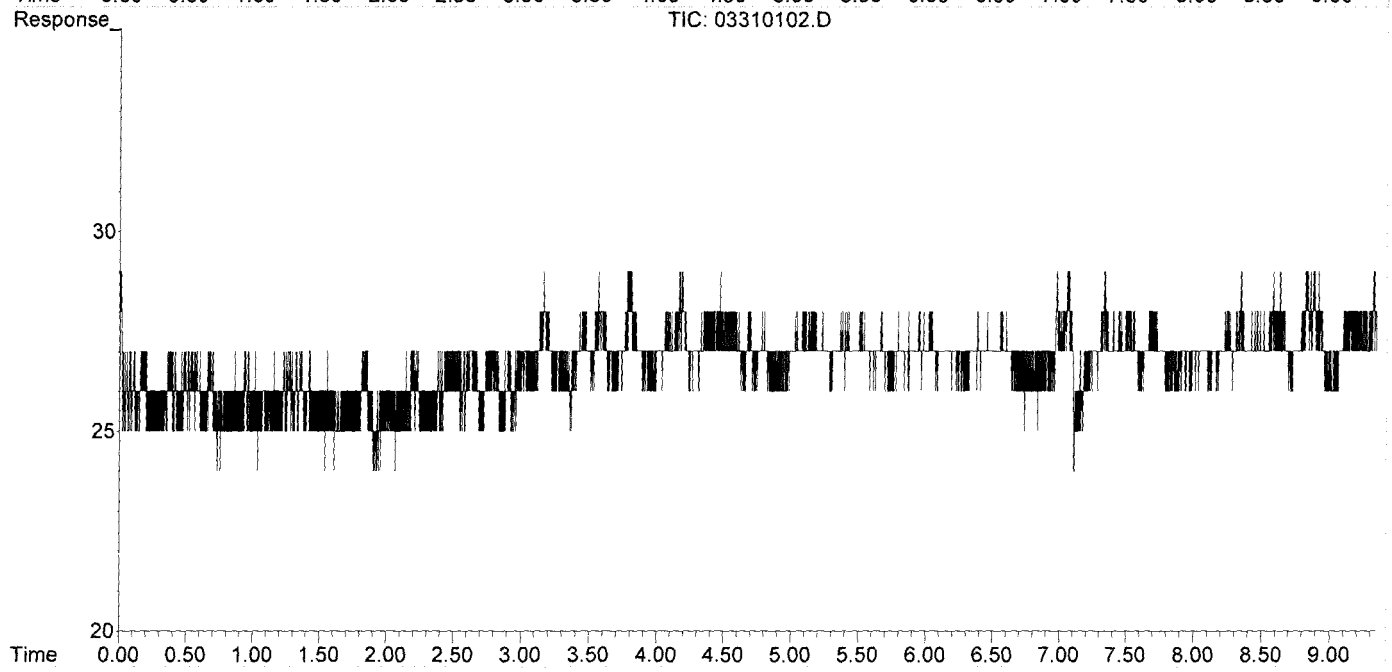
Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310102.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 13:03:45
Operator : LD
Sample : STD S32-01312001
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 13:13:12 2020
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_FID\2020_03\31CO2\
Data File : 03310117.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 17:22:26
Operator : LD
Sample : STD S32-01312001
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 17:38:33 2020
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	1.905f	1846993	0.388	ppm	
2)	Carbon monoxide	1.905f	1846993	N.D.	ppm	
3)	Methane (TCD)	4.079f	645640	68268.620	ppm	
4)	Carbon dioxide	5.961	1159768	4940.878	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	

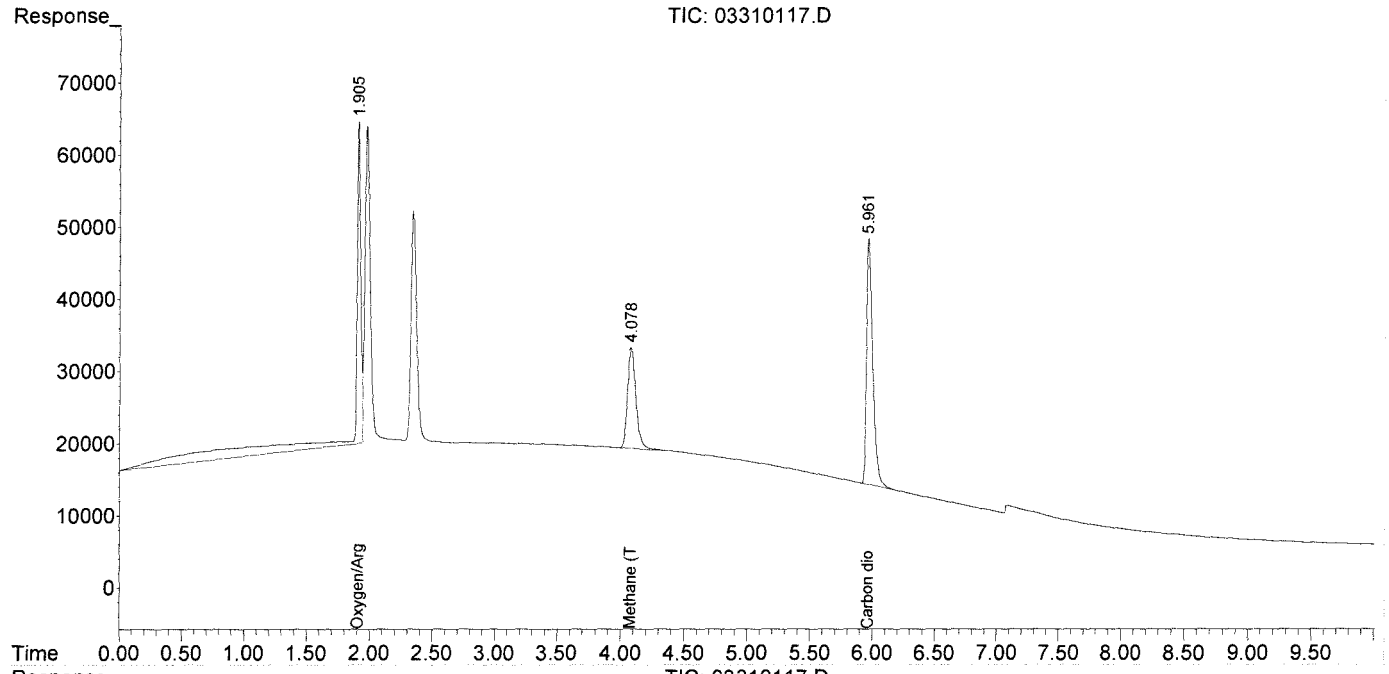
(f)=RT Delta > 1/2 Window (m)=manual int.

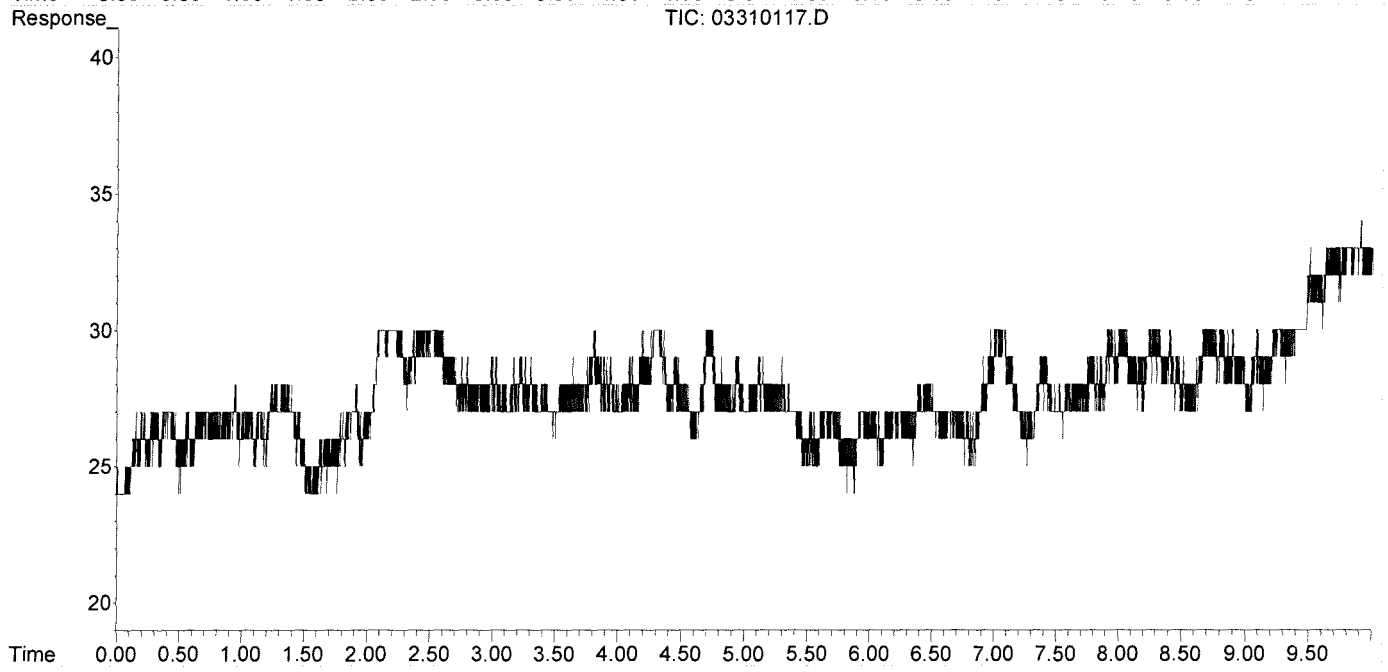
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310117.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 17:22:26
Operator : LD
Sample : STD S32-01312001
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 17:38:33 2020
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 :



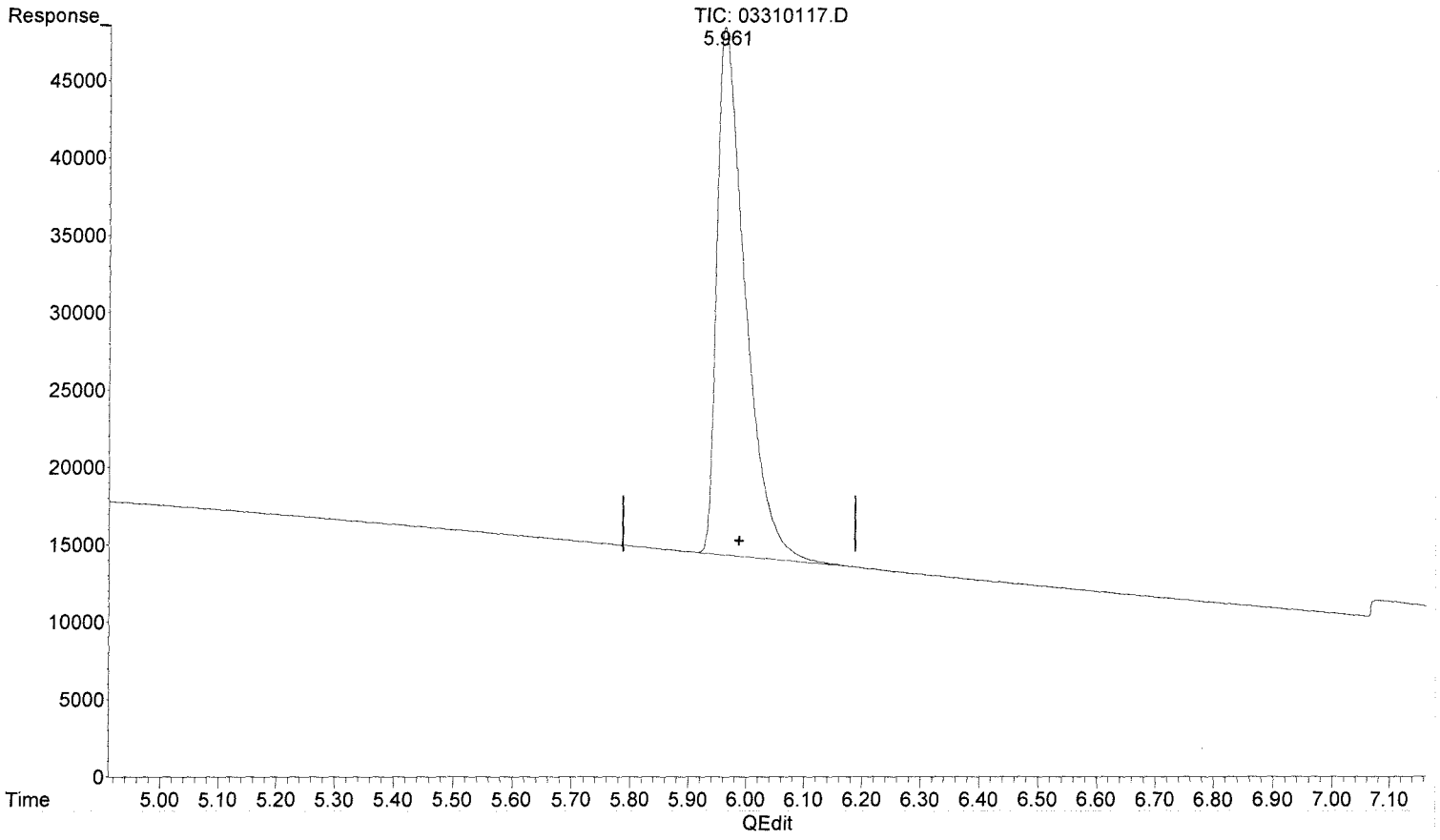


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2020_03\31CO2\
Data File : 03310117.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 31-Mar-2020, 17:22:26
Operator : LD
Sample : STD S32-01312001
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 31 17:38:33 2020
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

5.961min 4940.878 ppm m

response 1159768

4/1/20 per previous

LD
BLC
04/01
no previous

(+) = Expected Retention Time
RS082817_CO2.M Wed Apr 01 15:05:04 2020 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	mls 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	lcv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2020_03\31\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	31-Mar-20, 12:43:45	03310101.D	prime		LD	RSKBOTH.M	
2	31-Mar-20, 13:03:45	03310102.D	STD S32-01312001		LD	RSKBOTH.M	pass
3	31-Mar-20, 13:19:29	03310103.D	rb 0.1ml		LD	RSKBOTH.M	pass
4	31-Mar-20, 13:30:56	03310104.D	mcs 0.1ml		LD	RSKBOTH.M	pass
5	31-Mar-20, 13:43:55	03310105.D	lcs tcd 0.1ml		LD	RSKBOTH.M	pass
6	31-Mar-20, 13:58:57	03310106.D	lcsd tcd 0.1ml		LD	RSKBOTH.M	pass
7	31-Mar-20, 14:16:14	03310107.D	P2001715-001 0.1ml		LD	RSKBOTH.M	
8	31-Mar-20, 14:37:56	03310108.D	P2001715-002 0.1ml		LD	RSKBOTH.M	
9	31-Mar-20, 14:55:05	03310109.D	P2001715-003 0.1ml		LD	RSKBOTH.M	
10	31-Mar-20, 15:10:58	03310110.D	P2001715-003ms 0.1ml		LD	RSKBOTH.M	
11	31-Mar-20, 15:23:05	03310111.D	P2001715-003msd 0.1ml		LD	RSKBOTH.M	
12	31-Mar-20, 15:56:00	03310112.D	P2001715-004 0.1ml		LD	RSKBOTH.M	
13	31-Mar-20, 16:26:21	03310113.D	P2001715-005 0.1ml		LD	RSKBOTH.M	
14	31-Mar-20, 16:39:35	03310114.D	XXXXXXP2001715-006 0.1		LD	RSKBOTH.M	
15	31-Mar-20, 16:51:33	03310115.D	P2001715-007 0.1ml		LD	RSKBOTH.M	
16	31-Mar-20, 17:09:23	03310116.D	P2001715-006 0.05ml		LD	RSKBOTH.M	
17	31-Mar-20, 17:22:26	03310117.D	STD S32-01312001		LD	RSKBOTH.M	pass
18	31-Mar-20, 17:42:37	03310118.D	meepp loq		LD	RSKBOTH.M	pass
19	31-Mar-20, 17:52:40	03310119.D	meepp loq		LD	RSKBOTH.M	pass
20	31-Mar-20, 18:11:38	03310120.D	meepp loq		LD	RSKBOTH.M	pass

Data Path : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300106.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 16:01:40
Operator : LD
Sample : P2001715-001 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 19:05:24 2020
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 :

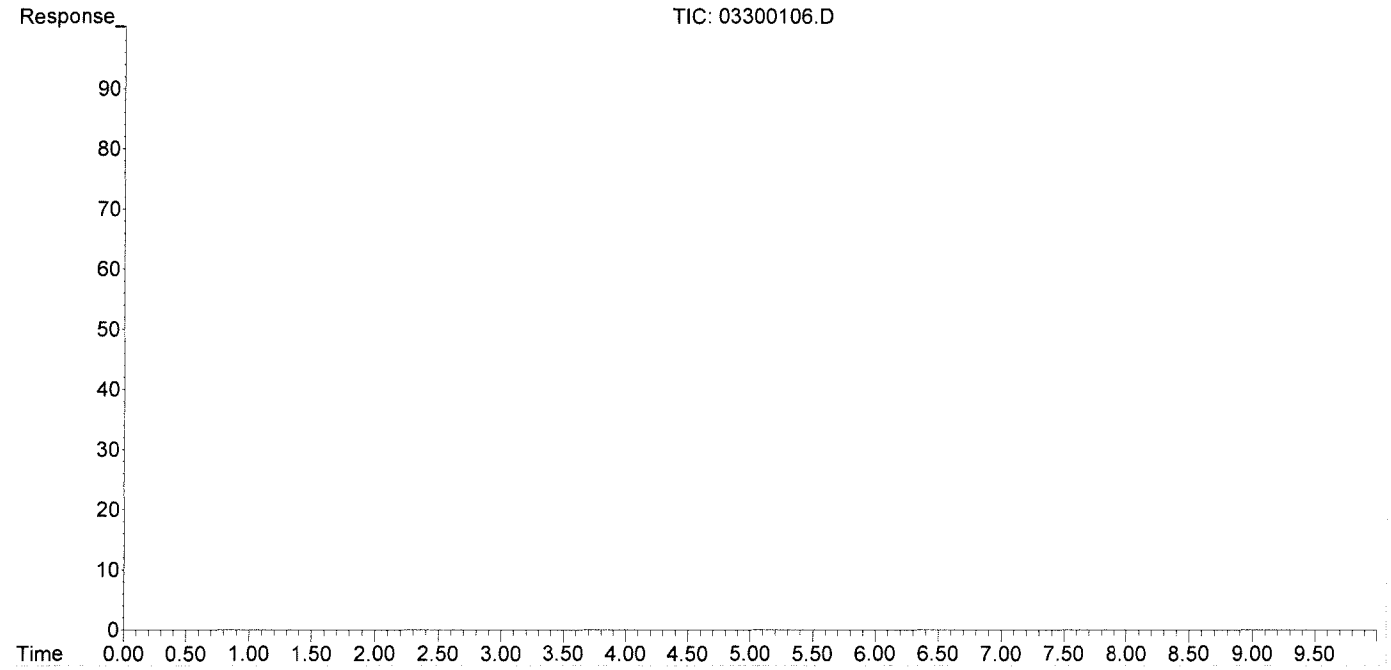
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.109	4042945	445.718	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	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

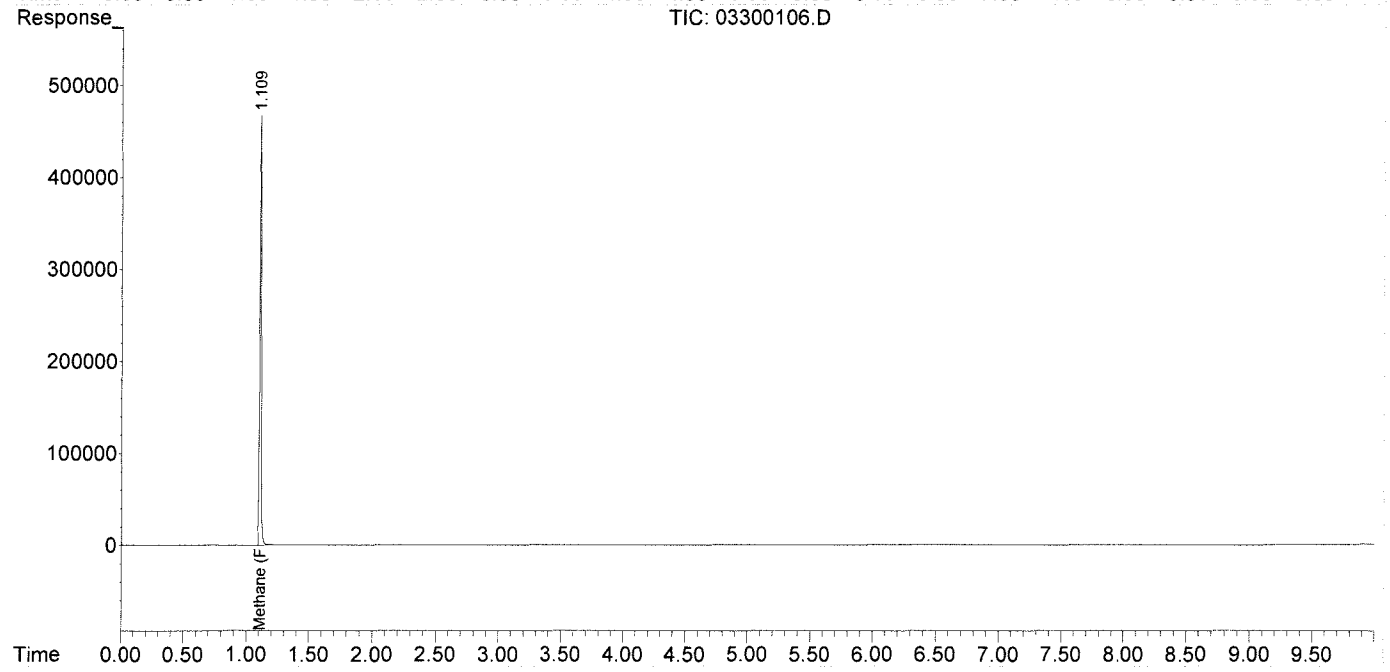
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300106.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 16:01:40
Operator : LD
Sample : P2001715-001 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 19:05:24 2020
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 :





00997789

Data Path : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300107.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 16:17:41
Operator : LD
Sample : P2001715-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 19:05:37 2020
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 :

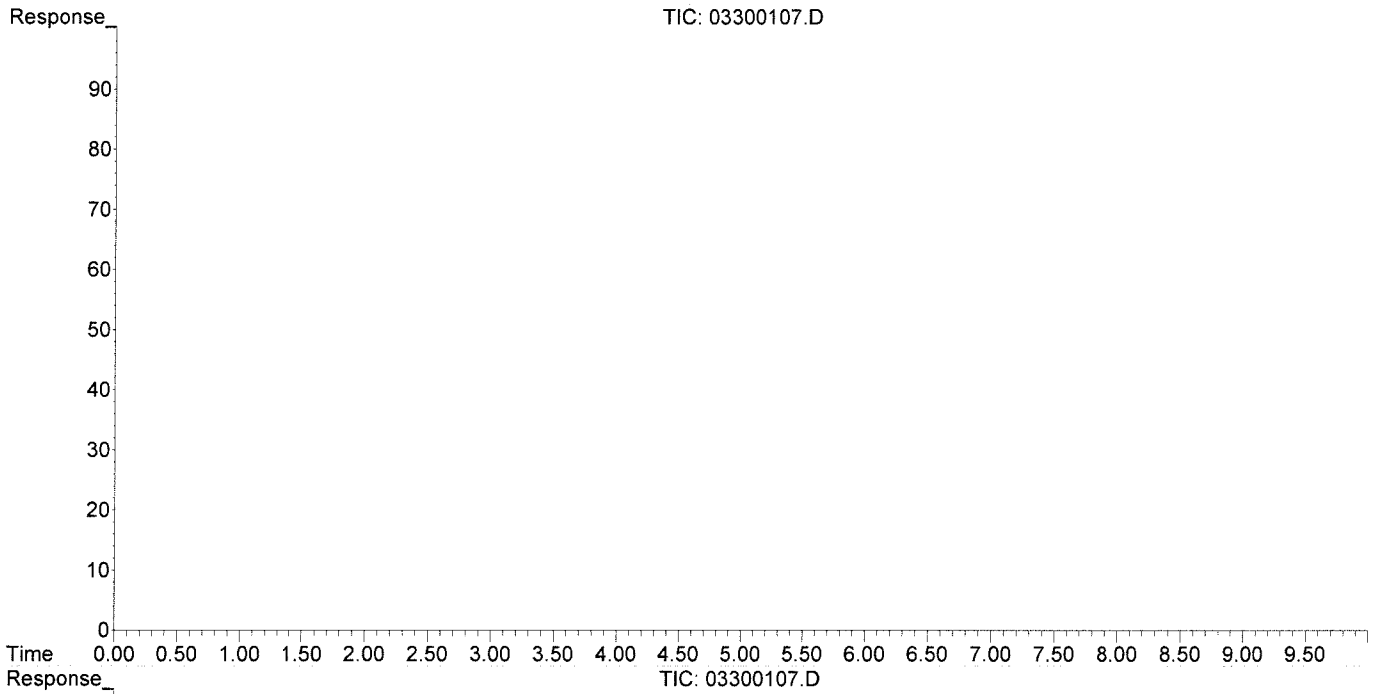
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.113	4098637	451.857	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	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

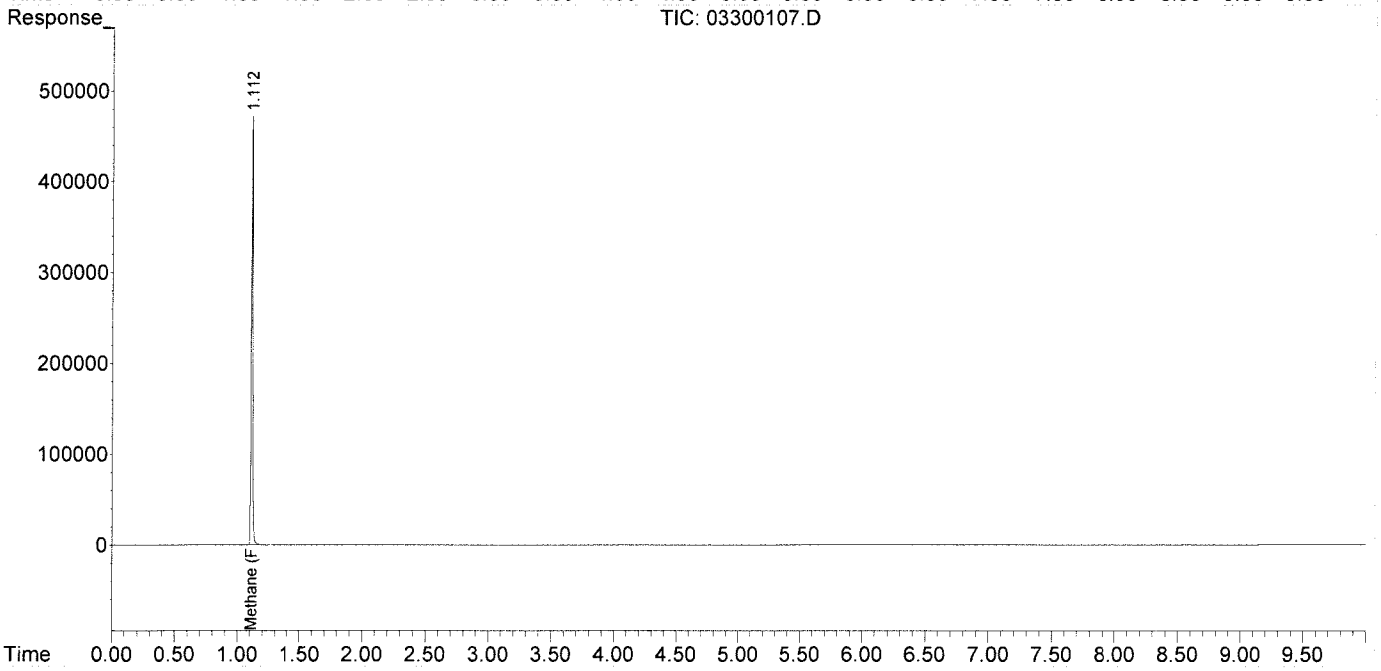
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300107.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 16:17:41
Operator : LD
Sample : P2001715-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 19:05:37 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 16:31:12
Operator : LD
Sample : P2001715-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 17:14:09 2020
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 :

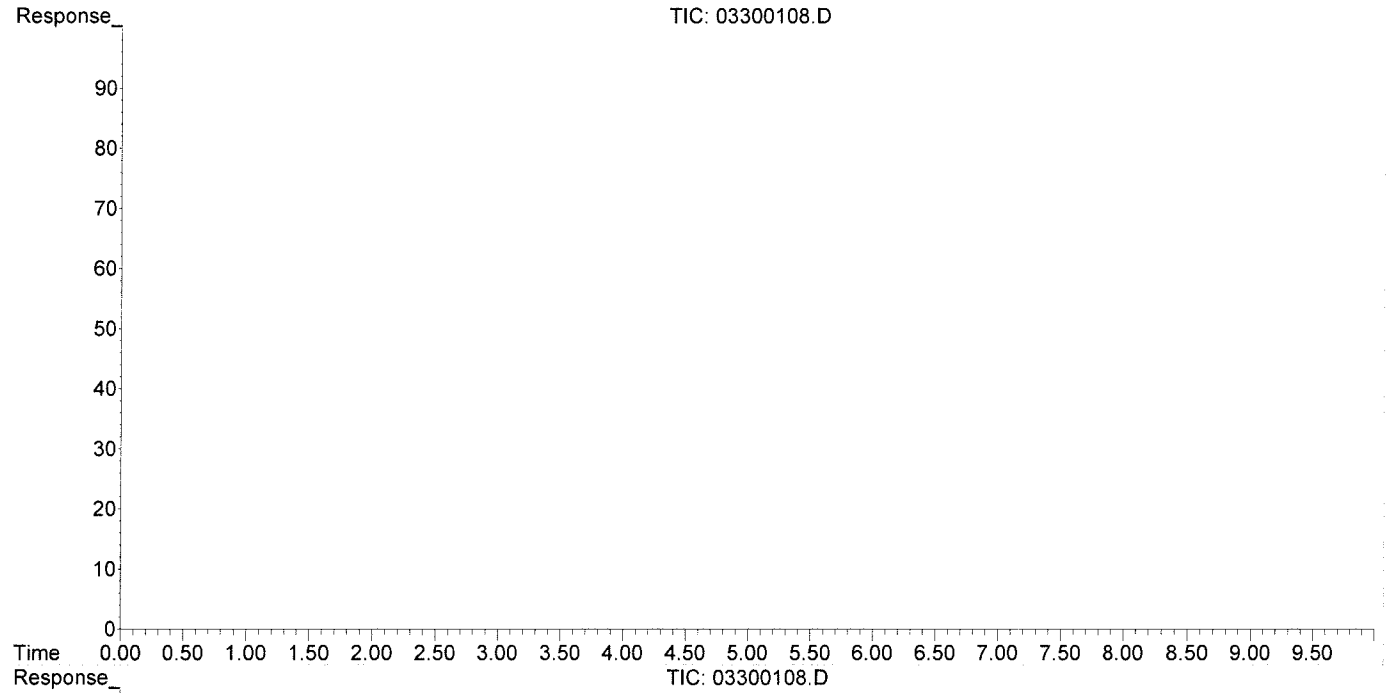
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.110	1963618	216.481	ppm	
7)	Ethylene	1.681	22621	1.352	ppm	
8)	Ethane	0.000	0	N.D.	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	d
13)	n-Butane	0.000	0	N.D.	ppm	d

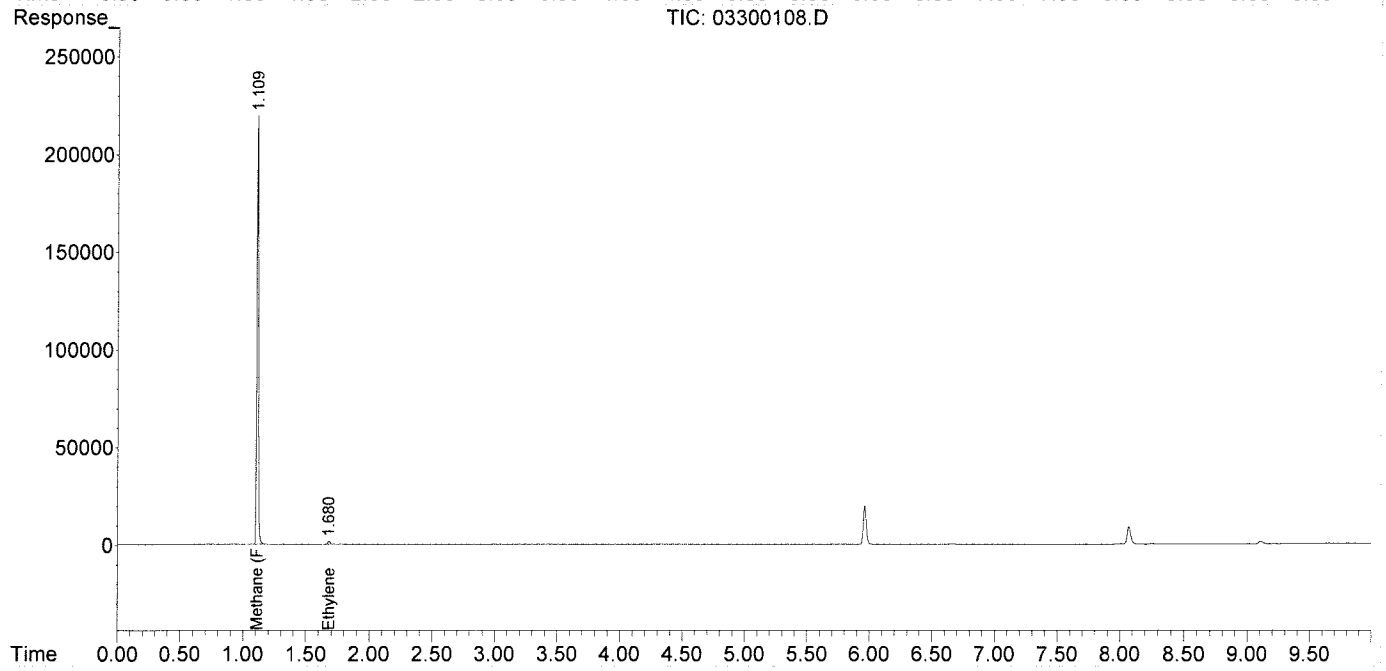
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300108.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 16:31:12
Operator : LD
Sample : P2001715-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 17:14:09 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300109.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 16:51:09
Operator : LD
Sample : P2001715-003 MS 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 17:14:34 2020
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 :

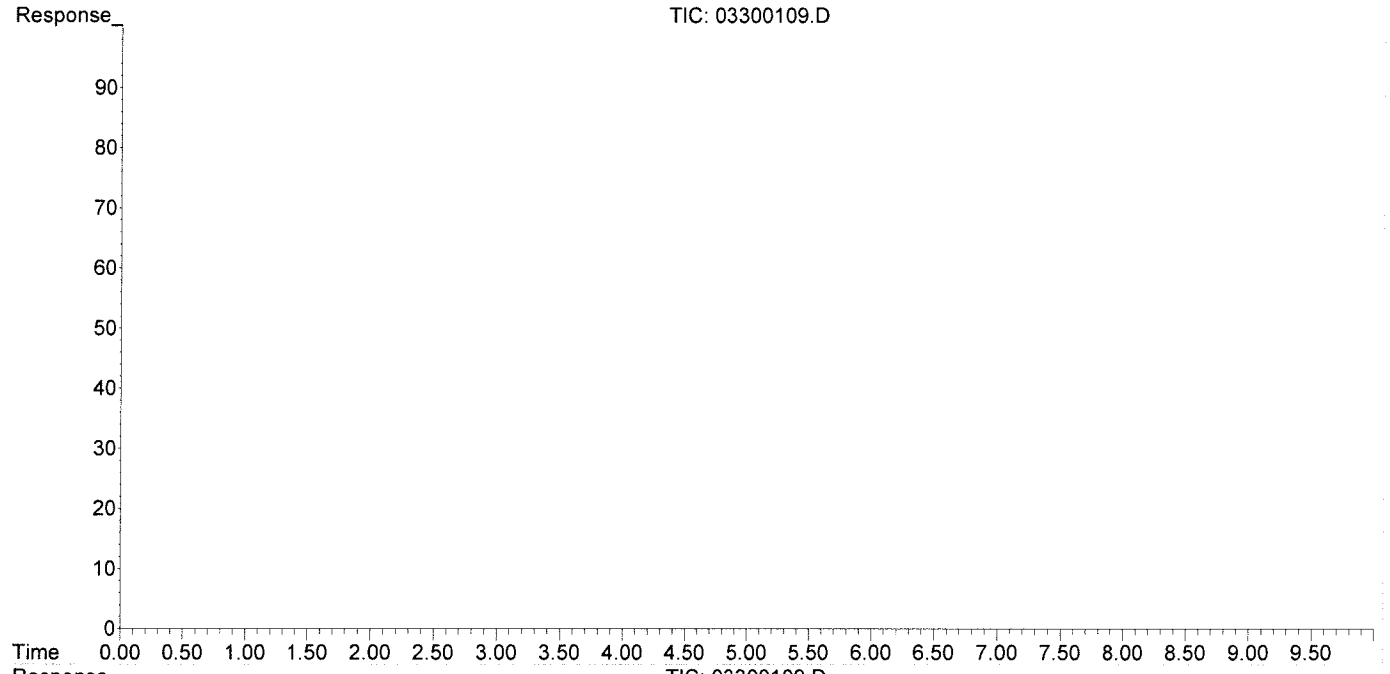
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.106	8330408	918.392	ppm	
7)	Ethylene	1.678	99020	5.917	ppm	
8)	Ethane	1.946	15855	0.935	ppm	
9)	Propylene	4.329	16018	0.684	ppm	
10)	Propane	4.452	22404	0.900	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	d
12)	Isobutane	0.000	0	N.D.	ppm	d
13)	n-Butane	0.000	0	N.D.	ppm	d

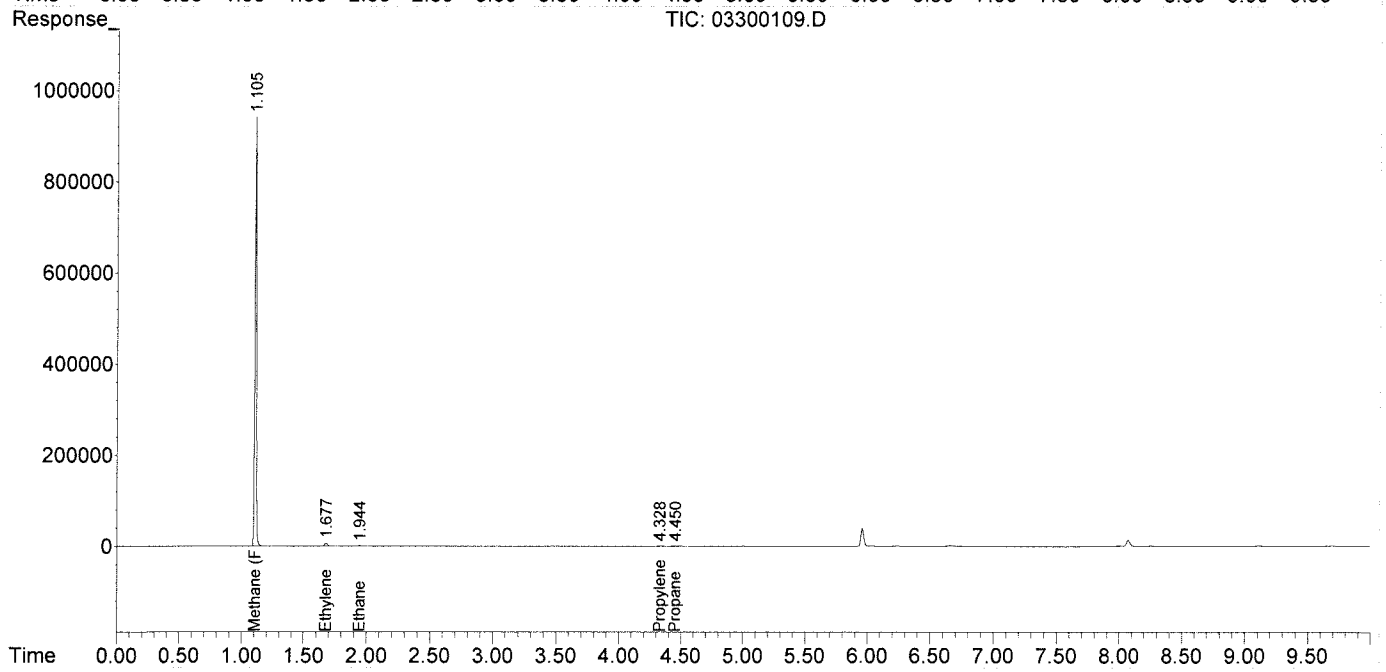
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300109.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 16:51:09
Operator : LD
Sample : P2001715-003 MS 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 17:14:34 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 17:04:38
Operator : LD
Sample : P2001715-003 MSD 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 17:15:02 2020
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 :

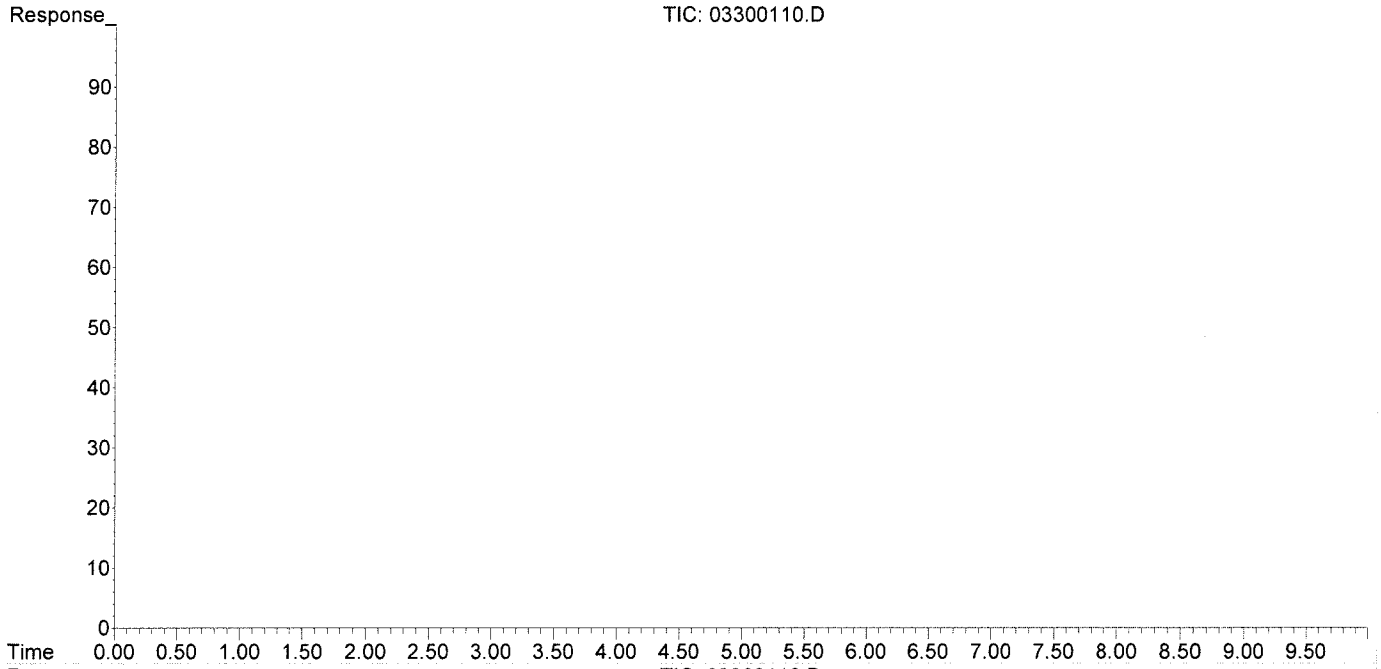
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.108	8608724	949.076	ppm	
7)	Ethylene	1.679	102338	6.115	ppm	
8)	Ethane	1.946	16036	0.946	ppm	
9)	Propylene	4.333	16141	0.689	ppm	
10)	Propane	4.455	22954	0.923	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	d
12)	Isobutane	0.000	0	N.D.	ppm	d
13)	n-Butane	0.000	0	N.D.	ppm	d

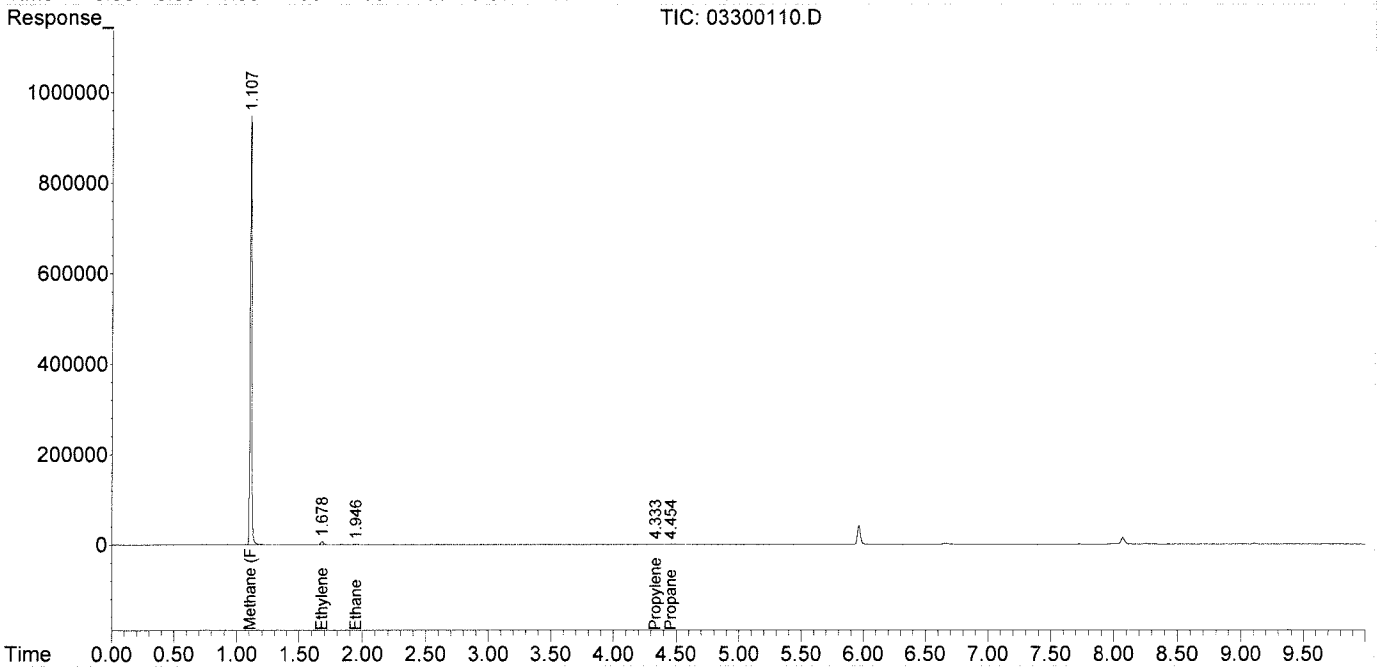
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300110.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 17:04:38
Operator : LD
Sample : P2001715-003 MSD 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 17:15:02 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300111.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 17:19:07
Operator : LD
Sample : P2001715-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 19:06:36 2020
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 :

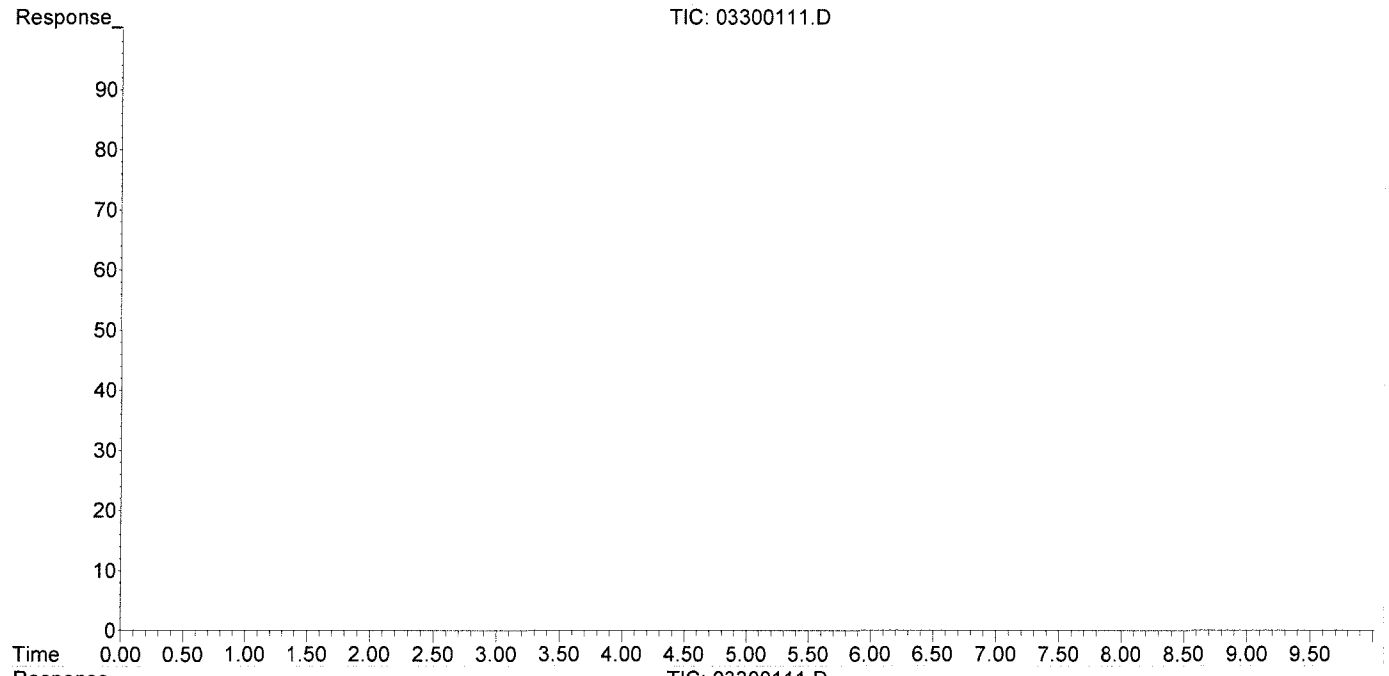
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.110	364616	40.197	ppm	
7)	Ethylene	1.684	8538	0.510	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
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	d
13)	n-Butane	0.000	0	N.D.	ppm	d

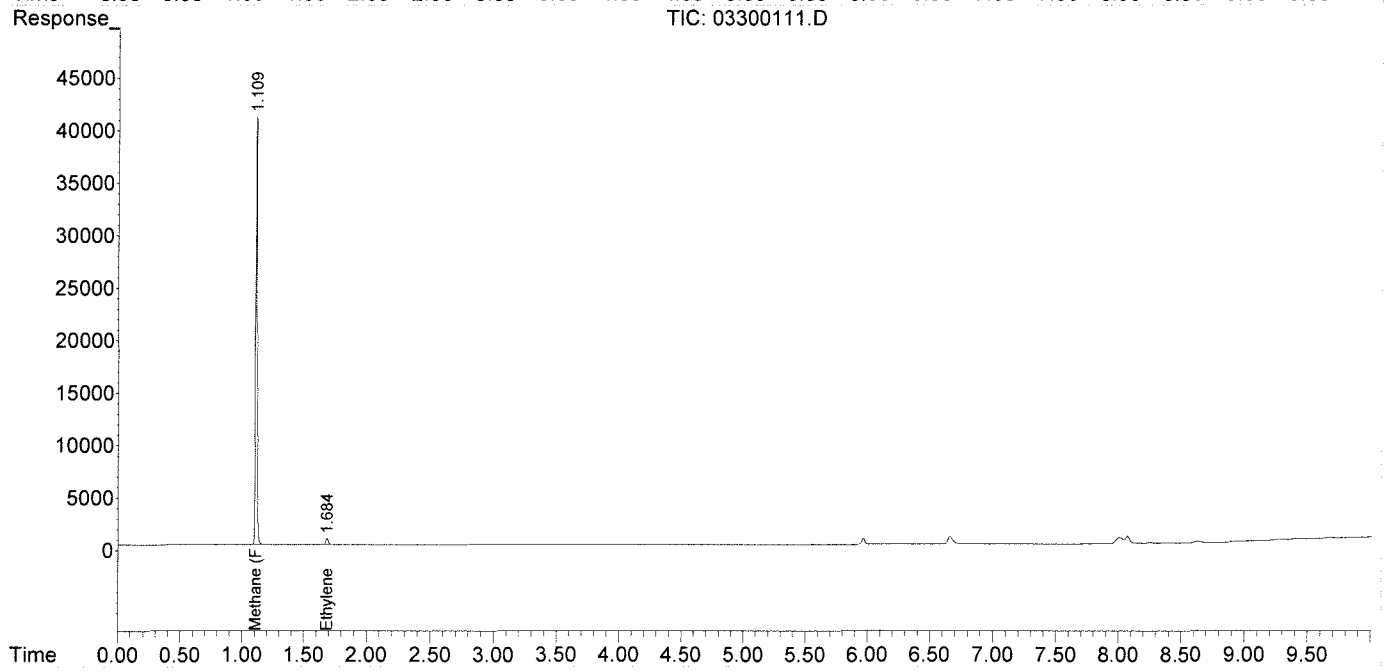
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300111.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 17:19:07
Operator : LD
Sample : P2001715-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 19:06:36 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300112.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 17:37:14
Operator : LD
Sample : P2001715-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 19:07:05 2020
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 :

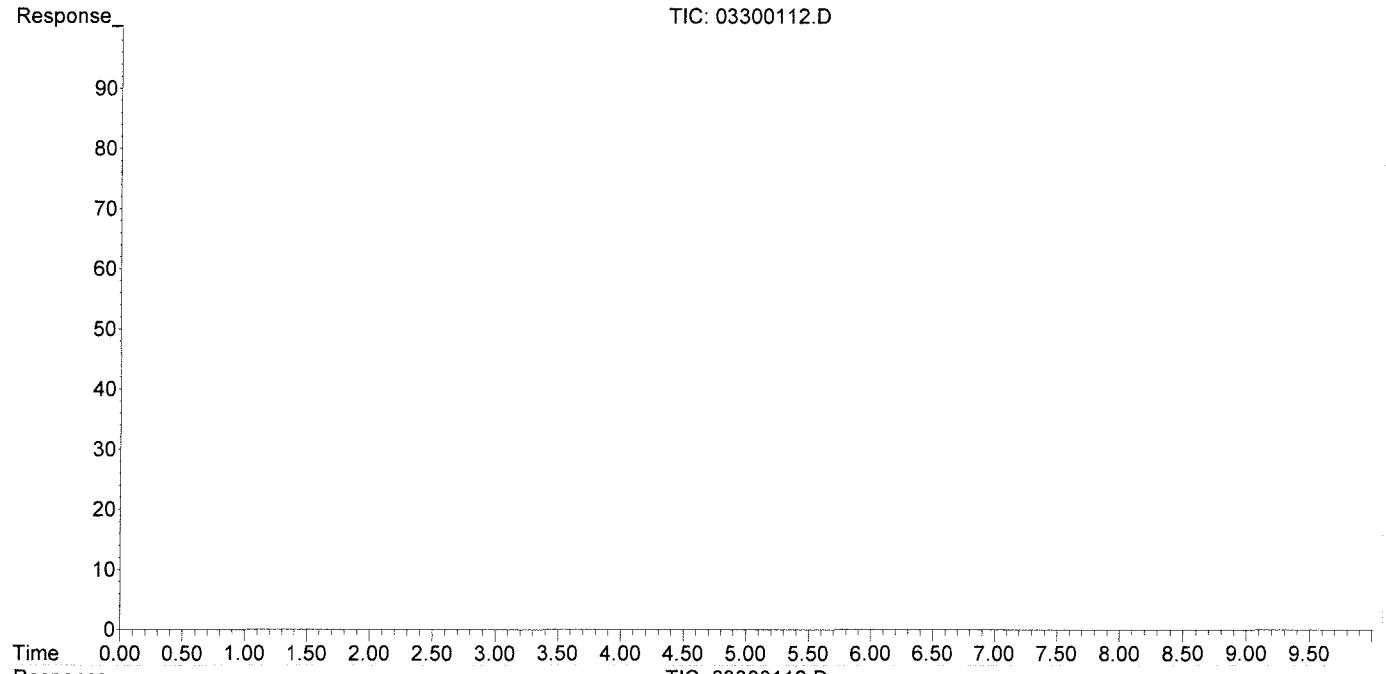
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.111	6282661	692.637	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	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

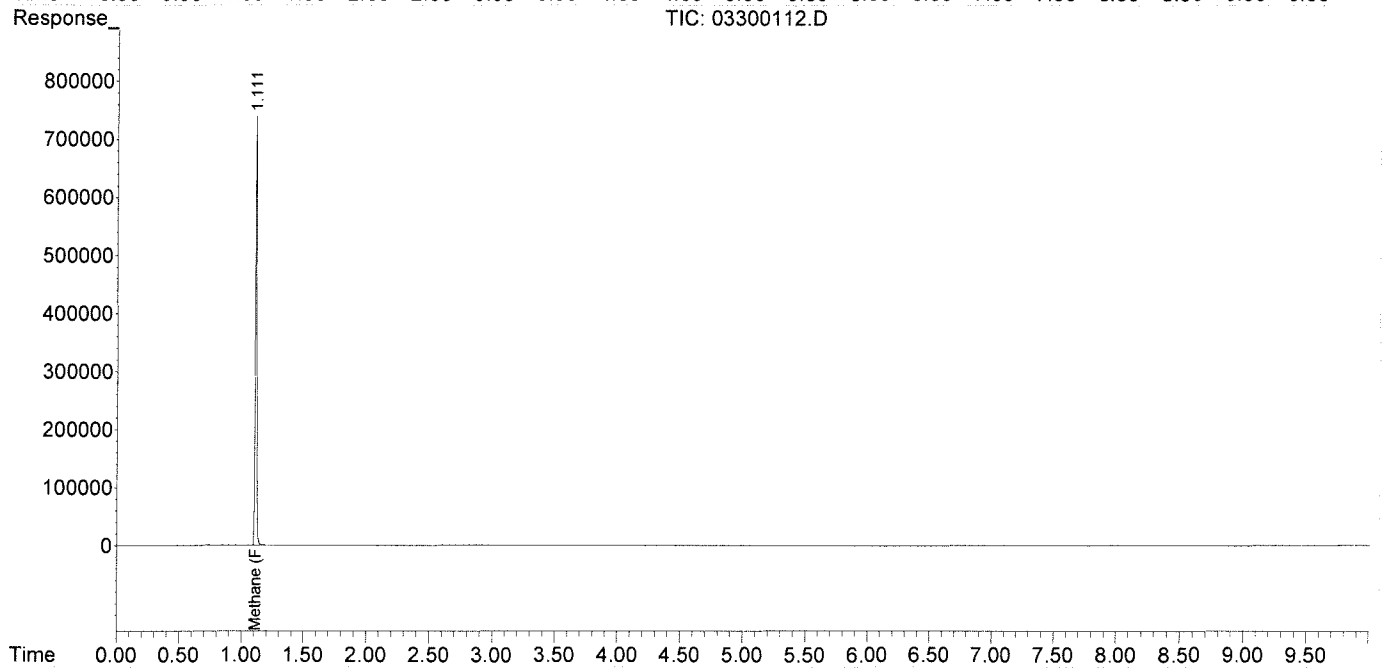
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300112.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 17:37:14
Operator : LD
Sample : P2001715-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 19:07:05 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300113.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 17:51:05
Operator : LD
Sample : P2001715-006 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 19:08:03 2020
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 :

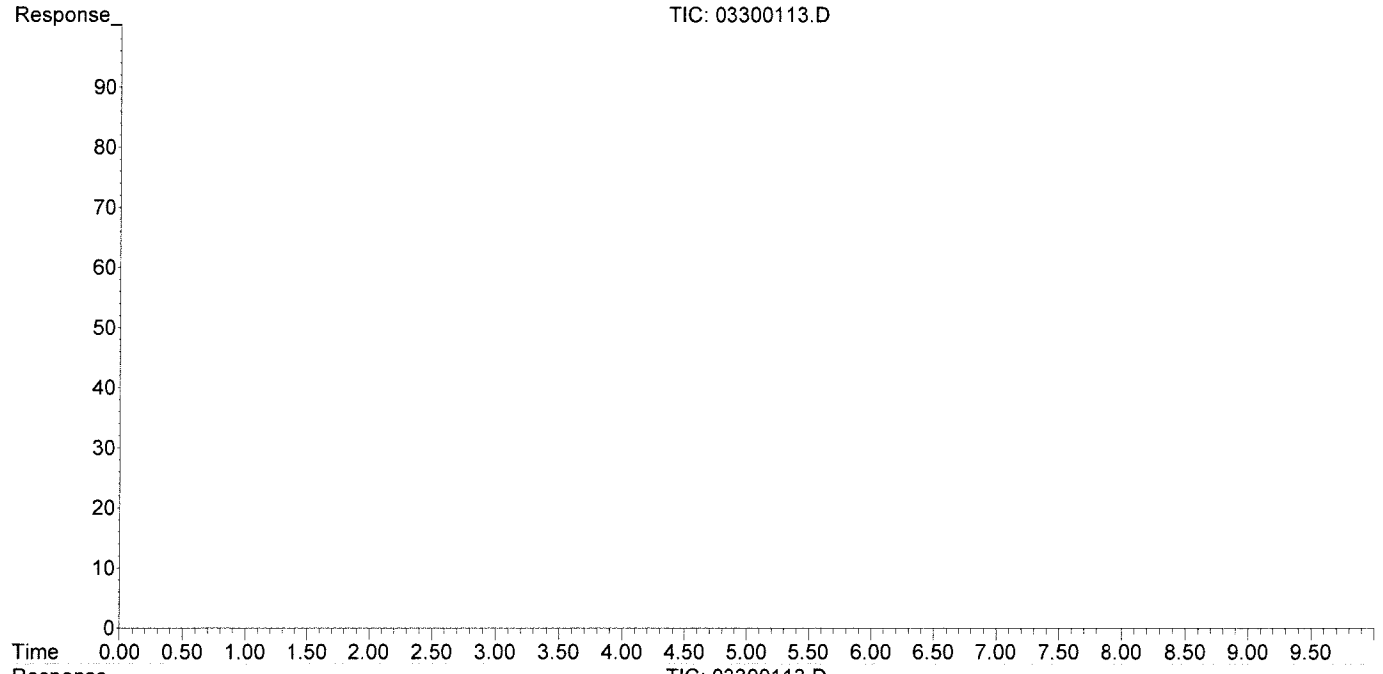
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.107	6552999	722.441	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	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

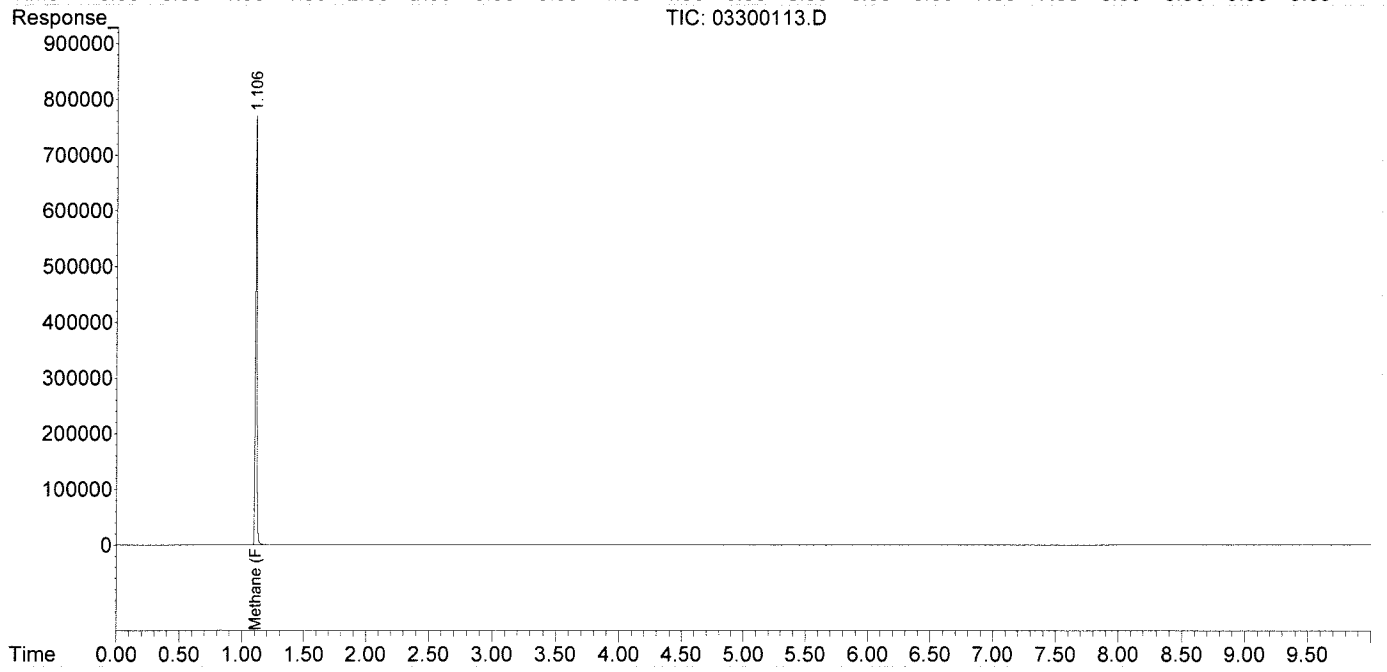
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300113.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 17:51:05
Operator : LD
Sample : P2001715-006 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 19:08:03 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300114.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 18:04:06
Operator : LD
Sample : P2001715-007 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 19:08:26 2020
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 :

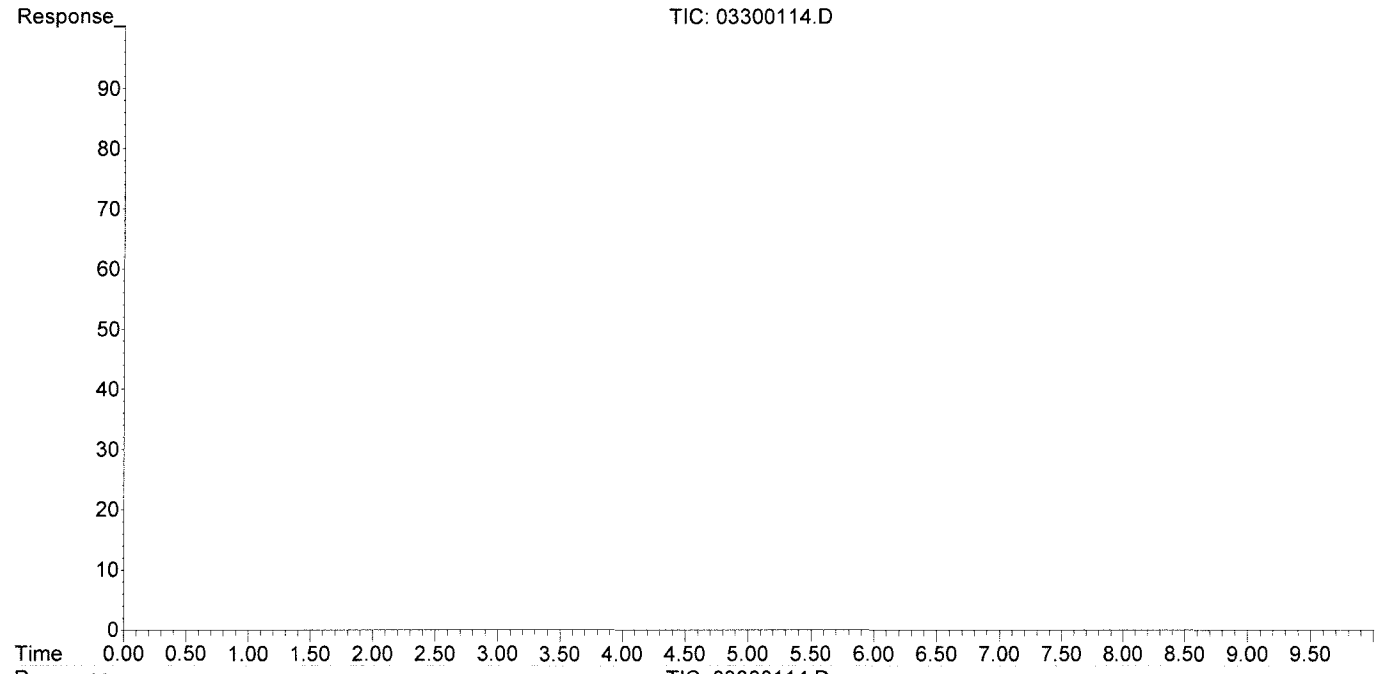
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.089	15007	1.654	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	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

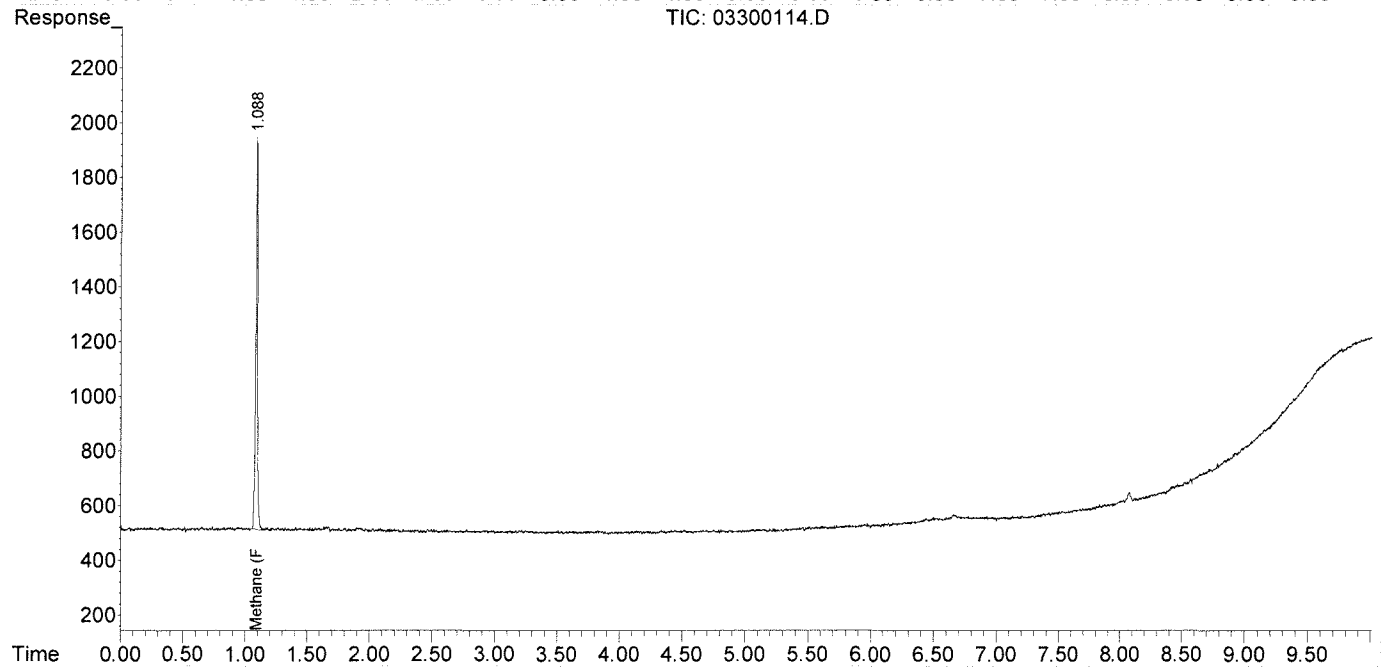
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300114.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 18:04:06
Operator : LD
Sample : P2001715-007 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 30 19:08:26 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 15:14:49
Operator : LD
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 15:32:23 2020
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 :

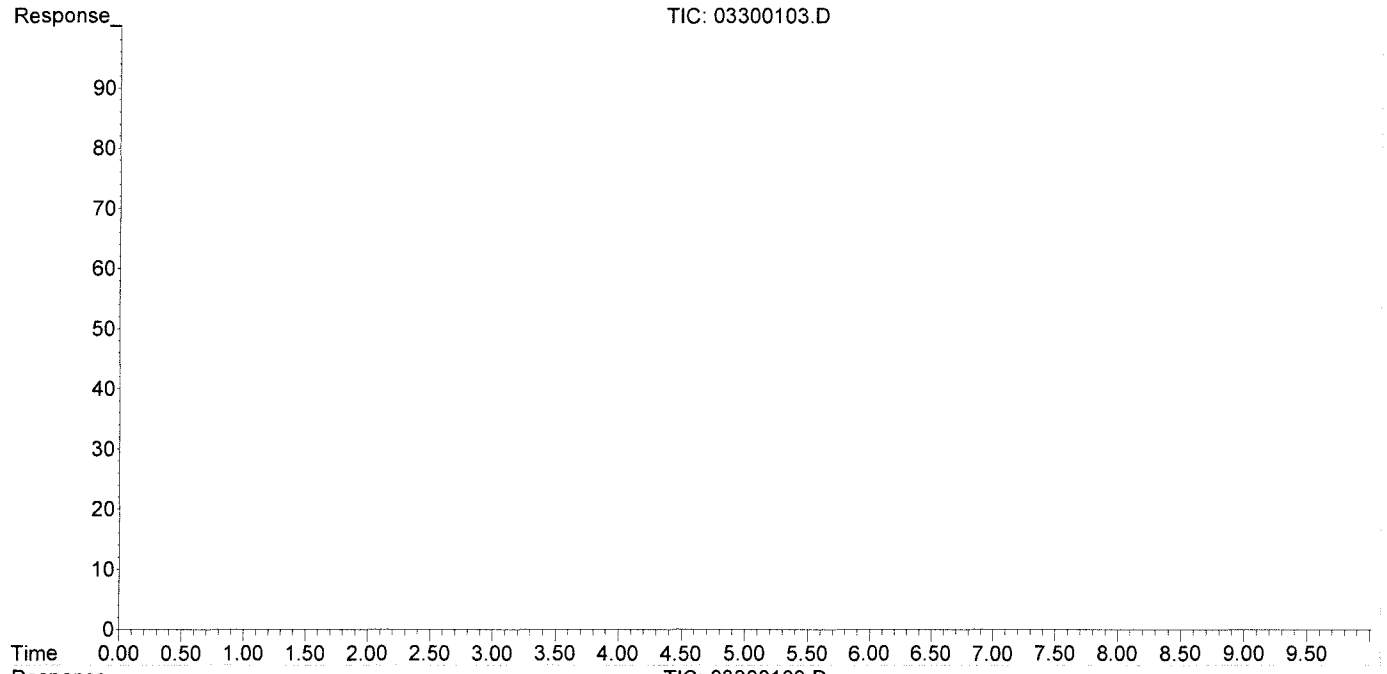
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000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

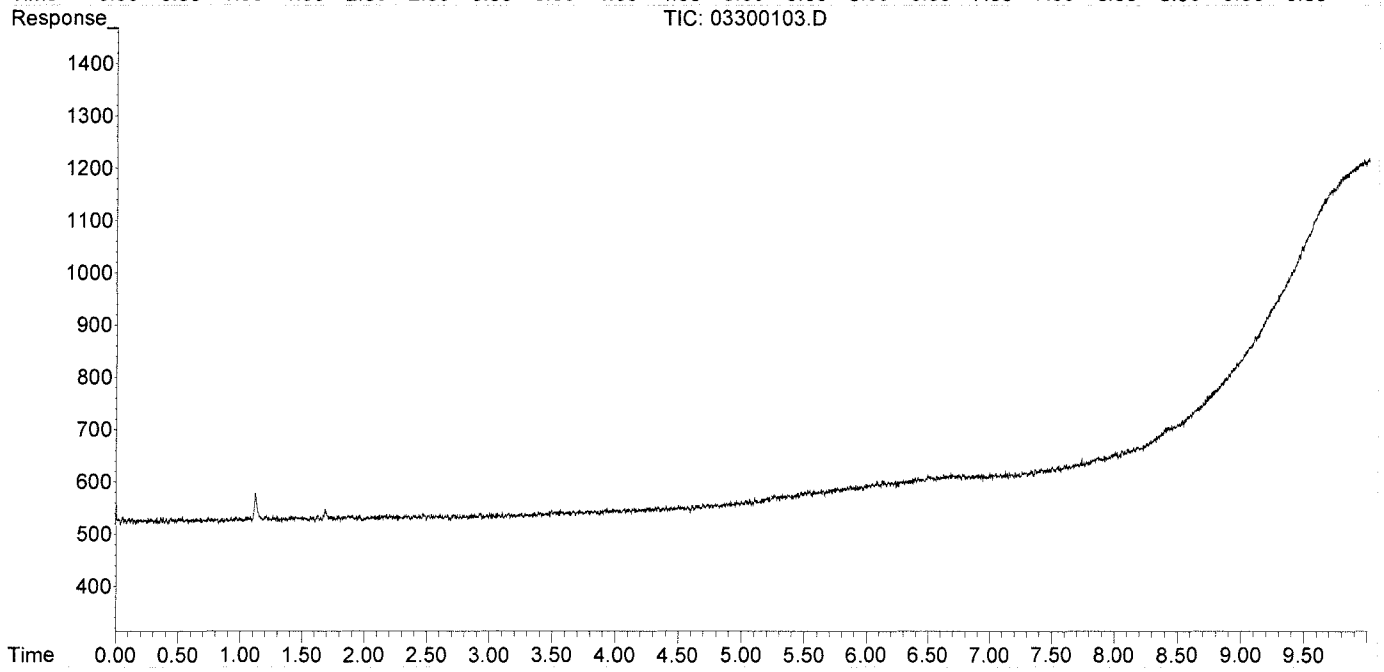
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300103.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 15:14:49
Operator : LD
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 15:32:23 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 15:31:42
Operator : LD
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 15:45:00 2020
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 :

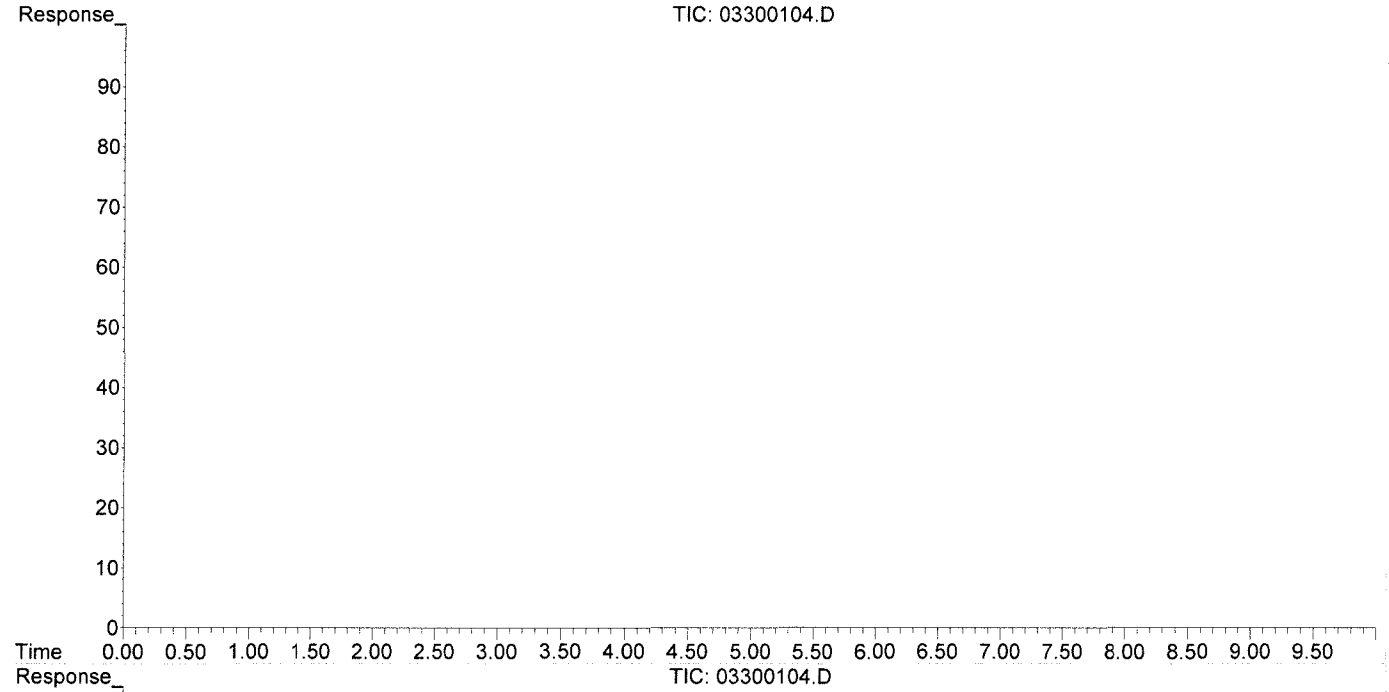
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.112	14295	1.576	ppm	
7)	Ethylene	1.685	18700	1.117	ppm	
8)	Ethane	1.951	21774	1.285	ppm	
9)	Propylene	4.329	24622	1.051	ppm	
10)	Propane	4.451	32720	1.315	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	d
13)	n-Butane	0.000	0	N.D.	ppm	d

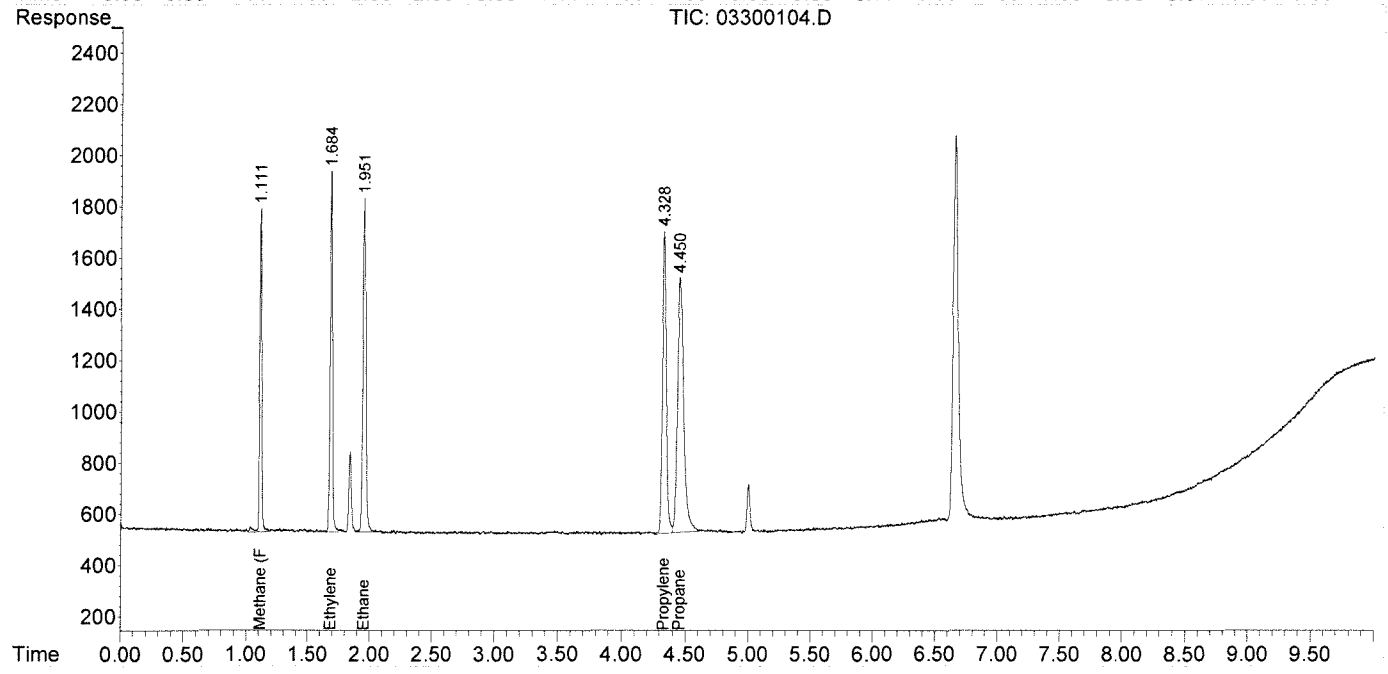
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300104.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 15:31:42
Operator : LD
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 15:45:00 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 15:48:34
Operator : LD
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 15:58:53 2020
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 :

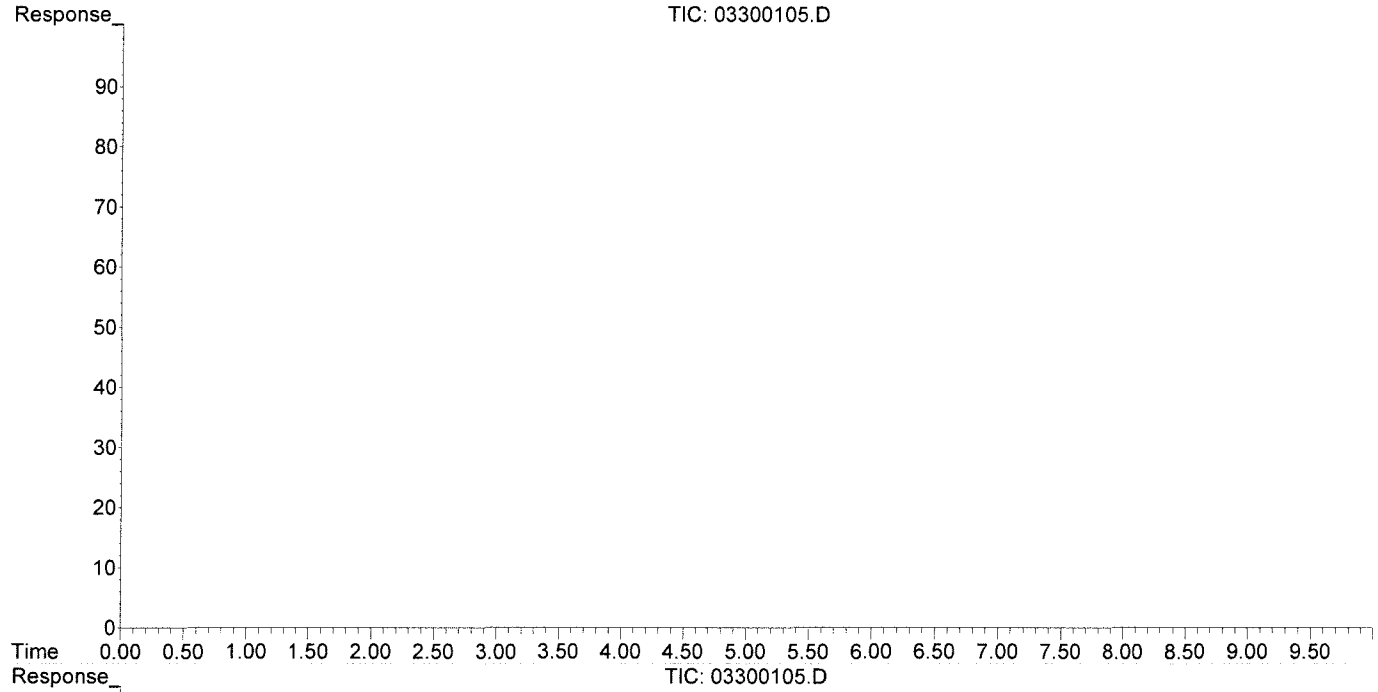
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.111	13940	1.537	ppm
7)	Ethylene	1.684	18220	1.089	ppm
8)	Ethane	1.951	21849	1.289	ppm
9)	Propylene	4.332	23929	1.021	ppm
10)	Propane	4.454	32526	1.307	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.656	42532	1.598	ppm
13)	n-Butane	6.656	42532	1.598	ppm

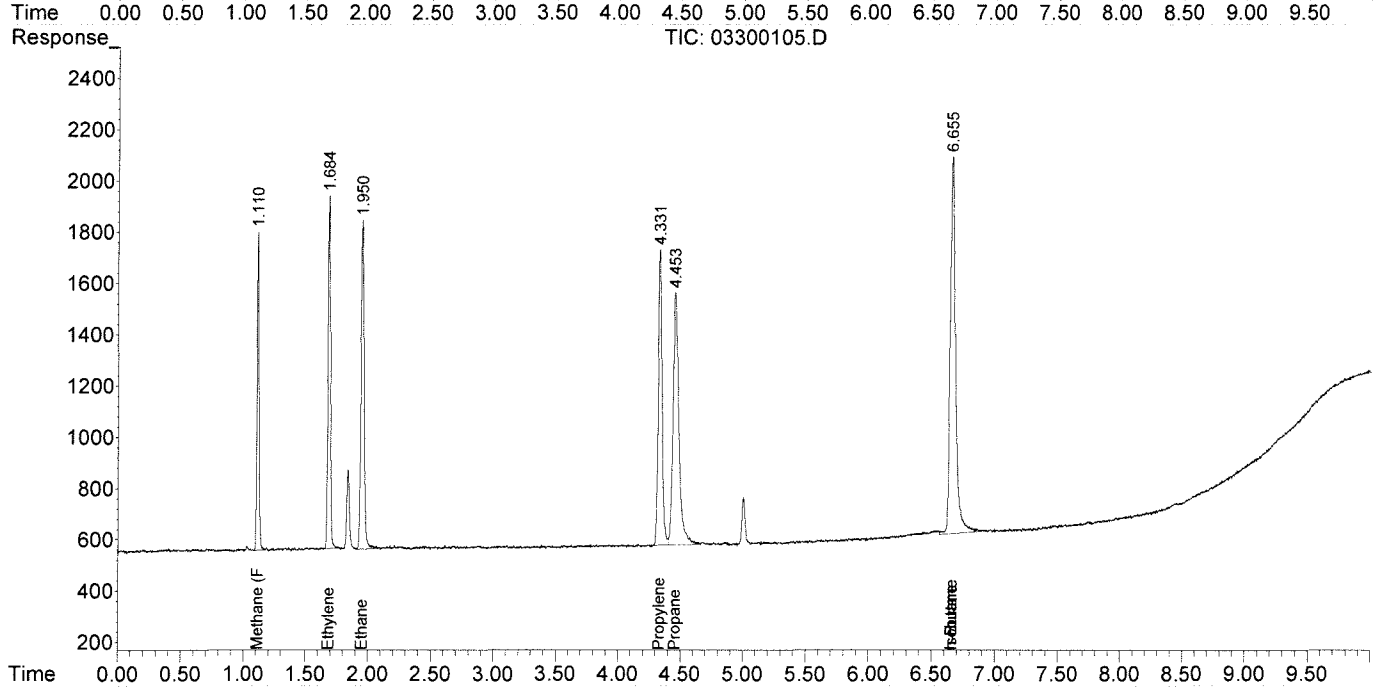
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300105.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 15:48:34
Operator : LD
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 15:58:53 2020
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 :





Response Factor Report HP5890

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)

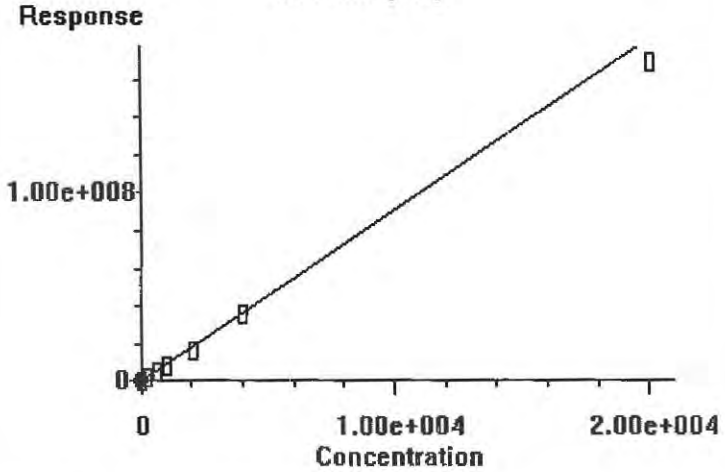
Search by: Ret Time | Name | Index | Find Compound

- 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

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

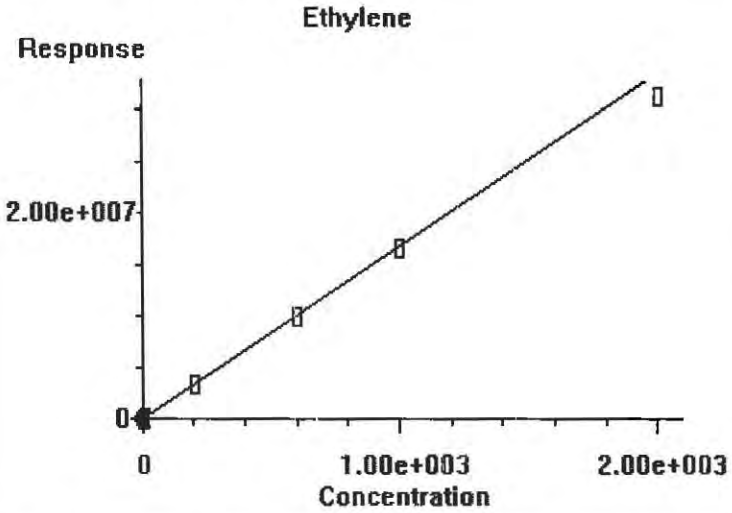
Search by: Ret Time | Name | Index | Find Compound

- 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

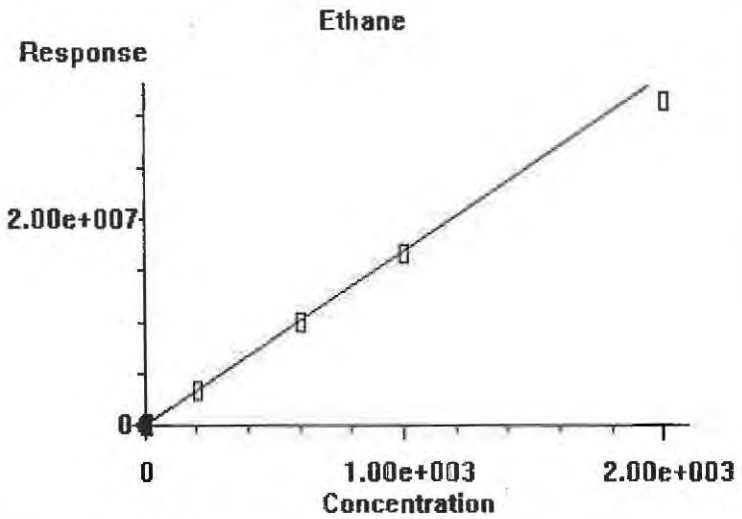
Search by: Ret Time | Name | Index — Find Compound

- 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	16703164.879012
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

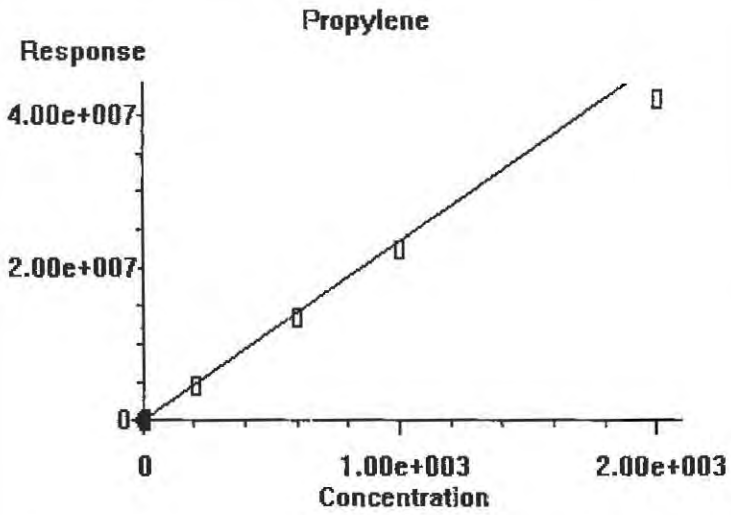
Search by: Ret Time | Name | Index | Find Compound

- 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	5043035.663316
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	

Propane

Response

4.00e+007
2.00e+007
0

0 1.00e+003 2.00e+003

Concentration

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

00997816

Calibration Status Report HP5890

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

Quantitation Report (QT Reviewed)

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	

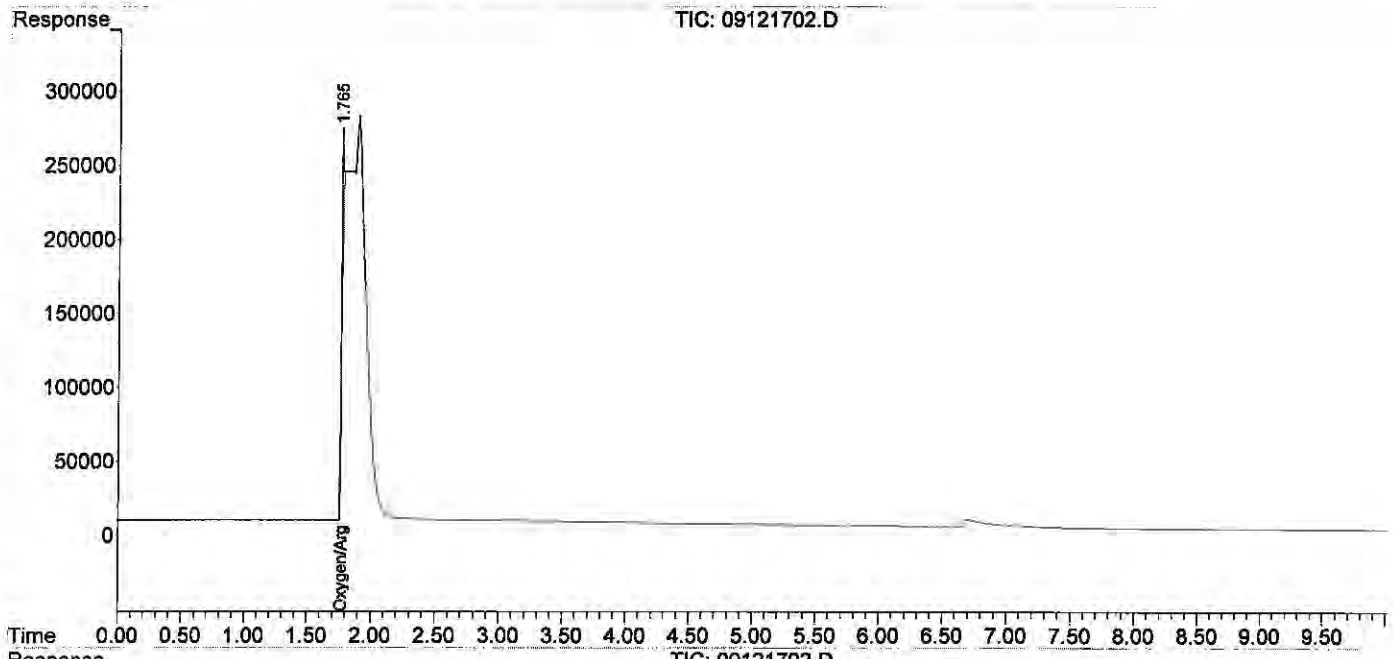
(f)=RT Delta > 1/2 Window (m)=manual int.

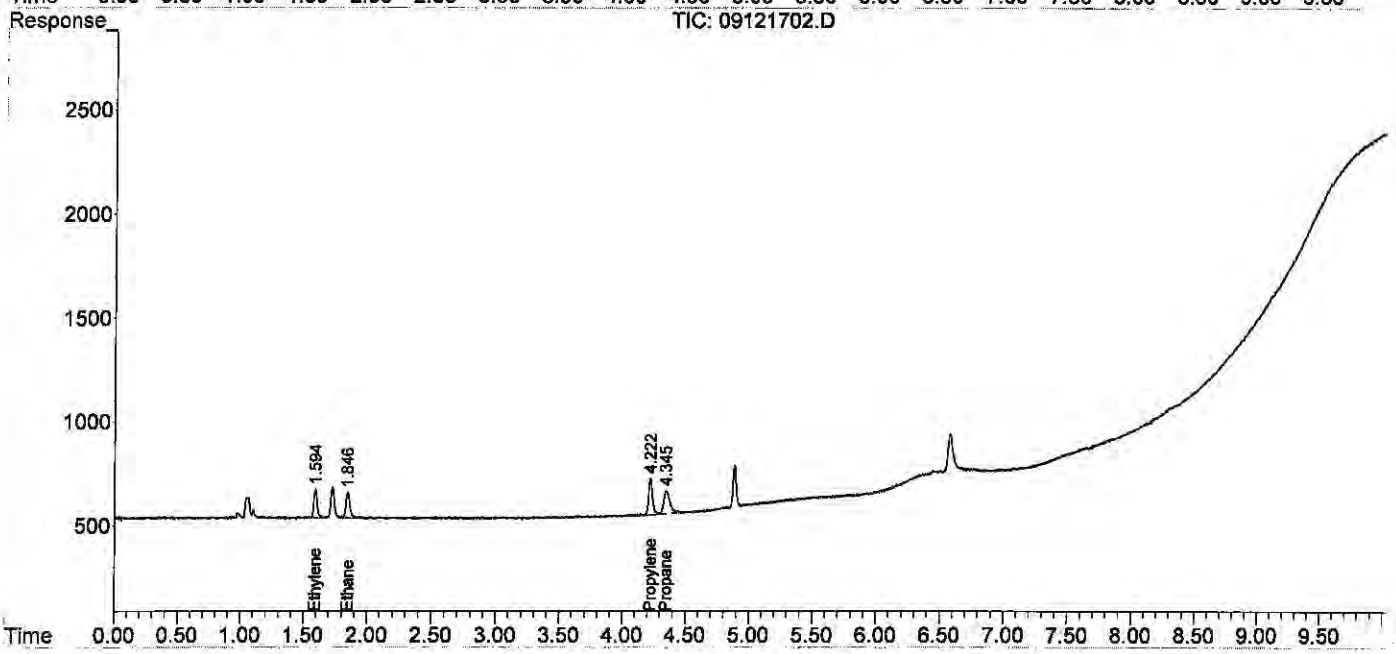
9/13/17

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 :





Quantitation Report (QT Reviewed)

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	

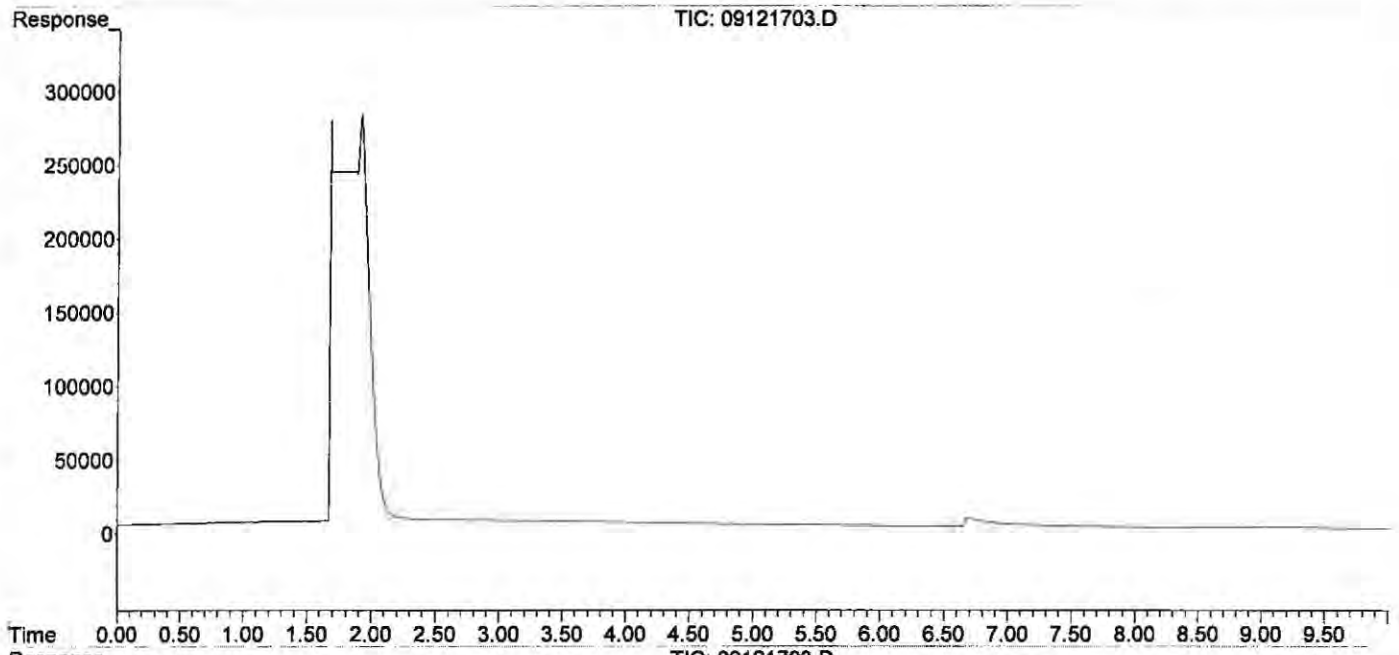
(f)=RT Delta > 1/2 Window (m)=manual int.

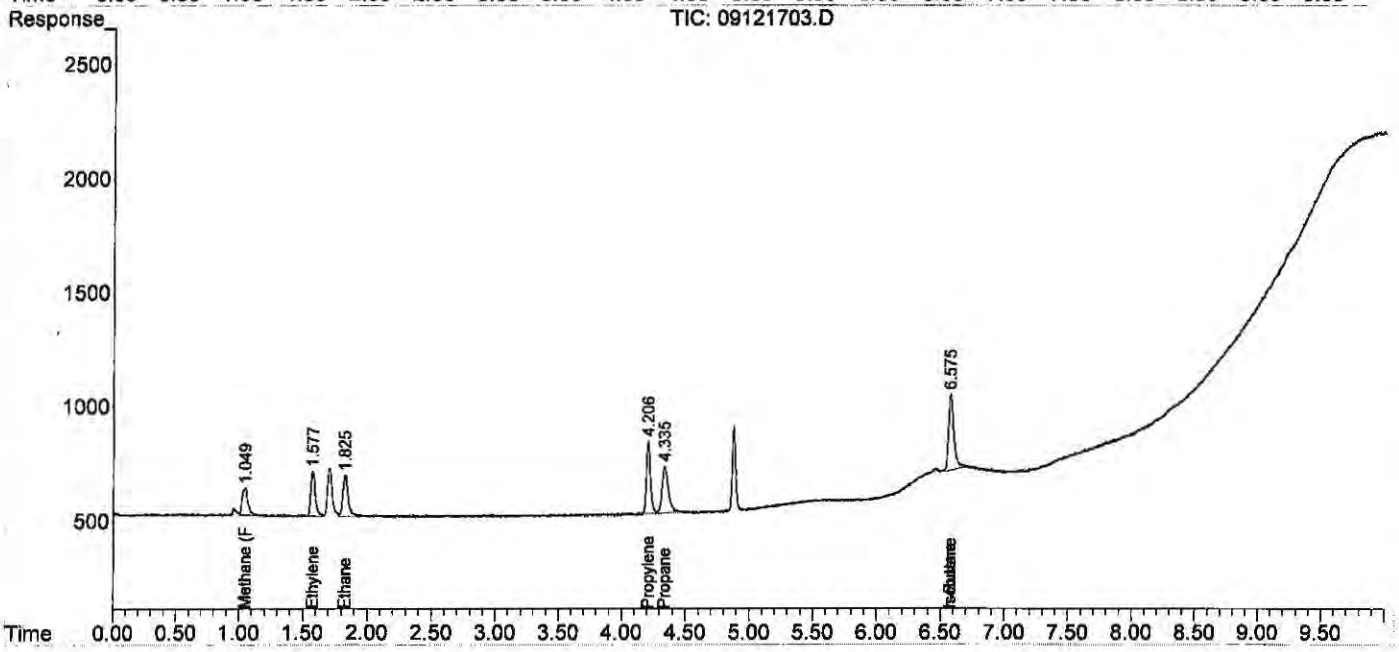
Quantitation Report (QT Reviewed)

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 :



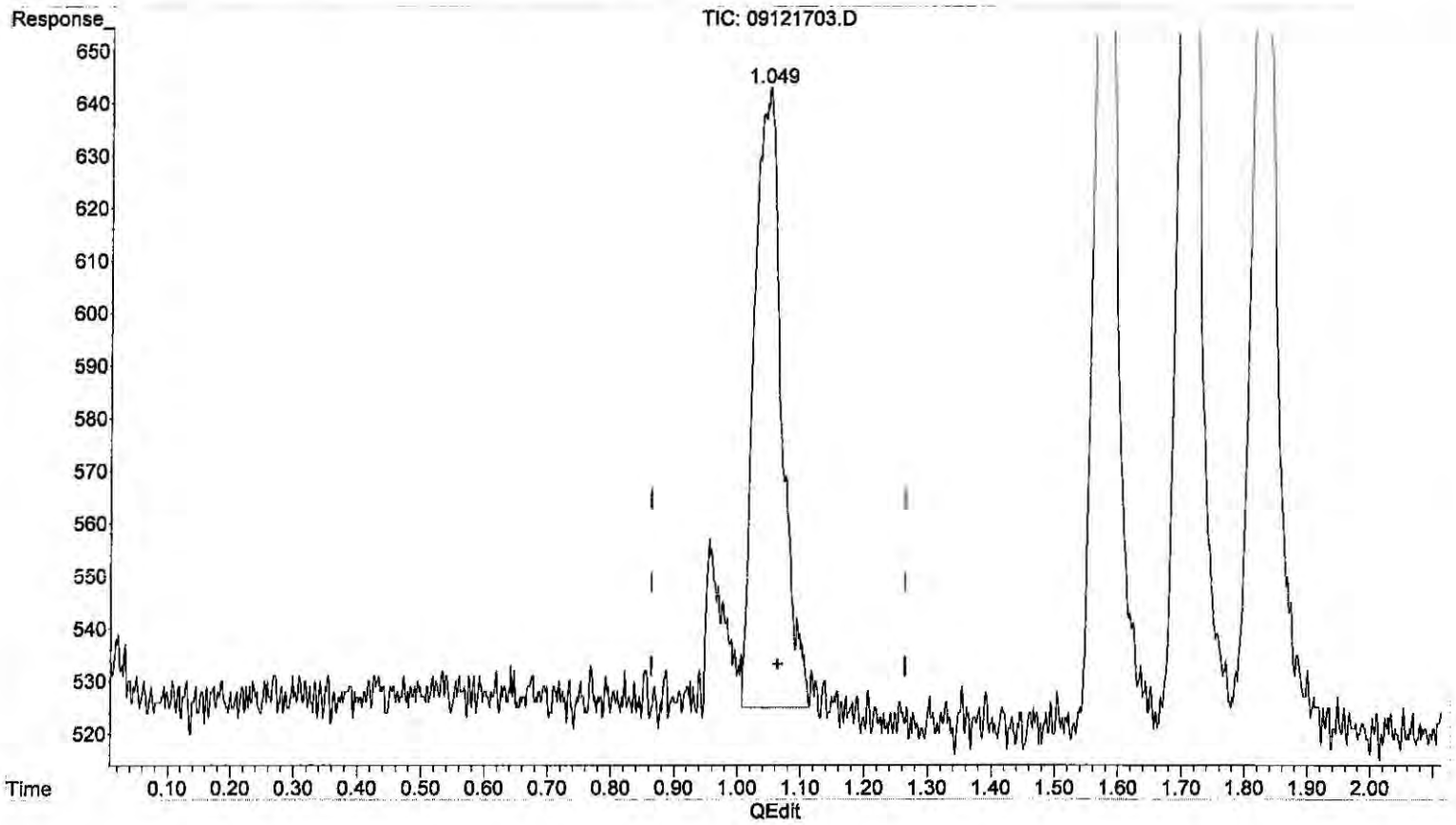


Quantitation Report (Qedit)

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 #1 Info :
Signal #2 Phase:
Signal #2 Info :



(6) Methane (FID)

1.049min 0.391 ppm m

response 3564

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

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

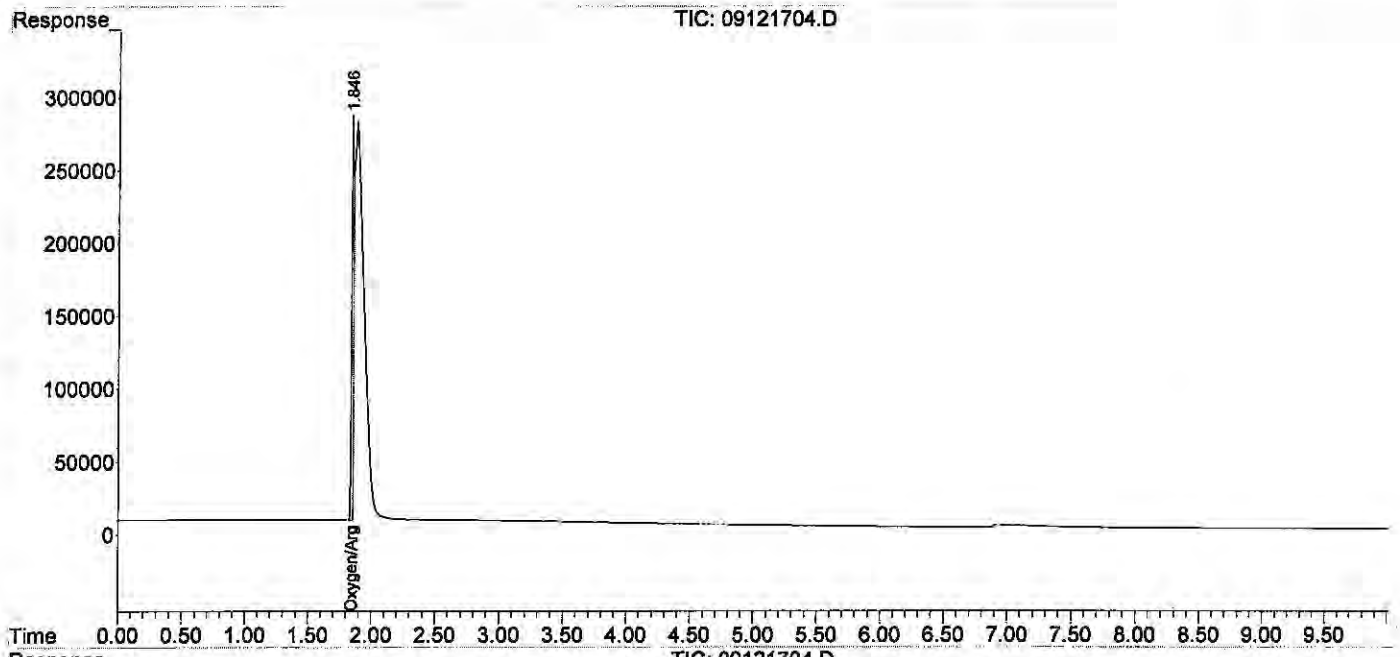
(f)=RT Delta > 1/2 Window (m)=manual int.

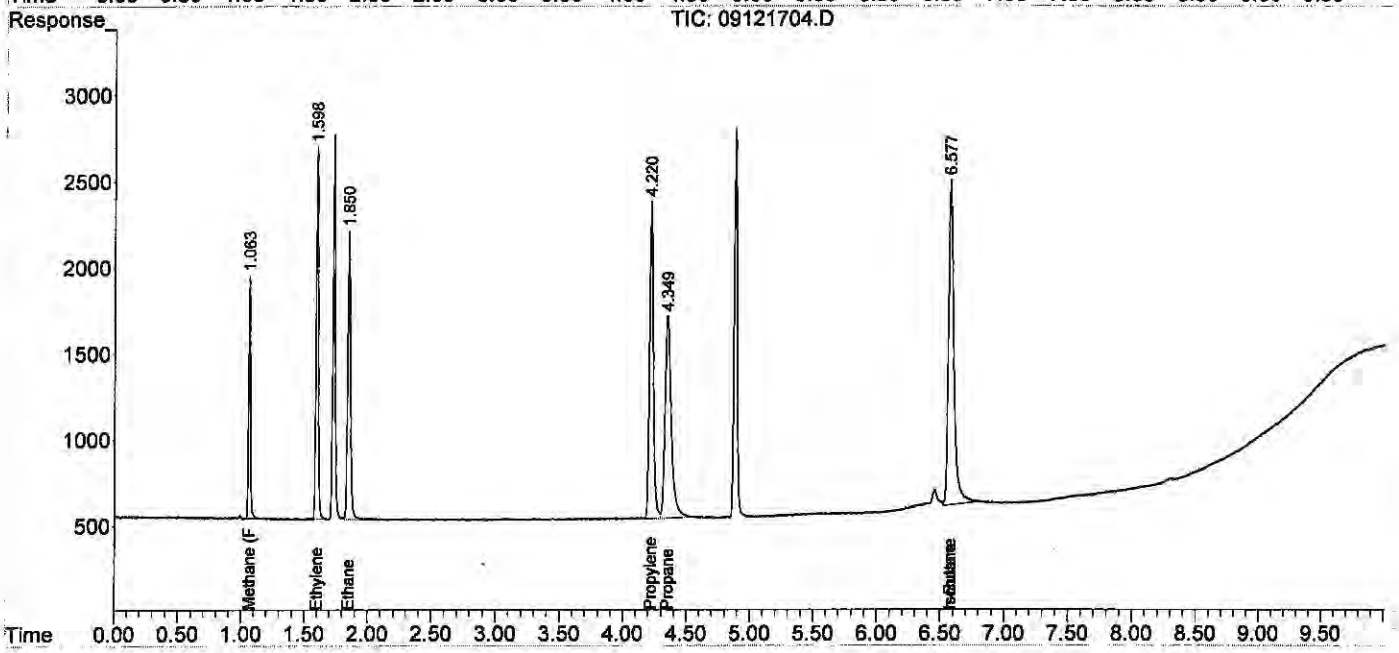
Quantitation Report (QT Reviewed)

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 :





Quantitation Report (QT Reviewed)

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 :

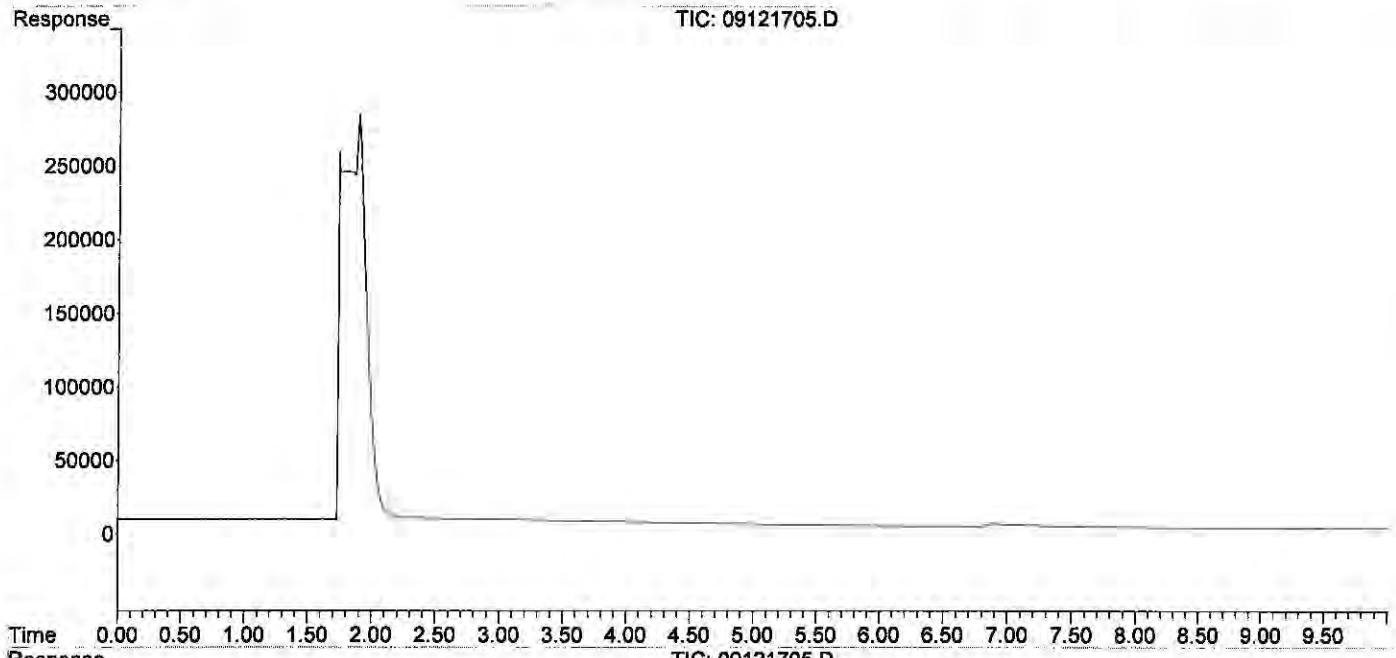
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	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

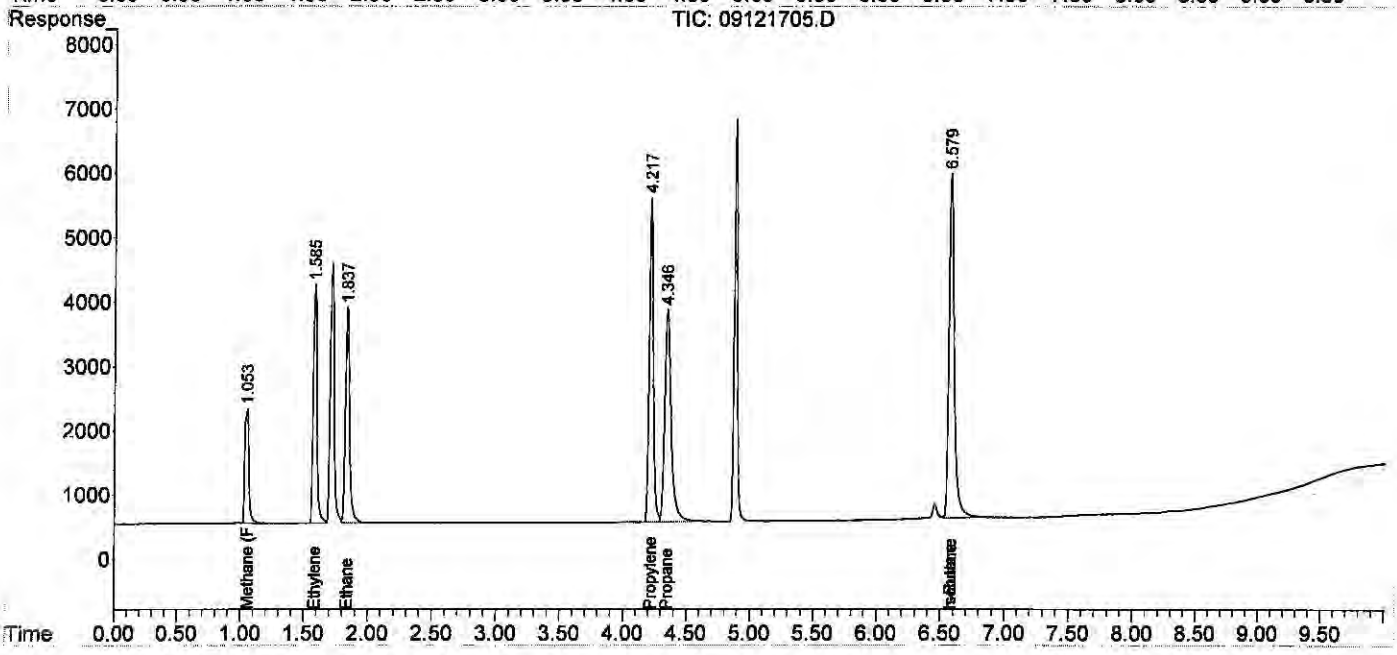
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :





Quantitation Report (QT Reviewed)

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

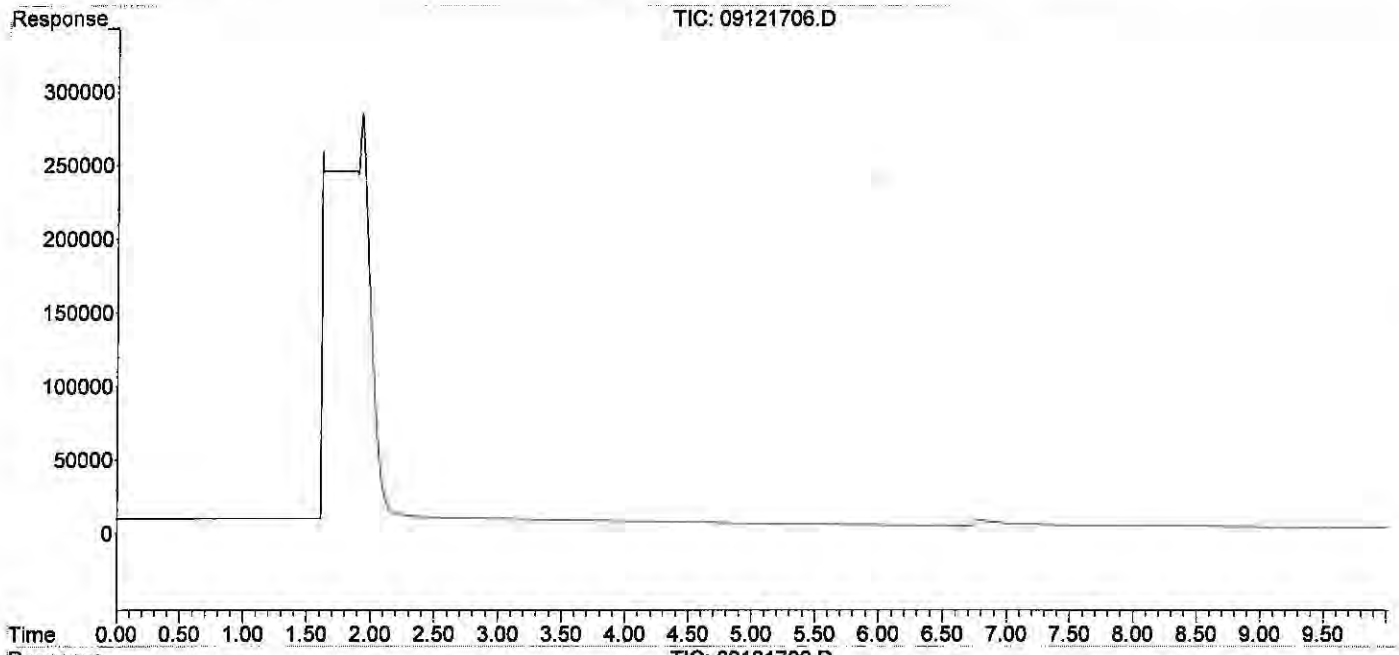
(f)=RT Delta > 1/2 Window (m)=manual int.

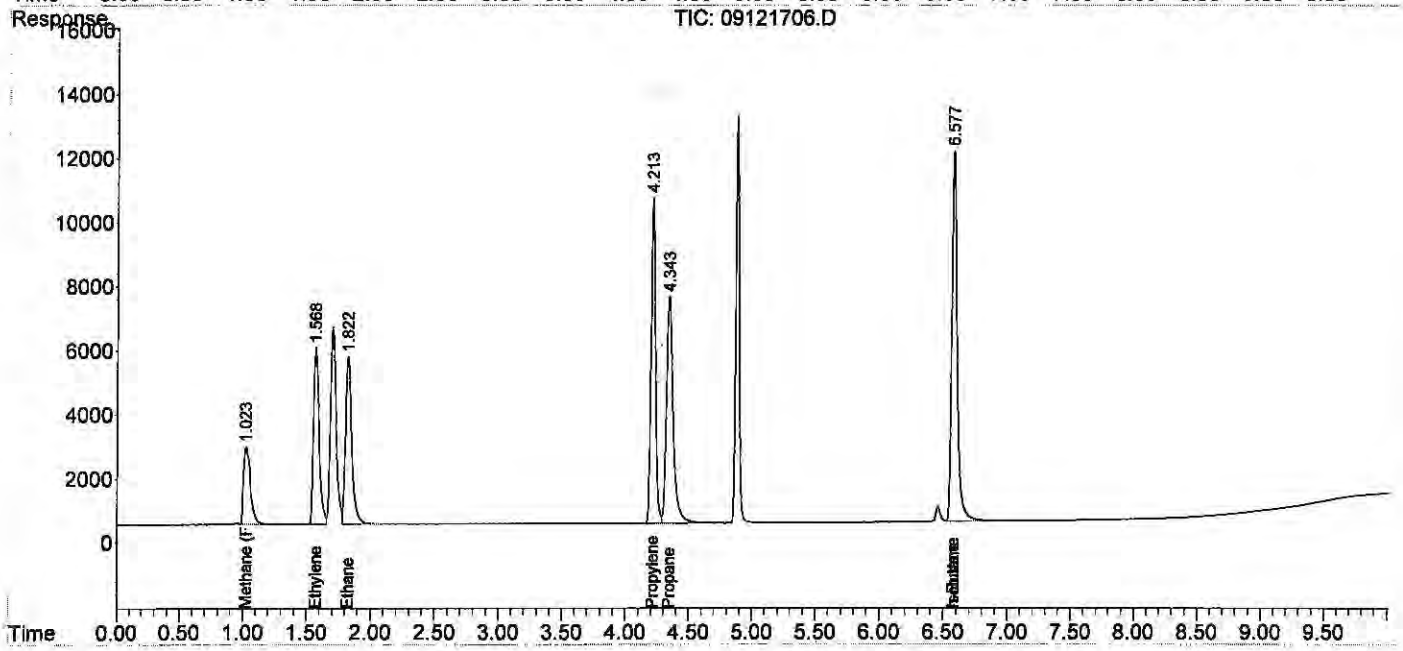
Quantitation Report (QT Reviewed)

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 :





Quantitation Report (QT Reviewed)

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 :

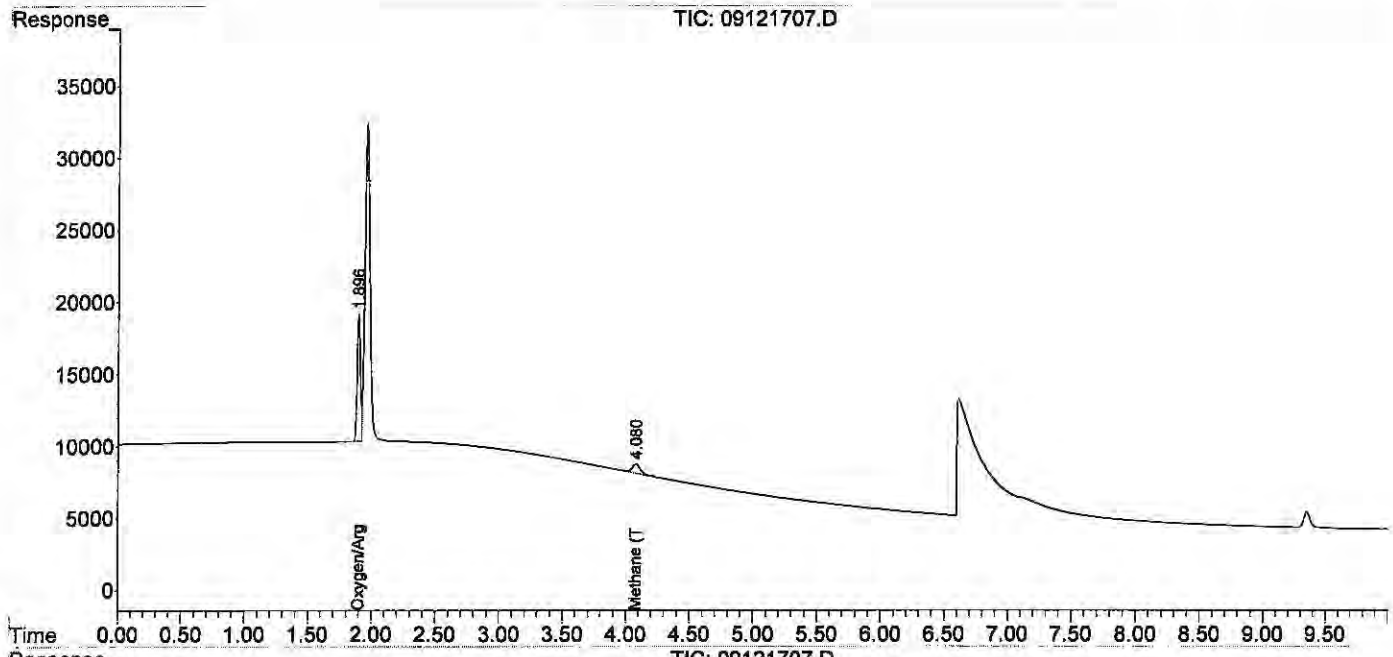
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	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

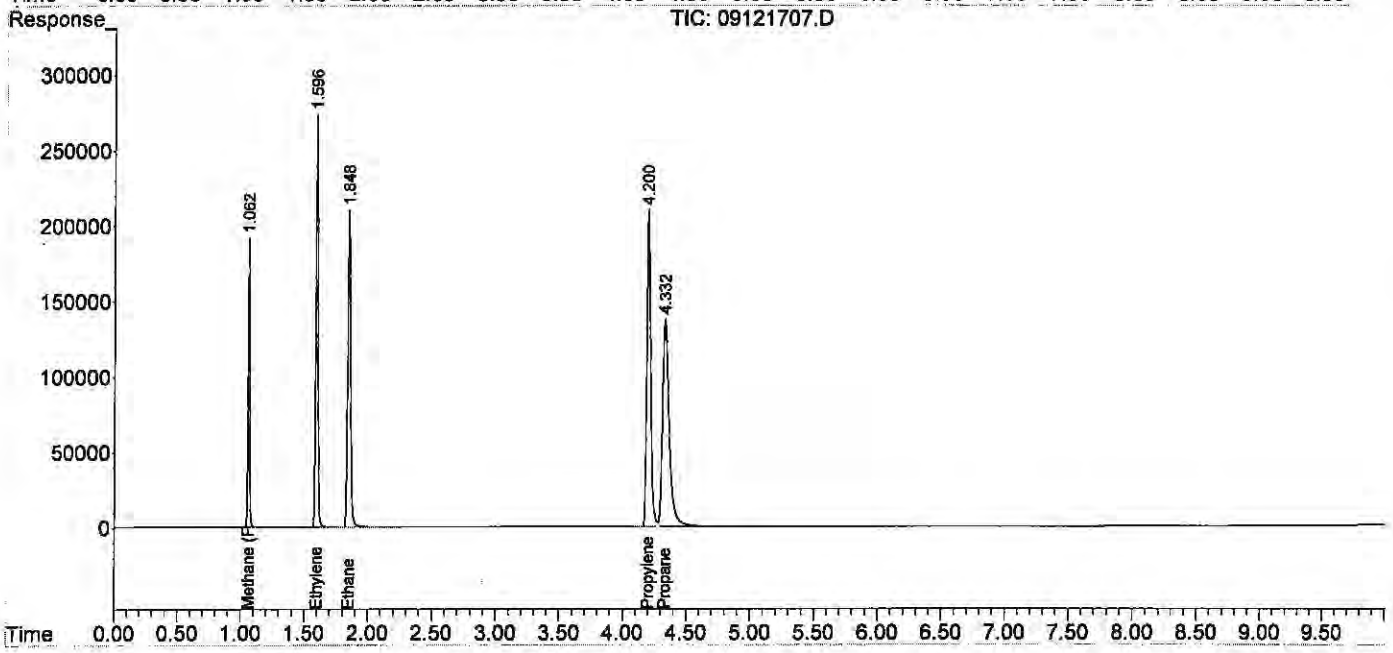
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :





Quantitation Report (QT Reviewed)

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

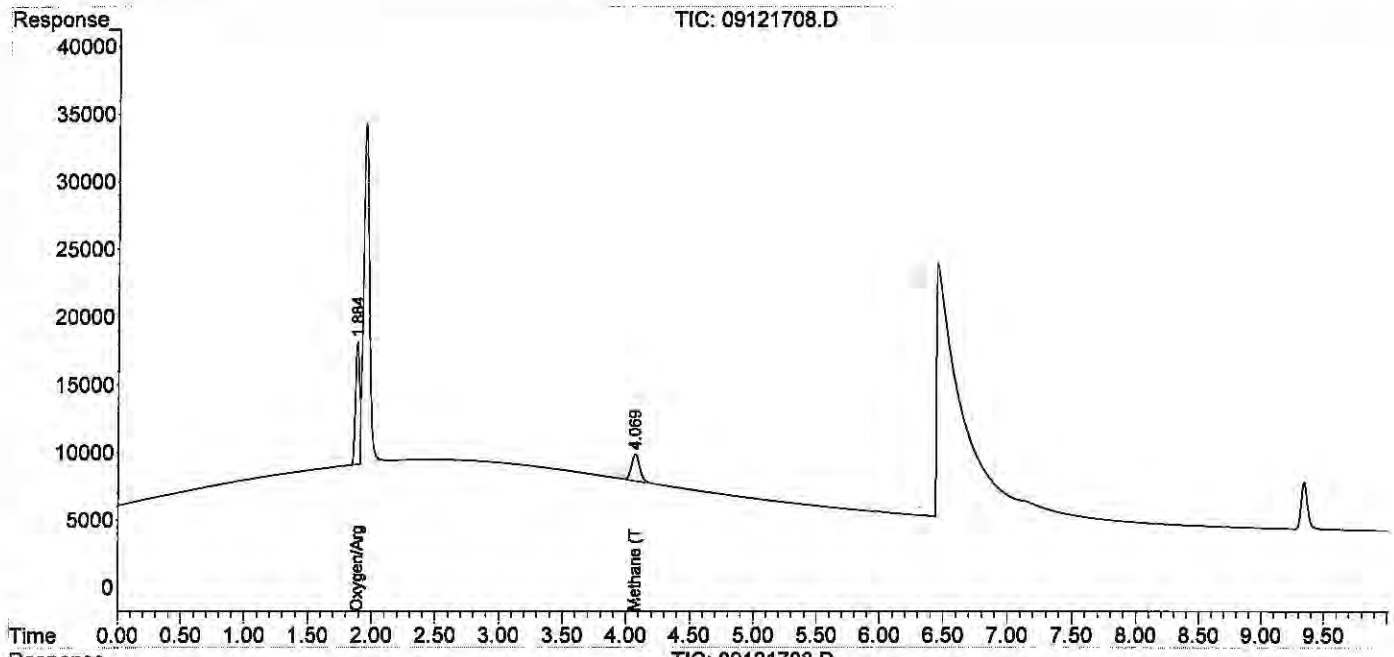
(f)=RT Delta > 1/2 Window (m)=manual int.

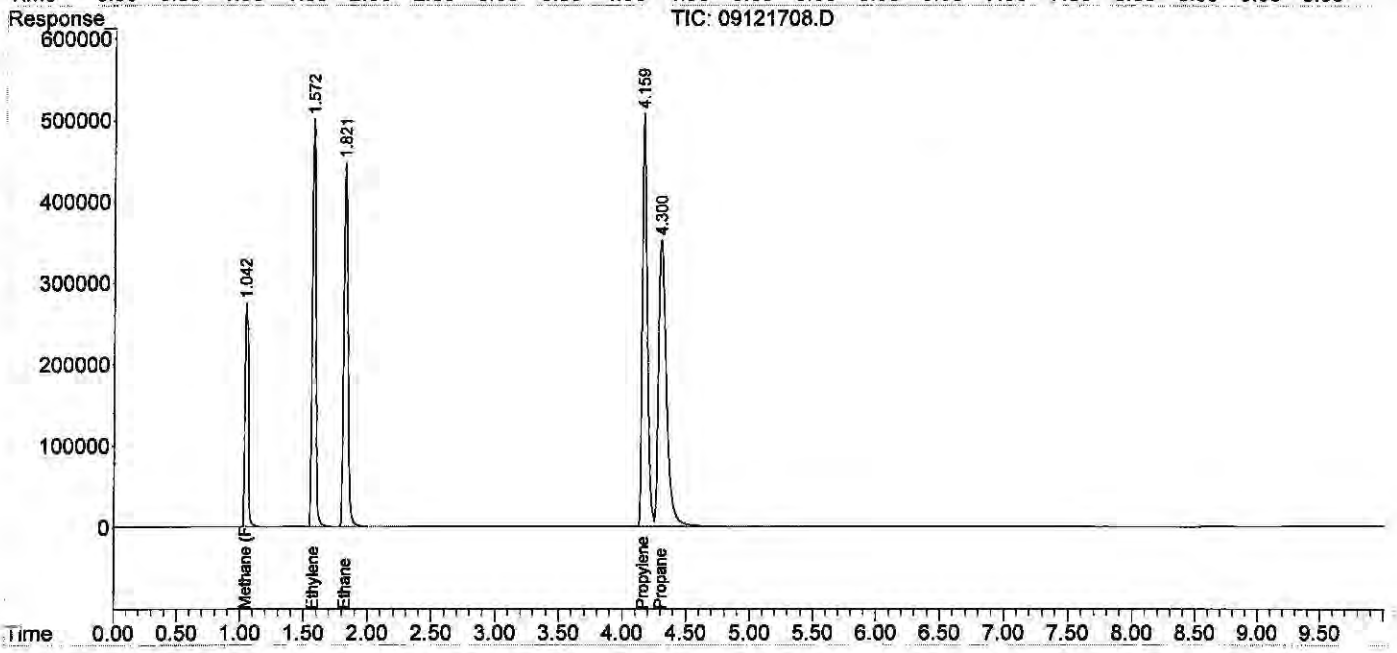
Quantitation Report (QT Reviewed)

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 :





Quantitation Report (QT Reviewed)

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 :

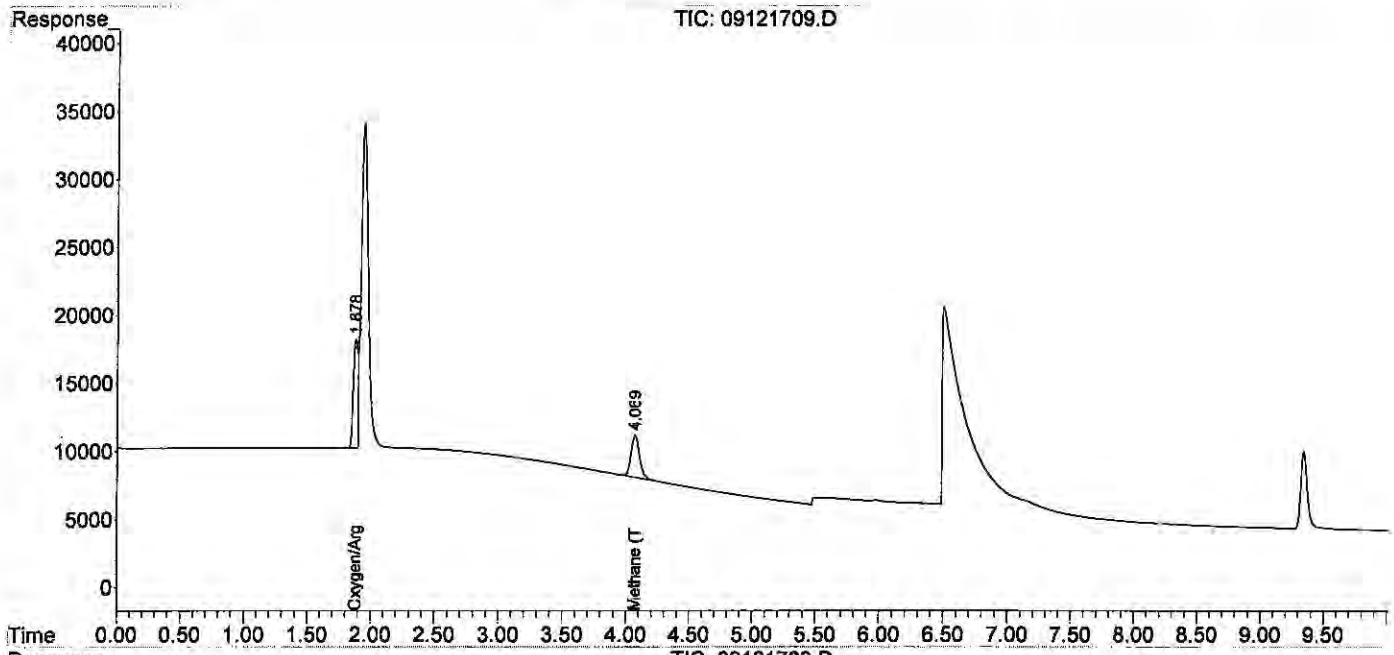
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	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

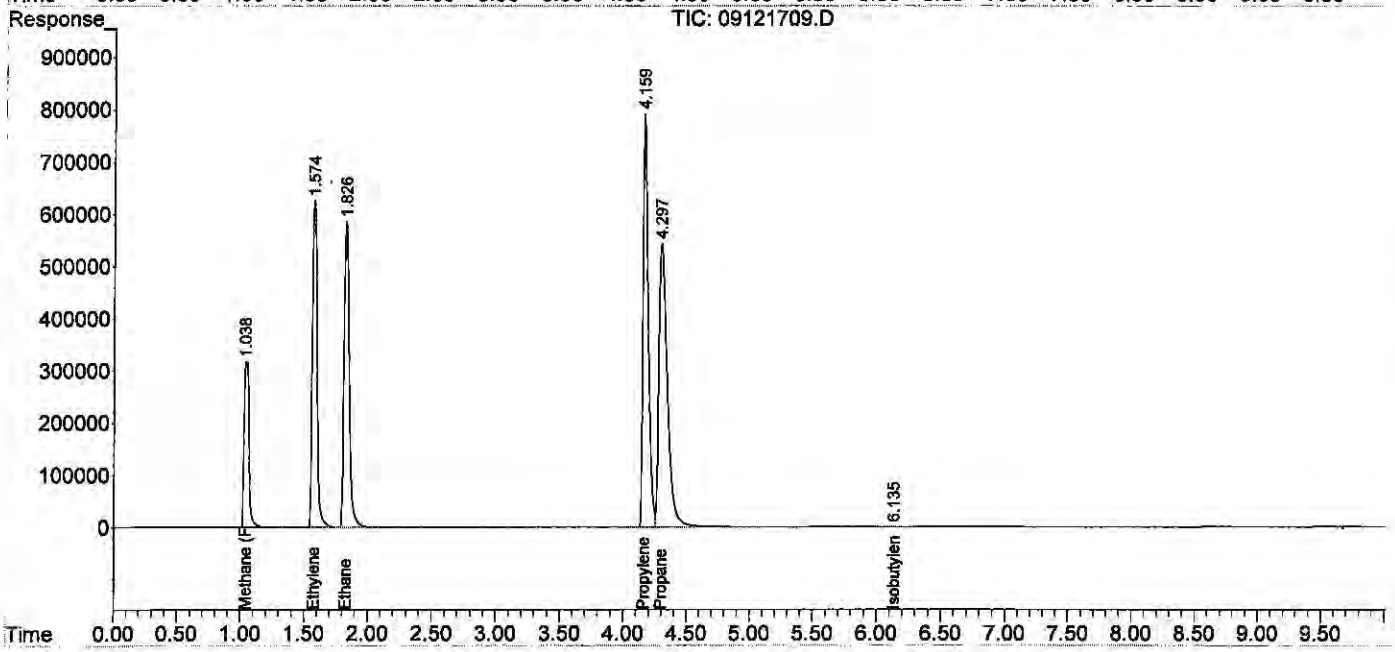
(f)=RT Delta > 1/2 Window (m)=manual int.

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 #1 Info :
Signal #2 Phase:
Signal #2 Info :





Quantitation Report (QT Reviewed)

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 :

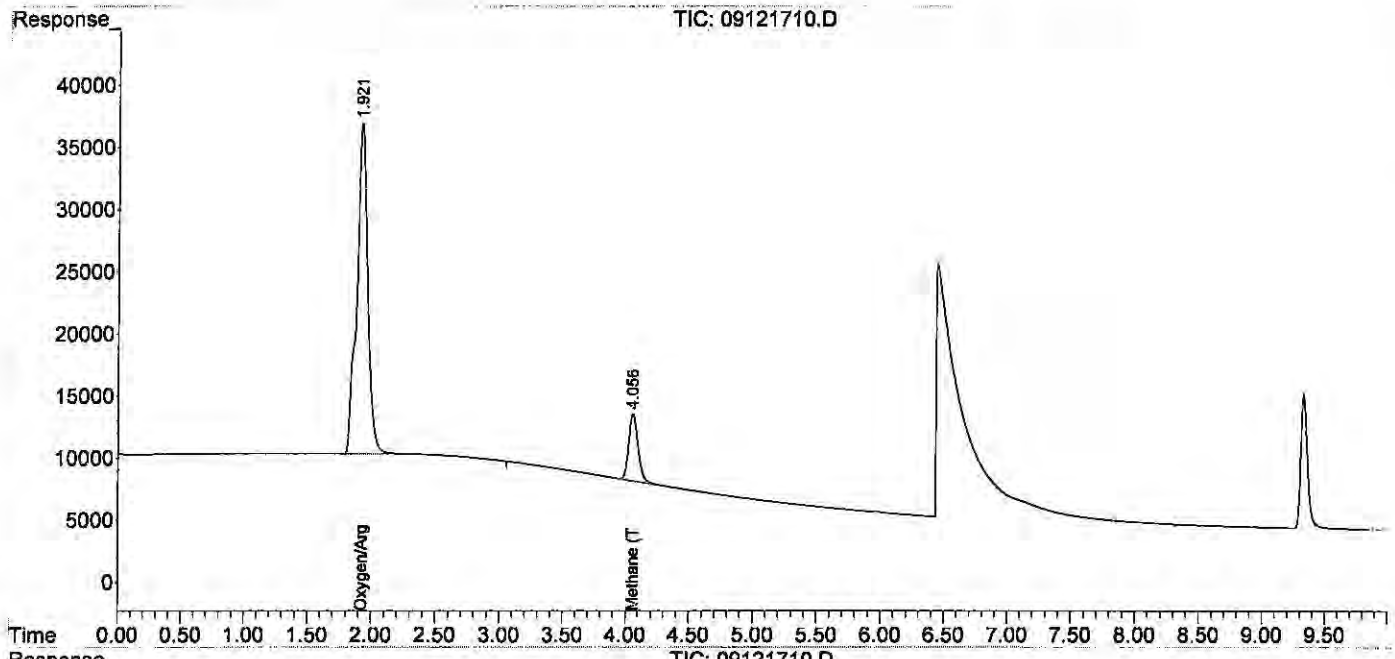
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	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	

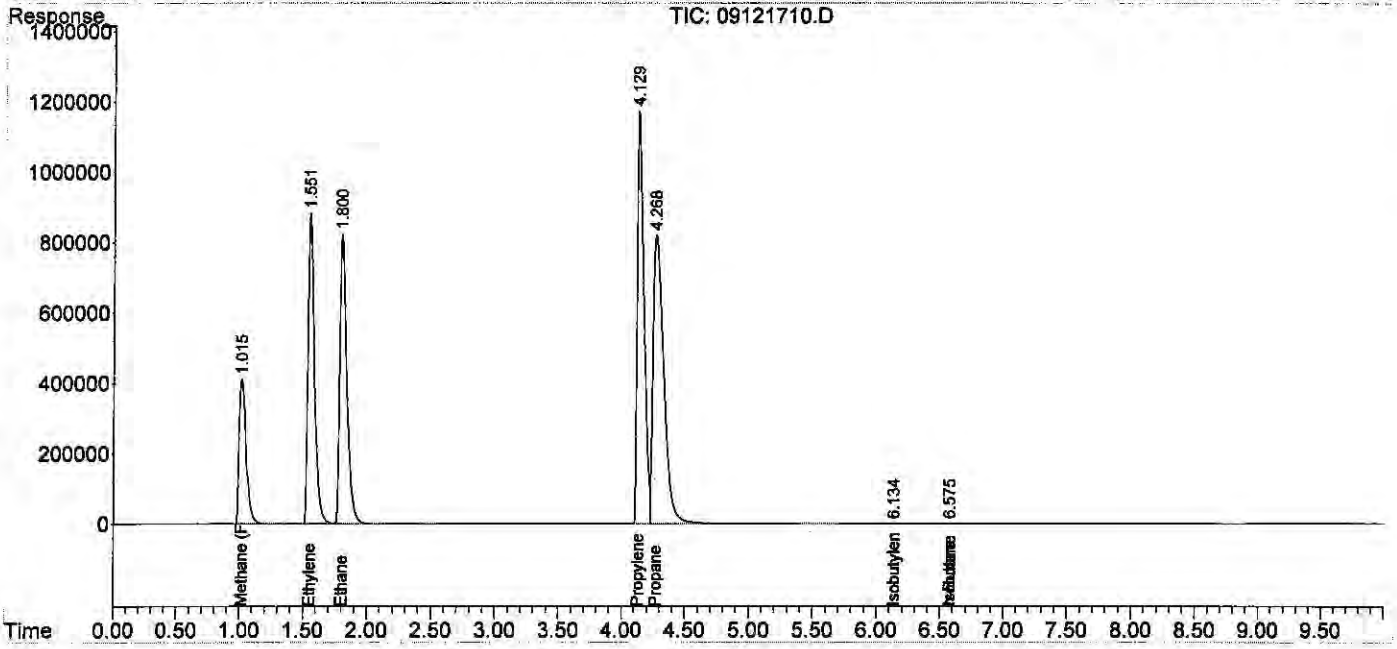
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



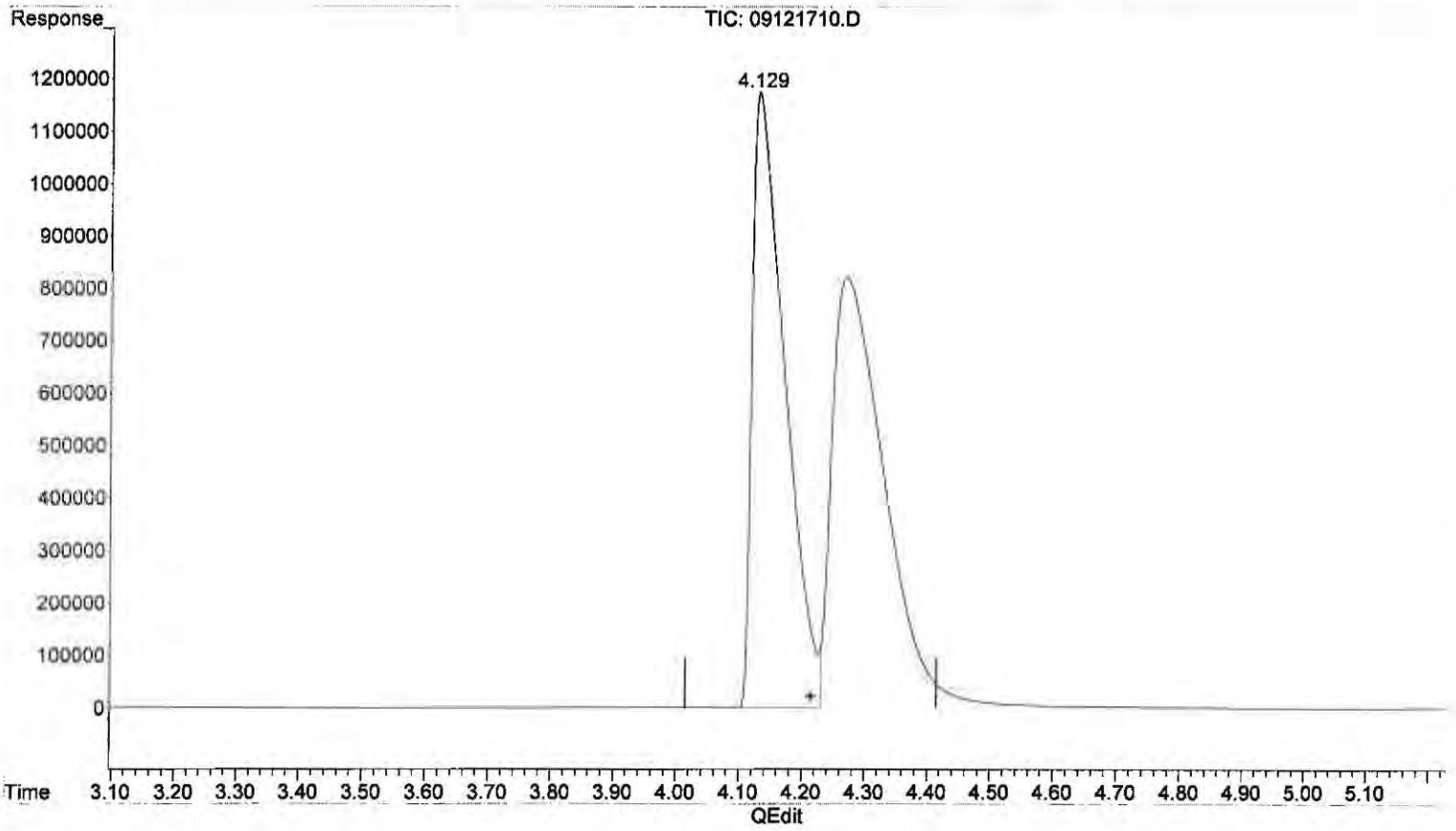


Quantitation Report (Qedit)

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
RS091217_R.M Wed Sep 13 15:08:03 2017

Quantitation Report (QT Reviewed)

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 :

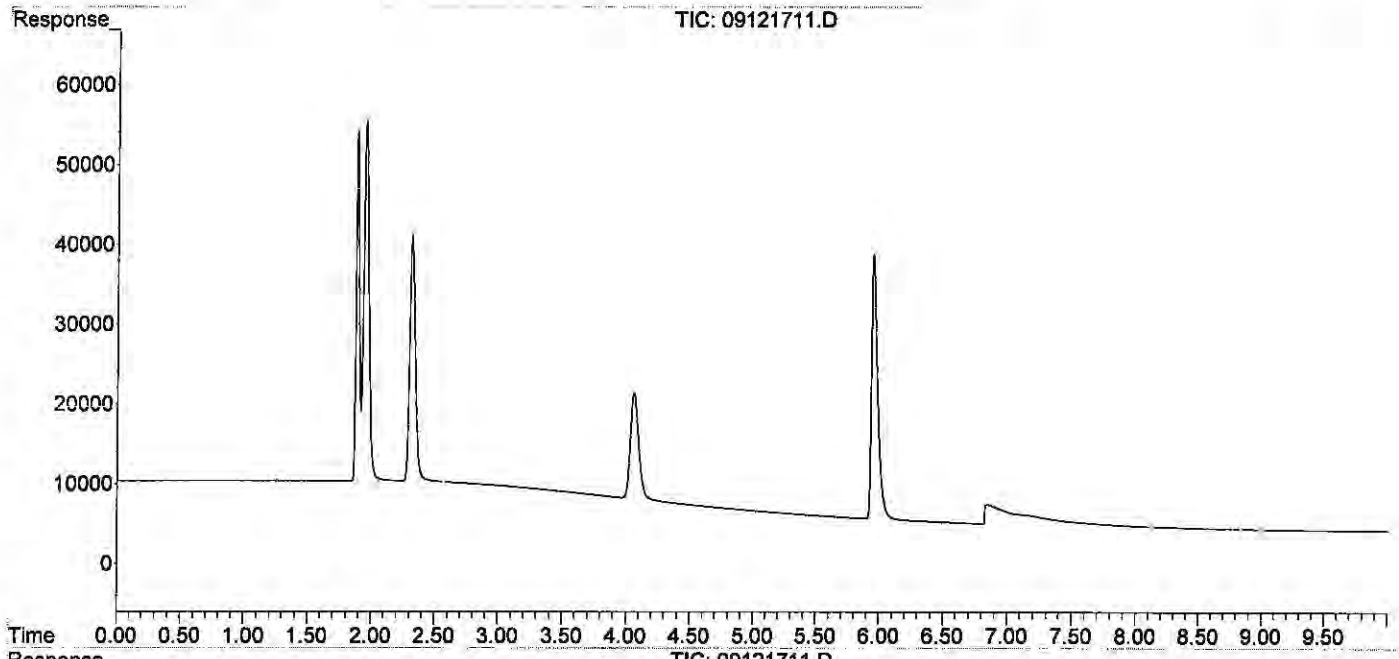
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	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	

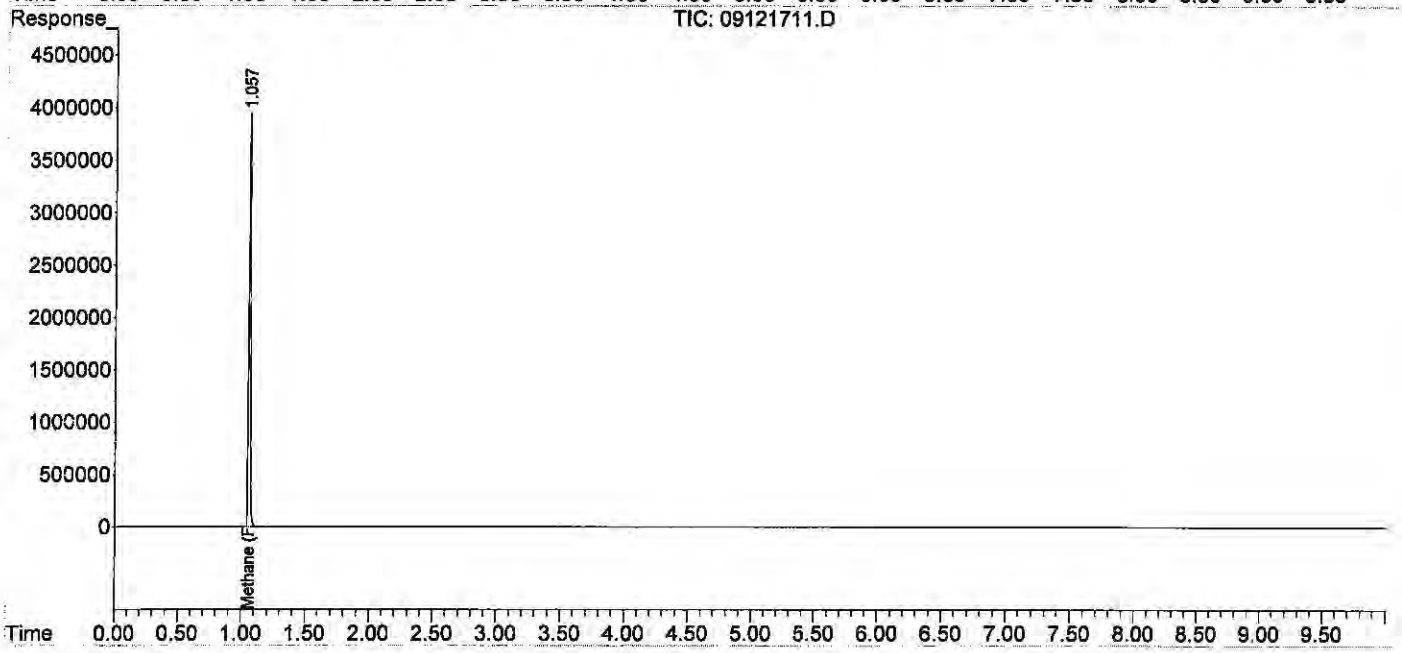
(f)=RT Delta > 1/2 Window (m)=manual int.

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 #1 Info :
Signal #2 Phase:
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 :

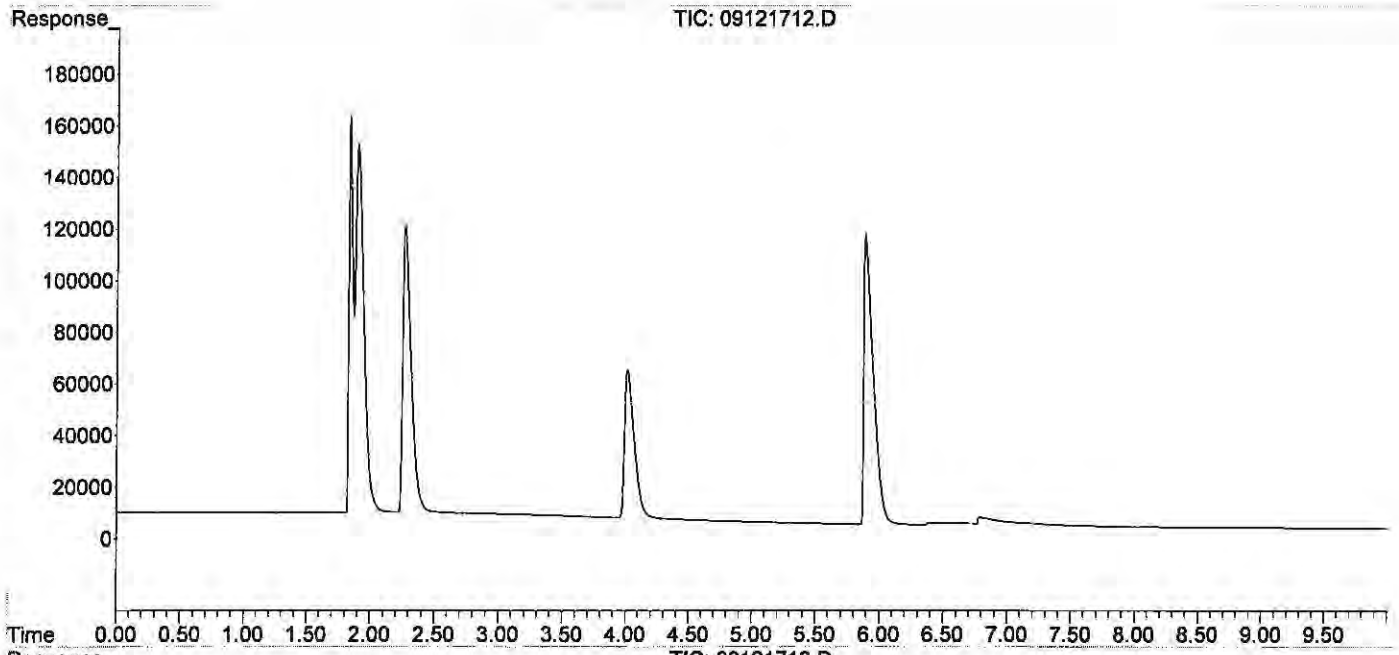
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	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	

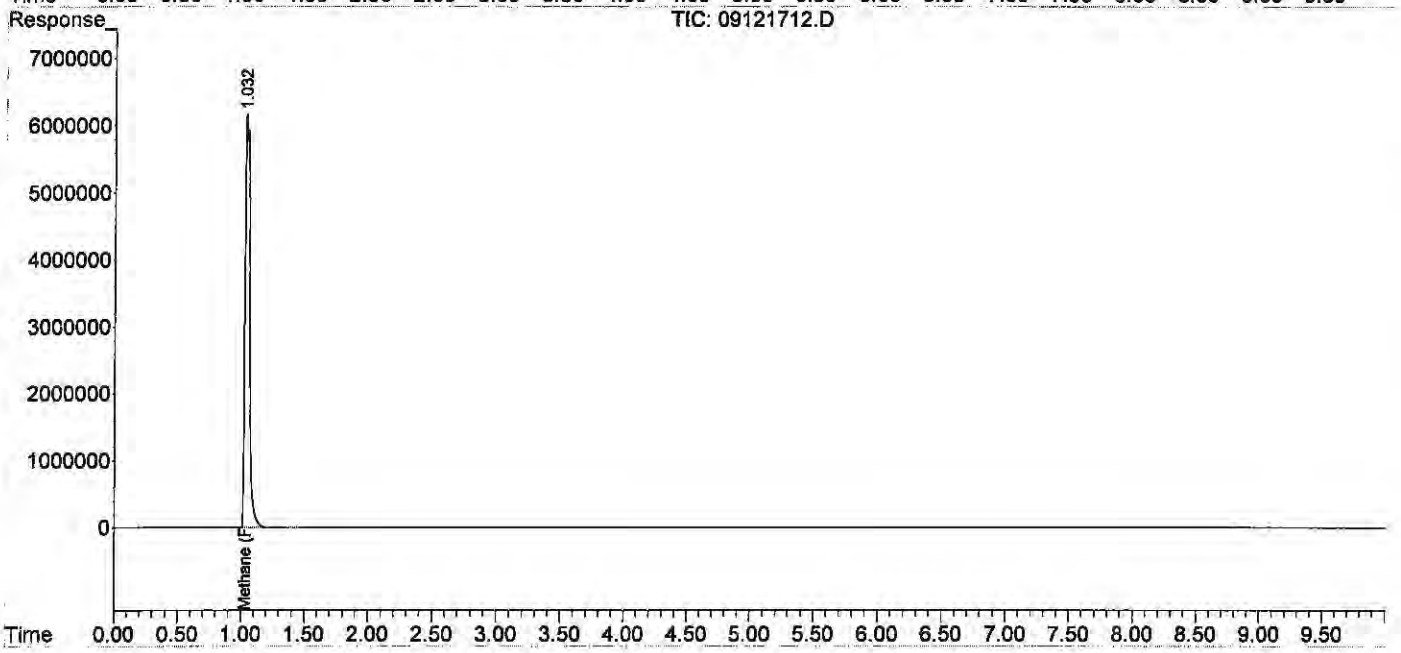
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :





Quantitation Report (QT Reviewed)

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	1.50 101.1
7)	Ethylene	1.598	24153	1.443	ppm	1.50 96.2
8)	Ethane	1.850	24488	1.445	ppm	1.50 96.3
9)	Propylene	4.221	36004	1.537	ppm	1.50 102.5
10)	Propane	4.350	37738	1.517	ppm	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	

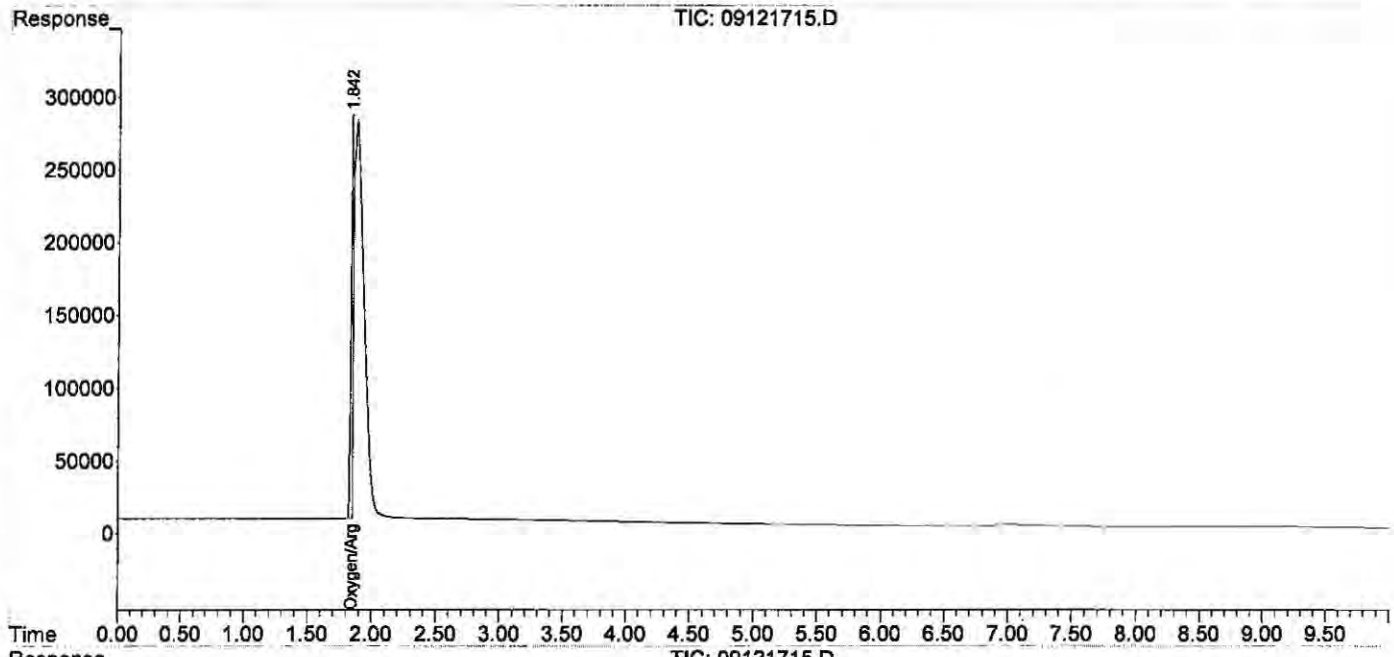
(f)=RT Delta > 1/2 Window (m)=manual int.

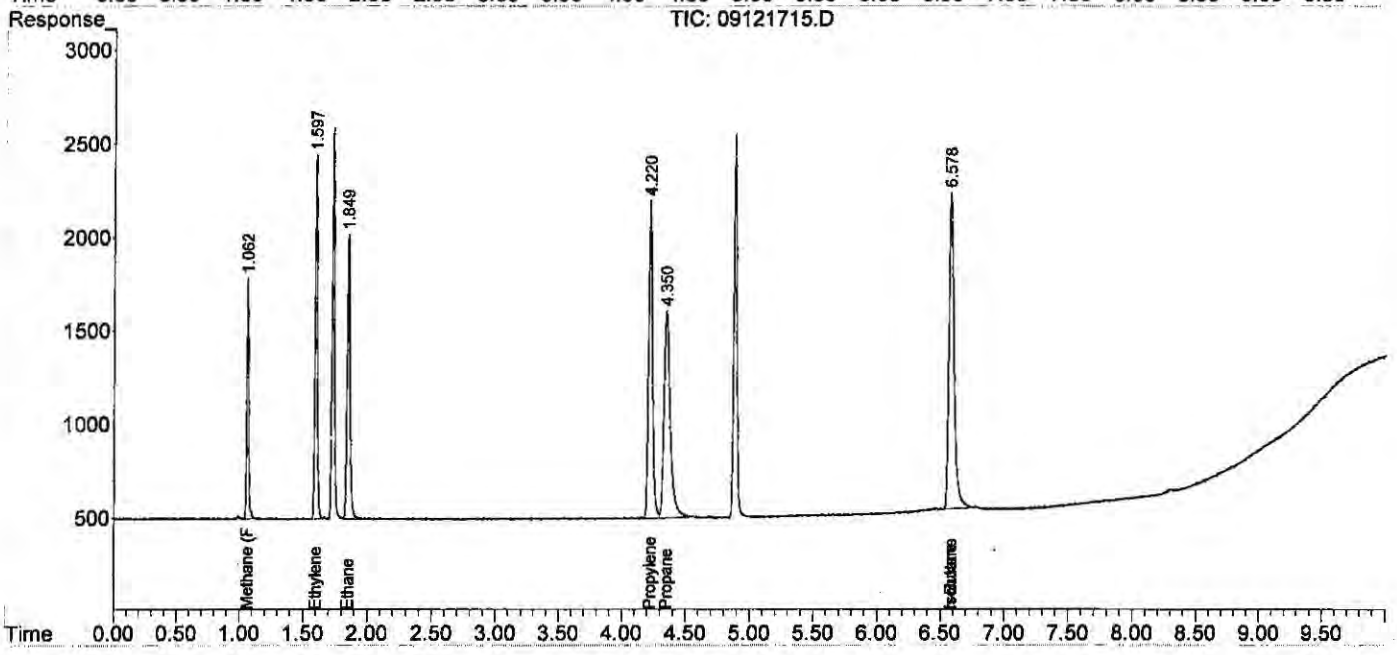
9/14/2017

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: P2001715
Sample Vol. (ml) : 32.00 ml
Analyst : LD
Date Analysis : 03/30/20
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	97.704	104.050	103.499
ACTUAL		101.50	100.90	101.40
%Difference		3.7%	3.1%	2.1%
MCS 0.1ml	0.100	0.000	0.000	0.000
RB 0.1ml	0.100	0.000	0.000	0.000
LCS FID 0.1ml	0.100	1.576	1.117	1.285
LCSD FID 0.1ml	0.100	1.537	1.089	1.289
P2001715-001 0.1ml	0.100	445.718	0.000	0.000
P2001715-002 0.1ml	0.100	451.857	0.000	0.000
P2001715-003 0.1ml	0.100	216.481	1.352	0.000
P2001715-004 0.1ml	0.100	40.197	0.510	0.000
P2001715-005 0.1ml	0.100	692.637	0.000	0.000
P2001715-006 0.1ml	0.100	722.441	0.000	0.000
P2001715-007 0.1ml	0.100	1.654	0.000	0.000
P2001715-003 MS 0.1ml	0.100	918.392	5.917	0.935
P2001715-003 MSD 0.1r	0.100	949.076	6.115	0.946
STD S32-05221901		90.962	96.289	95.587
ACTUAL		101.50	100.90	101.40
%Difference		10.4%	4.6%	5.7%

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	0.000	0.000	0.000
LCS FID 0.1ml	15.760	11.170	12.850
LCSD FID 0.1ml	15.370	10.890	12.890
P2001715-001 0.1ml	4457.180	0.000	0.000
P2001715-002 0.1ml	4518.570	0.000	0.000
P2001715-003 0.1ml	2164.810	13.520	0.000
P2001715-004 0.1ml	401.970	5.100	0.000
P2001715-005 0.1ml	6926.370	0.000	0.000
P2001715-006 0.1ml	7224.410	0.000	0.000
P2001715-007 0.1ml	16.540	0.000	0.000
P2001715-003 MS 0.1ml	9183.920	59.170	9.350
P2001715-003 MSD 0.1ml	9490.760	61.150	9.460
17:51:05	722.44	0.00	0.00

LD
03/30

Data Path : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300101.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 14:08:34
Operator : LD
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 14:25:13 2020
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

LD 05/30

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

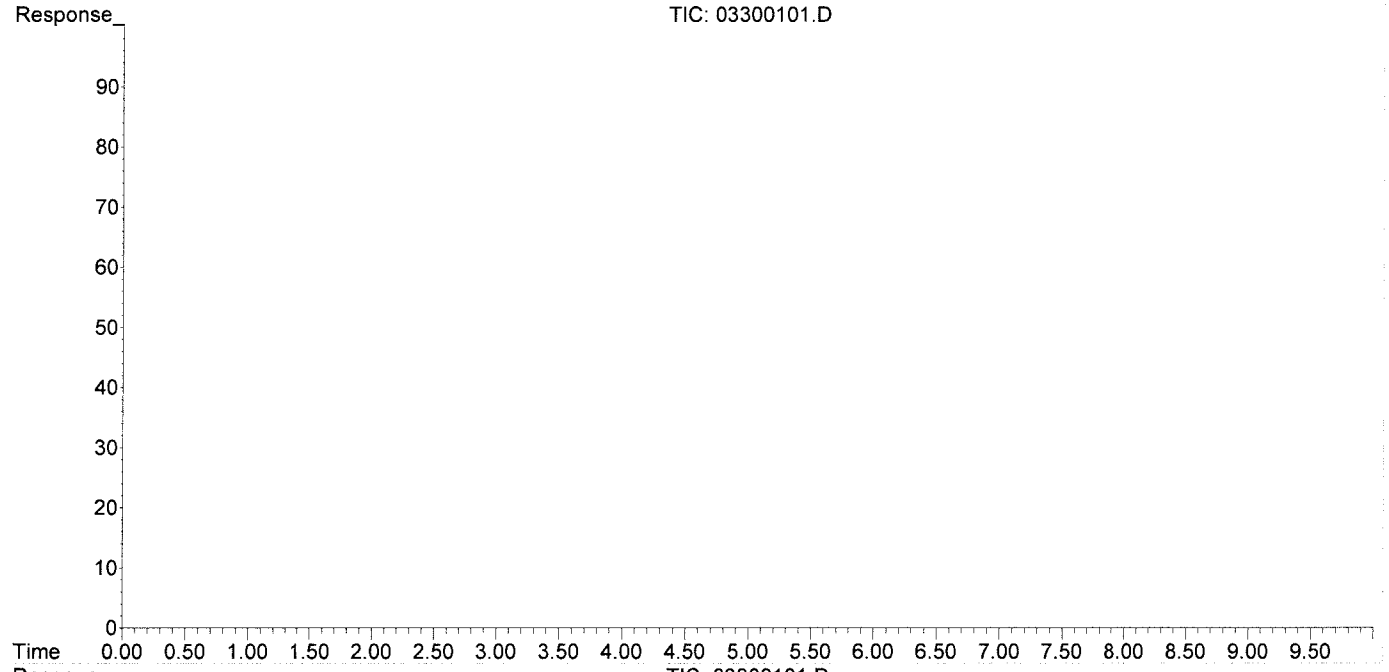
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.103	886235	97.704	ppm
7)	Ethylene	1.674	1741208	104.050	ppm
8)	Ethane	1.939	1754333	103.499	ppm
9)	Propylene	4.318	2570991	109.724	ppm
10)	Propane	4.441	2640982	106.148	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

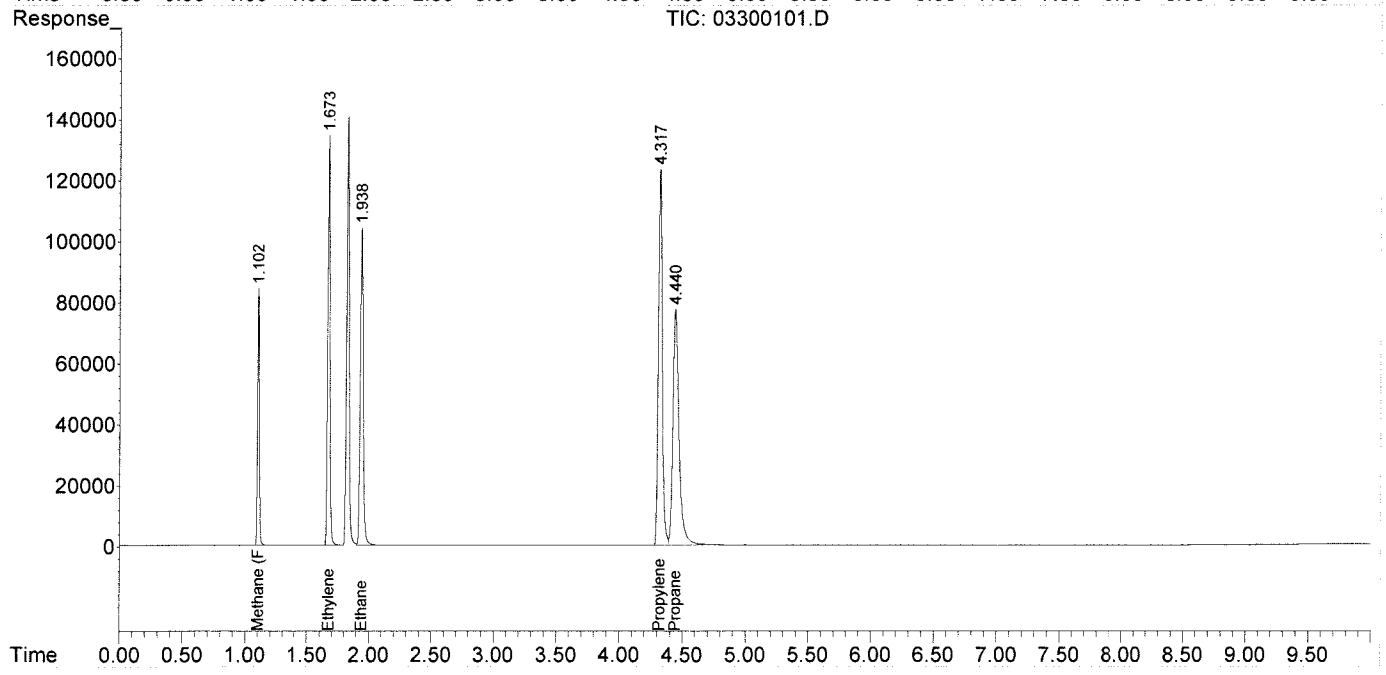
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300101.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 14:08:34
Operator : LD
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 14:25:13 2020
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 : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300115.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 18:17:13
Operator : LD
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 18:52:44 2020
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 :

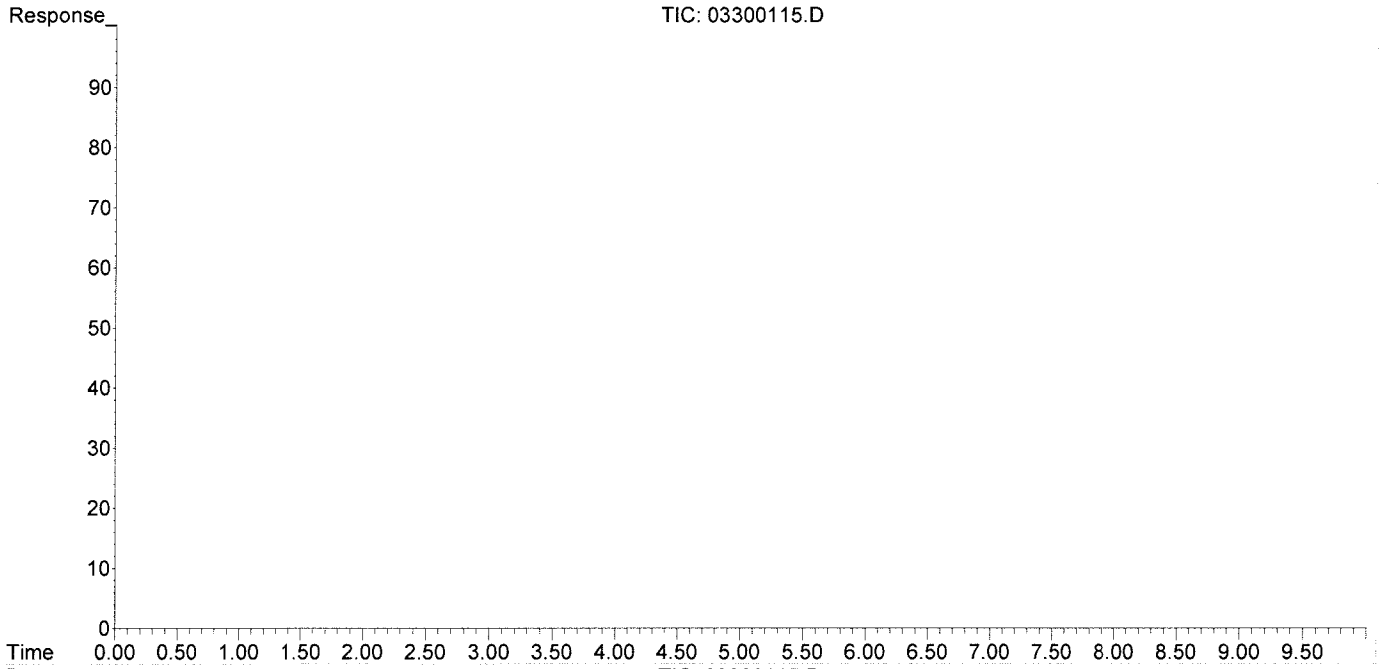
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.108	825083	90.962	ppm
7)	Ethylene	1.675	1611337	96.289	ppm
8)	Ethane	1.940	1620217	95.587	ppm
9)	Propylene	4.324	2333283	99.579	ppm
10)	Propane	4.447	2400300	96.474	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

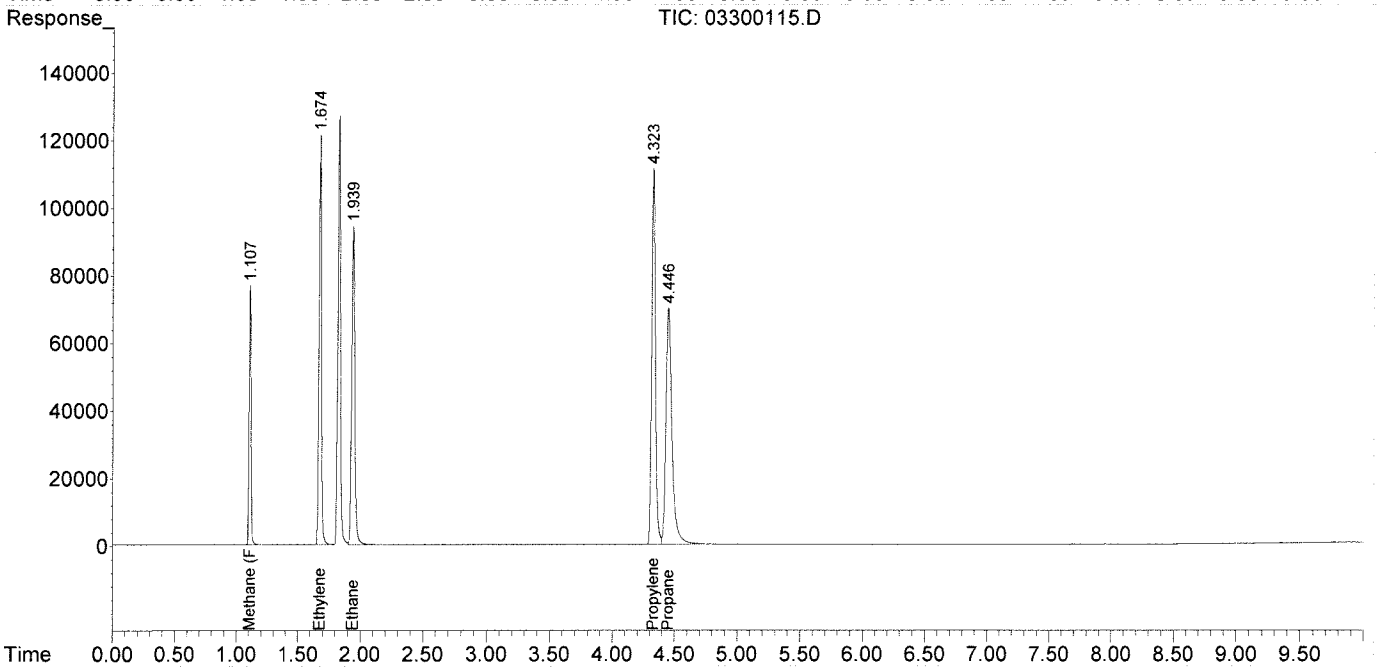
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_03\30\
Data File : 03300115.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Mar-2020, 18:17:13
Operator : LD
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 18:52:44 2020
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\2020_03\30\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	30-Mar-20, 14:08:34	03300101.D	STD S32-05221901		LD	RSKBOTH.M	PASS
2	30-Mar-20, 14:27:03	03300102.D	RB 0.1ml		LD	RSKBOTH.M	PASS
3	30-Mar-20, 15:14:49	03300103.D	MCS 0.1ml		LD	RSKBOTH.M	PASS
4	30-Mar-20, 15:31:42	03300104.D	LCS FID 0.1ml		LD	RSKBOTH.M	PASS
5	30-Mar-20, 15:48:34	03300105.D	LCSD FID 0.1ml		LD	RSKBOTH.M	PASS
6	30-Mar-20, 16:01:40	03300106.D	P2001715-001 0.1ml		LD	RSKBOTH.M	
7	30-Mar-20, 16:17:41	03300107.D	P2001715-002 0.1ml		LD	RSKBOTH.M	
8	30-Mar-20, 16:31:12	03300108.D	P2001715-003 0.1ml		LD	RSKBOTH.M	
9	30-Mar-20, 16:51:09	03300109.D	P2001715-003 MS 0.1ml		LD	RSKBOTH.M	
10	30-Mar-20, 17:04:38	03300110.D	P2001715-003 MSD 0.1ml		LD	RSKBOTH.M	
11	30-Mar-20, 17:19:07	03300111.D	P2001715-004 0.1ml		LD	RSKBOTH.M	
12	30-Mar-20, 17:37:14	03300112.D	P2001715-005 0.1ml		LD	RSKBOTH.M	
13	30-Mar-20, 17:51:05	03300113.D	P2001715-006 0.1ml		LD	RSKBOTH.M	
14	30-Mar-20, 18:04:06	03300114.D	P2001715-007 0.1ml		LD	RSKBOTH.M	
15	30-Mar-20, 18:17:13	03300115.D	STD S32-05221901		LD	RSKBOTH.M	PASS
16	30-Mar-20, 18:39:06	03300116.D	J2001621-050 0.1ml		LD	RSKBOTH.M	
17	30-Mar-20, 18:53:50	03300117.D	J2001621-051 0.1ml		LD	RSKBOTH.M	
18	30-Mar-20, 19:13:21	03300118.D	J2001621-052 0.1ml		LD	RSKBOTH.M	
19	30-Mar-20, 19:28:00	03300119.D	J2001621-053 0.1ml		LD	RSKBOTH.M	
20	30-Mar-20, 19:43:18	03300120.D	STD S32-05221901		LD	RSKBOTH.M	PASS
21	30-Mar-20, 19:56:30	03300121.D	LOQ 0.05ml		LD	RSKBOTH.M	
22	30-Mar-20, 20:10:25	03300122.D	LOQ 0.05ml		LD	RSKBOTH.M	

10515 Research Drive
Knoxville, TN 37932
Phone: (865) 573-8188
Fax: (865) 573-8133

Client: RJ Modashia
ALS Laboratory Group
10450 Stancliff Rd
Suite 210
Houston, TX 77040

Phone: 281-575-2279

Fax:

Identifier: 105RC **Date Rec:** 03/25/2020 **Report Date:** 03/30/2020

Client Project #: NW01312.0150 **Client Project Name:** LHAAP-58

Purchase Order #:

Analysis Requested: CENSUS

Reviewed By:



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MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **ALS Laboratory Group**
Project: LHAAP-58

MI Project Number: **105RC**
Date Received: 03/25/2020

Sample Information

Client Sample ID:		**35AWW11_032420**	**35AWW20_032420**	**LHSMW07_032420**	**35AWW06_032420**	**35AWW23_032420**
Sample Date:		03/24/2020	03/24/2020	03/24/2020	03/24/2020	03/24/2020
Units:		cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		CB	CB	CB	CB	CB
Dechlorinating Bacteria						
Dehalococcoides	*DHC*	**9.40E+02**	**1.30E+04**	**2.28E+03**	**9.60E+00**	**1.36E+02**
tceA Reductase	TCE	<6.00E-01	<5.00E-01	<6.00E-01	<5.00E-01	**2.30E+01**
BAV1 Vinyl Chloride Reductase	BVC	**1.95E+01**	**1.98E+04**	**4.80E+00**	**4.70E+00**	**9.00E-01**
Vinyl Chloride Reductase	VCR	**4.43E+02**	<5.00E-01	**2.27E+03**	<5.00E-01	**4.93E+01**
Dehalobacter spp.	*DHBt*	**4.06E+04**	**9.54E+02**	**1.03E+04**	**1.22E+03**	<5.50E+00

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **ALS Laboratory Group**
Project: LHAAP-58

MI Project Number: **105RC**
Date Received: 03/25/2020

Sample Information

Client Sample ID:	**35AWW19_032420**
Sample Date:	03/24/2020
Units:	cells/mL
Analyst/Reviewer:	CB

Dechlorinating Bacteria

Dehalococcoides	*DHC*	**9.40E+00**
tceA Reductase	TCE	<5.00E-01
BAV1 Vinyl Chloride Reductase	BVC	**1.80E+00**
Vinyl Chloride Reductase	VCR	<5.00E-01
Dehalobacter spp.	*DHBt*	**1.22E+04**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

Quality Assurance/Quality Control Data

Samples Received **3/25/2020**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
BVC	03/25/2020	03/30/2020	0 °C	106%	non-detect	non-detect
DHBt	03/25/2020	03/30/2020	0 °C	114%	non-detect	non-detect
DHC	03/25/2020	03/30/2020	0 °C	102%	non-detect	non-detect
TCE	03/25/2020	03/30/2020	0 °C	107%	non-detect	non-detect
VCR	03/25/2020	03/30/2020	0 °C	107%	non-detect	non-detect

How to Retrieve and Use Estimated Percentile Ranks from the Microbial Insights Database

The MI Database

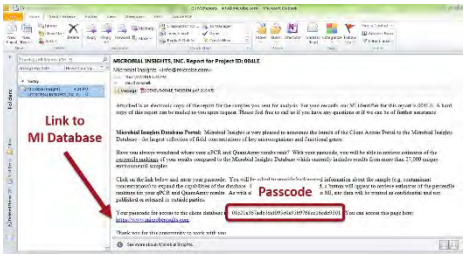
The Microbial Insights Database is the largest collection of field concentrations of key microorganisms and functional genes currently containing qPCR and QuantArray results for more than 40,000 unique groundwater, soil, and sediment samples from all 50 states and 33 countries worldwide.

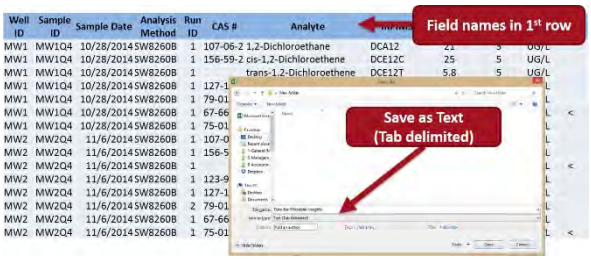
Is that low, medium or high?

In practice, biodegradation depends not just on the presence but the actual concentrations of the contaminant degrading microorganisms. The estimated percentile ranks retrieved from the MI Database answer the question "Is that low, medium or high?" by comparing your results to those of the literally thousands of other environmental samples submitted to MI for analysis over the last 20+ years.

Retrieving Estimated Percentile Ranks

With your report, you were emailed a passcode and link enabling you to login to the Client Portal. Just enter basic information about the sample (e.g. contaminant concentrations) to aid in understanding the links between environmental conditions and microbial populations and you can retrieve estimates of the percentile ranks of your results based on those compiled in the MI database at no additional charge.





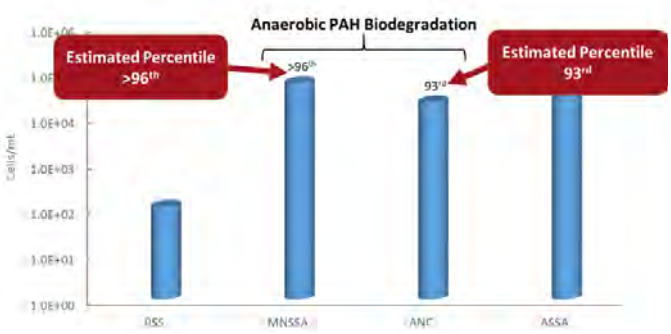
All site specific data will be treated as confidential and uploading is easy.

You can even upload chemical and geochemical data from EDDs. Just save as a Tab Delimited text file.

Example - Using Estimated Percentile for MNA Assessment at an MGP Site

CENSUS® qPCR was performed to quantify anaerobic naphthalene carboxylase (ANC) and naphthyl-2-methylsuccinate synthase (MNSSA) to assess anaerobic biodegradation of naphthalene and methyl-naphthalene under existing site conditions.

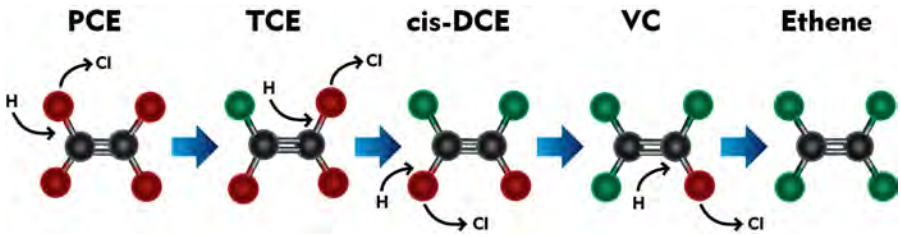
- Not only were ANC and MNSSA genes detected, but these functional genes responsible for anaerobic biodegradation of PAHs were present at concentrations "far better than average" based on the estimated percentile ranks.
- Demonstrating high concentrations of ANC and MNSSA gave an additional line of evidence indicating growth substantial populations of anaerobic PAH degraders and suggested a greater probability that monitored natural attenuation (MNA) will be successful.



DHC Interpretation

Dehalococcoides 16S rRNA gene (qDHC)

Under anaerobic conditions, tetrachloroethene (PCE) and trichloroethene (TCE) can undergo sequential reductive dechlorination through the daughter products *cis*-dichloroethene (*cis*-DCE) and vinyl chloride to nontoxic ethene (1,2).



While a number of bacterial cultures capable of utilizing PCE and TCE as growth supporting electron acceptors have been isolated (3-7), *Dehalococcoides* spp. may be the most important because they are the only bacterial group that has been isolated to date which is capable of complete reductive dechlorination of PCE to ethene (8). In fact, the presence of *Dehalococcoides* spp. has been associated with complete dechlorination to ethene at sites across North America and Europe (9).

Status	*Dehalococcoides spp.*	Observation
	**≥ 10^4** (cells/mL)	Lu et al. proposed that a concentration of 1 x 10^4 DHC cells/mL could be used as a screening criterion to identify sites where reductive dechlorination will yield a generally useful biodegradation rate (10). Similarly, in an internal study conducted with nearly 1000 groundwater samples obtained from sites across the US, ethene production was observed in approximately 80% of samples in which CENSUS® qDHC results were greater than or equal to 10^4 DHC cells/mL.
	**10^1 to < 10^4** (cells/mL)	When vinyl chloride reductase genes (See DHC functional genes discussion below) are also detected, complete reductive dechlorination of PCE and TCE to ethene may still occur even with moderate DHC concentrations. When the DHC population is below the 10^4 cells/mL criterion proposed by Lu et al. (10), project managers should carefully consider other site-specific data to determine whether subsurface conditions may be limiting reductive dechlorination. For example, the addition of an electron donor may be able to stimulate DHC growth and enhance anaerobic bioremediation.
	**< 10^1** (cells/mL)	DHC concentrations are low suggesting that complete reductive dechlorination of PCE and TCE to ethene is unlikely to occur under existing conditions. Enhanced anaerobic bioremediation options (biostimulation or bioaugmentation) may need to be considered.

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DHC Interpretation

DHC Functional Genes (*tce*A, *bvc*A, *vcr*A)

A "stall" where daughter products *cis*-DCE and vinyl chloride accumulate can occur at PCE- and TCE-impacted sites especially under MNA conditions. The accumulation of vinyl chloride, generally considered more carcinogenic than the parent compounds, is particularly problematic. Although elevated *Dehalococcoides* concentrations correspond to ethene production in numerous studies, the range of chlorinated ethenes metabolized and cometabolized varies among species and strains within the *Dehalococcoides* genus. For example, *Dehalococcoides ethenogenes* str. 195 metabolizes PCE, TCE, and *cis*-DCE and cometabolizes vinyl chloride (8) to produce ethene. Conversely, *Dehalococcoides* sp. CBDB1 utilizes PCE and TCE but does not cometabolize additional chloroethenes (11). Other *Dehalococcoides* strains, such as BAV1, GT and VS, are known to fully dechlorinate cis-DCE and VC to ethene (14,16,19). Quantification of reductive dehalogenase genes is used to more definitively confirm the potential for reductive dechlorination of TCE, cis-DCE, and vinyl chloride (12-15).

Functional Gene	Observation
TCE Reductase	
***tce*A gene**	The *tce*A gene encodes the enzyme responsible for reductive dechlorination of TCE to *cis*-DCE in some strains of *Dehalococcoides*. Absence of *tce*A does not preclude the potential for reductive dechlorination of TCE in the field since the *tce*A gene is not universally distributed among all DHC and is not present in other microorganisms capable of reductive dechlorination of TCE (e.g. *Dehalobacter*). Detection of the *tce*A gene provides an additional line of evidence indicating the potential for dechlorination of TCE.
Vinyl Chloride Reductase	
***bvc*A gene**	The *bvc*A gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of vinyl chloride to ethene by *Dehalococcoides* sp. str. BAV1 (16). Presence of *bvc*A gene indicates the potential for reductive dechlorination of VC to ethene. Absence of both *bvc*A and *vcr*A genes suggests VC may accumulate. An internal study with ~1,000 samples showed ethene production was observed in 80% of the samples that the DHC population was greater than or equal to 10^4 cells/mL. The *bvc*A gene was detected in over 50% of these samples. Van Der Zaan et al (17) noted that the bvcA gene was the only VC reductase gene detected at three of their sites. Alfred Spormann's laboratory at Stanford University (18) reported that the *bvc*A gene was the most abundant and active at the outflow of a PCE fed column study. This section of the column was in the DCE to VC stages of reductive dechlorination thus confirming the importance of the *bvc*A gene for complete reductive dechlorination.
***vcr*A gene**	The *vcr*A gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of *cis*-DCE and vinyl chloride by *Dehalococcoides* sp. strain VS (14). Presence of *vcr*A gene indicates the potential for reductive dechlorination of DCE and/or VC to ethene. Absence of both *bvc*A and *vcr*A genes suggest VC may accumulate. As with the *bvc*A gene, detection of the *vcr*A gene is associated with ethene production in internal studies (67%) and vinyl chloride reduction in independent studies (14, 17).

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DHC Interpretation

Reporting

Microbial Insights can provide a variety of data packages and reporting levels to suit the needs of any project. Data packages range from simple analytical reports with results only to more complex data packages that include a report narrative, analytical results, QC data, and supporting materials including all raw data and chain-of-custody documentation. The figure below shows our standard report and explains the way values are reported.

Microbial Insights, Inc.

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CENSUS

Client: Company Name
Project: Your Project Name

MI Project Number: Unique Laboratory Identifier
Date Received: Date Samples Arrived

Sample Information

Client Sample ID:		Sample A	Sample B	Sample C
Sample Date:		00/00/0000	00/00/0000	00/00/0000
Units:		cells/mL	cells/mL	cells/mL
Analyst:		Intials	Intials	Intials
Dechlorinating Bacteria				
Dehalococcoides spp.	DHC	**1.84E+05**	**2.76E+02**	**2.28E+01 (J)**
Functional Genes				
tceA Reductase	TCE	**6.00E+01**	**3.23E+01**	<4.00E-01
bvcA Reductase	BVC	**1.17E+04**	**1.81E+01**	<4.00E-01
vcrA Reducatase	VCR	**8.42E+04**	**1.74E+02**	<4.00E-01

"J" value
Result is an estimated value. This data qualifier (flag) is used when the target gene is detected but at a concentration or abundance below the practical quantification limit (PQL).

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

< value
The target gene was not detected at the limit of quantitation (LOQ) reported for that sample.

"I" value
QA Procedure indicated that the sample may have exhibited PCR inhibition. Although relatively rare, PCR inhibition can occur due to the presence of metals or humic acids at high concentrations in the sample.

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Quality Assurance

Microbial Insights' comprehensive Quality Assurance (QA) Program is the foundation of all laboratory analyses, ensuring that our clients receive high-quality analytical services that are timely, reliable, and meet their intended purpose in a cost effective manner. MI is committed to providing quality data that surpasses regulatory and industry standards, thus enabling the client to make well-informed decisions. MI maintains strict standard operating procedures and QA/QC measures throughout all of the analyses offered. The following Table details specific QA/QC procedures that are used for CENSUS.

QA/QC	Description
Date of Extraction	DNA and RNA extractions are performed the day the samples are received by MI to minimize the possibility of any changes to the microbial community prior to analysis.
Laboratory Method Blanks	An extraction blank (no sample added) is processed alongside each set of field samples from DNA extraction through CENSUS® analysis to ensure that cross contamination has not occurred. Although MI has never experienced this issue, the detection of the CENSUS® target (e.g. *Dehalococcoides*) in an extraction blank is direct evidence of cross contamination with a sample or contamination of a reagent and would invalidate the results. If this were to occur, MI would re-extract the sample. If not possible to re-extract, MI would contact the client immediately and notate it on the laboratory report.
Laboratory Control Samples (LCS)	A laboratory control sample (LCS) or positive control (target DNA) is included with each CENSUS® plate to confirm amplification and as a continuing calibration check.
Negative Controls	A negative control (no DNA) is included with each CENSUS plate to ensure that cross contamination has not occurred during amplification. As with the extraction blank, detection of CENSUS target (e.g. DHC) in a negative control is direct evidence of contamination and would invalidate the results. If this were to occur, MI would rerun the analysis.

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How to Use Estimated Percentile Ranks from the Microbial Insights Database

The MI Database and Client Portal

The Microbial Insights Database is the largest collection of field concentrations of key microorganisms and functional genes currently containing qPCR and QuantArray results for more than 32,000 unique groundwater, soil, and sediment samples from all 50 states and 33 countries worldwide. Driven by field samples, the database reflects the impacts of common contaminants, geochemical conditions, and site management practices on critical microbial populations.

With your report, you received a passcode enabling you to retrieve estimates of the percentile ranks of your results based on those compiled in the MI database at no additional charge. When accessing the database, you will be asked to provide background information about the sample (e.g. contaminant concentrations) to aid in understanding the links between environmental conditions and microbial populations. As with all client information provided to MI, site specific data will be treated as confidential.

Is that low, medium or high?

In practice, biodegradation depends not just on the presence but the actual concentrations of the contaminant degrading microorganisms. Simply put, qPCR and QuantArray results demonstrating high concentrations of target microorganisms or functional genes suggest in situ selection, enrichment and growth of those specific contaminant degraders and therefore a greater probability that monitored natural attenuation (MNA) or bioremediation will be successful.

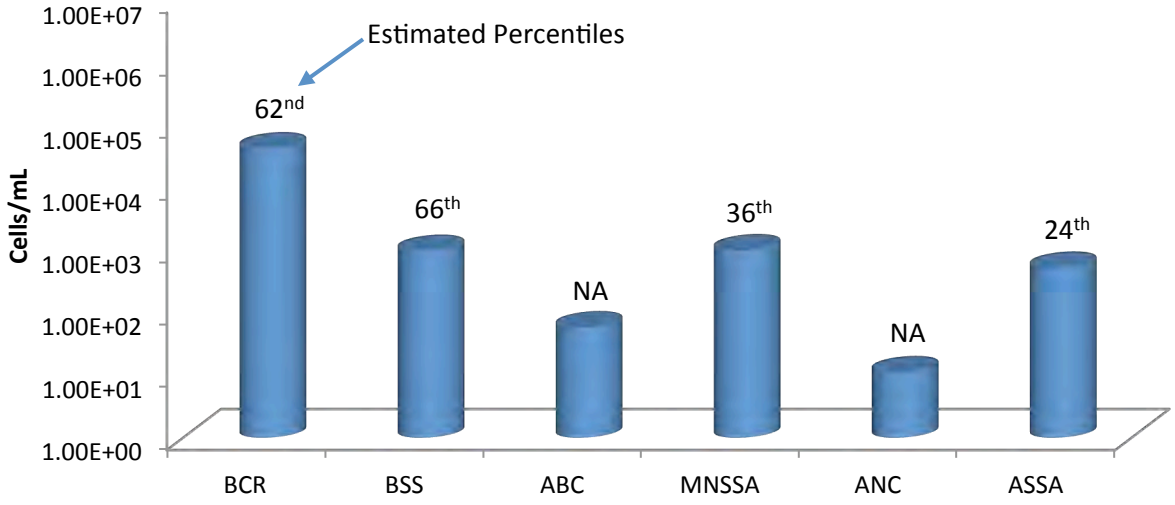
Is that a low, medium, or high concentration? The estimated percentile ranks retrieved from the MI Database answer that question by comparing your qPCR and QuantArray results to those of the literally thousands of other environmental samples submitted to MI for analysis over the last 20+ years.

Using the Estimated Percentile - Interpretation Examples

MNA Assessment – Petroleum Hydrocarbon Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between samples obtained from background and impacted wells. The estimated percentile ranks however provide an additional avenue for comparison and evaluation of treatment options as shown below.

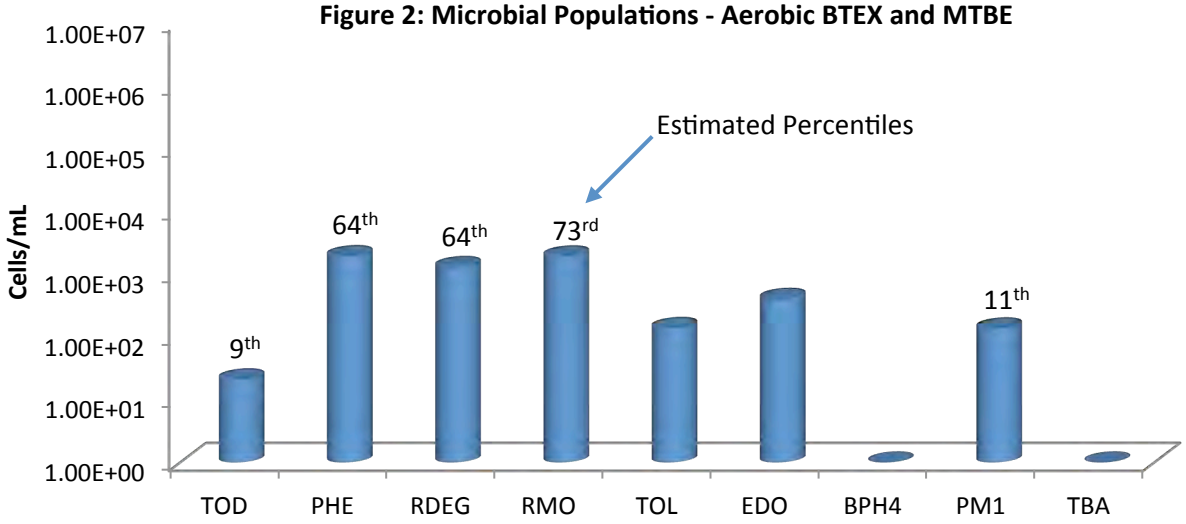
Figure 1: Microbial Populations - Anaerobic BTEX and PAHs



Anaerobic BTEX and PAH Biodegradation (Figure 1):

- With moderate concentrations of functional genes involved in anaerobic BTEX metabolism detected, the QuantArray-Petro® results were encouraging in terms of evaluating biodegradation potential under existing site conditions.
- More specifically, benzylsuccinate synthase (BSS) was detected on the order of nearly 10^3 cells/mL indicating the presence of a substantial population (66^{th} percentile) capable of anaerobic biodegradation of toluene and other alkyl substituted benzenes.
- Naphthyl-2-methylsuccinate synthase (MNSSA) and alkylsuccinate synthase (ASSA) genes were also detected indicating the potential for anaerobic biodegradation of 2-methylnaphthalene and normal alkanes.
- The concentration of MNSSA genes would be considered modest with an estimated percentile of 36^{th}.
- While the percentile rank for MNSSA would be "below average", a number of additional factors should be considered.
    - First, anaerobic hydrocarbon degraders are less prevalent than aerobic BTEX degraders and overall detection frequencies for many genes involved in anaerobic hydrocarbon biodegradation are less than 50%.
    - Therefore, the detection of genes like BSS, MNSSA, ASSA, anaerobic benzene carboxylase (ABC), and anaerobic naphthalene carboxylase (ANC) even at low concentrations is certainly noteworthy and inherently "better than average".
    - The estimated percentiles for all assays are based only on samples where the concentration of the target gene was greater than the practical quantitation limit (PQL).
    - For less commonly detected targets like many of the genes involved in anaerobic hydrocarbon biodegradation this is an especially important consideration.
    - Excluding samples where a gene target is below the PQL ensured that the median concentrations of less commonly detected targets would not be unduly biased low by the fact that the gene is not detected in most samples.
- Anaerobic benzene carboxylase (ABC) and naphthalene carboxylase (ANC) genes were also detected indicating the presence of bacterial populations capable of anaerobic biodegradation of benzene and naphthalene.
- For newly identified genes like ABC and ANC, estimated percentile ranks are not yet available due to the limited number of field samples that have been analyzed to date.
- However, like MNSSA and other genes involved in anaerobic hydrocarbon biodegradation, ABC and ANC detection frequencies are relatively low so the detection of these genes even at low concentrations should be considered when evaluating biodegradation potential under existing site conditions.

Figure 2: Microbial Populations - Aerobic BTEX and MTBE



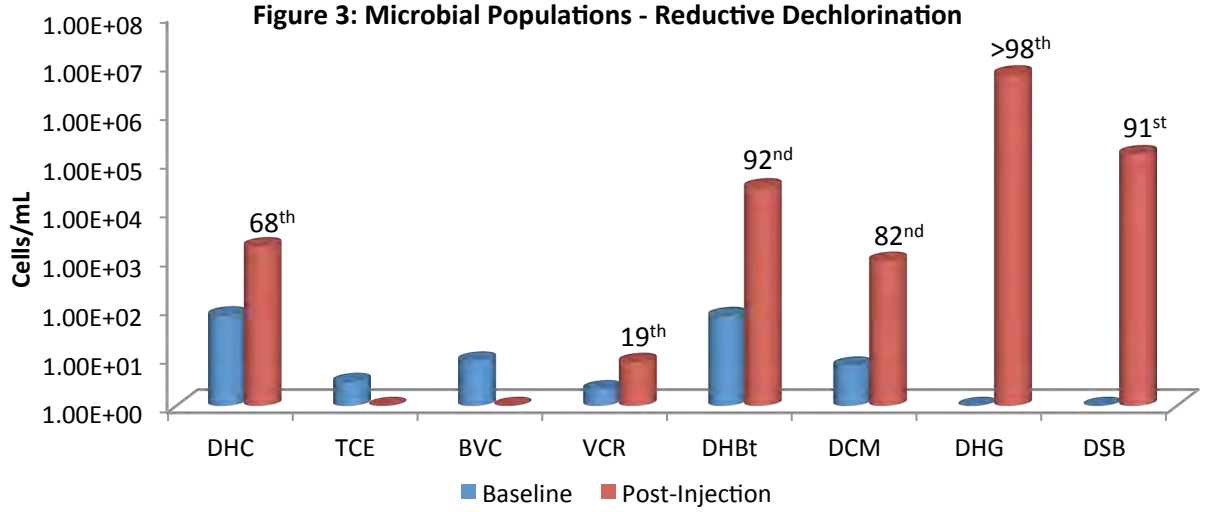
Aerobic BTEX and MTBE Biodegradation (Figure 2):

- With growing evidence that aromatic oxygenases function at low dissolved oxygen concentrations, aerobic BTEX biodegradation pathways should also be evaluated when considering MNA.
- Again, the QuantArray-Petro results were encouraging – genes encoding the first step in multiple pathways for aerobic BTEX biodegradation were detected indicating the presence of a diverse population of aerobic BTEX degraders.
- However, aerobic BTEX degraders are often considered ubiquitous. Therefore answering the question "Is that low, medium or high?" becomes especially important when evaluating aerobic BTEX biodegradation at petroleum hydrocarbon sites.
- In this case, the estimated percentile ranks of the concentrations of toluene/benzene monooxygenase (RMO and RDEG) and phenol hydroxylase (PHE) genes ranged from the 64th to 73rd percentile.
- In other words, the concentrations of RMO, RDEG, and PHE detected in this groundwater sample were greater than the concentrations detected in 64% to 73% of all other groundwater samples where these genes were analyzed and detected above the PQL.
- Aerobic BTEX degraders are common in the environment, but in this sample concentrations of toluene/benzene monooxygenase genes could be viewed as "better than average" when compared to the MI Database.

Biostimulation – Chlorinated Solvent Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between baseline and post-injection monitoring events as shown below (Figure 3). The estimated percentile ranks however provide an additional avenue for comparison and evaluation of remedy performance.

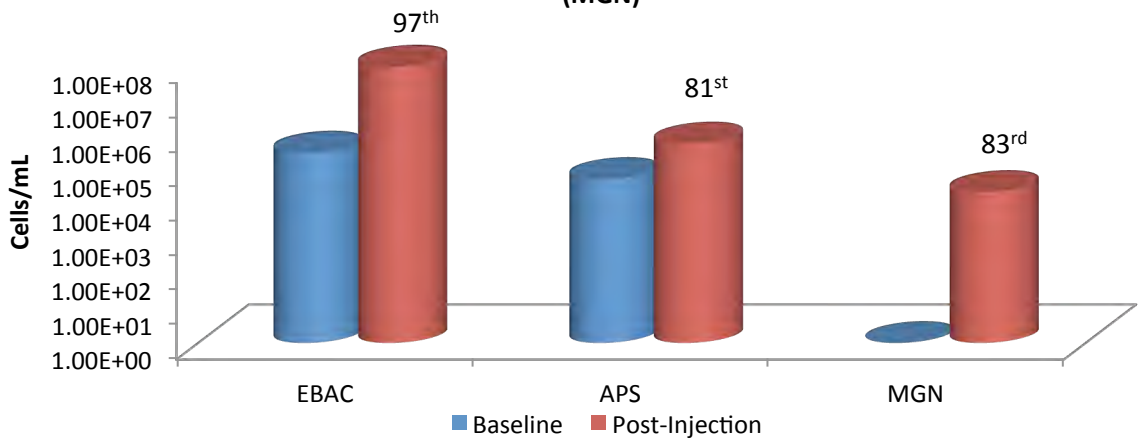
Figure 3: Microbial Populations - Reductive Dechlorination



- During the baseline groundwater sampling event, *Dehalococcoides* and vinyl chloride reductase genes were detected indicating the potential for complete reductive dechlorination of PCE and TCE to ethene.
- However, the *Dehalococcoides* concentration was well below the 10^4 cells/mL recommended by Lu et al. (2006) for generally effective rates of reductive dechlorination.
- Based on qPCR results as well as traditional groundwater monitoring, biostimulation with electron donor addition was selected as the site management plan.
- By the first monitoring event after injection, populations of halorespiring bacteria had increased substantially in response to electron donor addition.
    - *Dehalobacter* populations increased by more than two orders of magnitude to post-injection concentrations greater than 10^4 cells/mL (92^{nd} percentile).
    - *Dehalogenimonas* (10^6 cells/mL) and *Desulfitobacterium* (10^5 cells/mL) which had not been detected prior electron donor addition were present at concentrations greater than observed in over 90% of other groundwater samples where these halorespiring bacteria were detected.
- After injection, *Dehalococcoides* populations increased by more than an order of magnitude to a concentration of over 10^3 cells/mL (68^{th} percentile) demonstrating growth of this key group of halorespiring bacteria.
- Despite a substantial increase and a "better than average" concentration, the *Dehalococcoides* population was still below the 10^4 cells/mL threshold and vinyl chloride reductase gene copies were low (19^{th} percentile).
    - In terms of electron donors and acceptors, the metabolic capabilities of *Dehalococcoides* are rather specialized (hydrogen utilizing obligate halorespiring bacteria) so the median concentration is low. With a low median concentration across the database, a "better than average" *Dehalococcoides* concentration in a given sample may not exceed the 10^4 cells/mL threshold established for effective reductive dechlorination (Lu et al. 2006) and ethene production (Microbial Insights, unpublished data).

- In this case, the initial growth of *Dehalococcoides* was substantial but may have been somewhat hindered by competition with sulfate reducing bacteria (Figure 4 below).
    - The baseline population of sulfate reducing bacteria was moderate (10^4 cells/mL; 63rd percentile). Consistent with an observed decreased in dissolved sulfate concentrations, populations of sulfate reducing bacteria increased and were detected at a relatively high concentration (81st percentile) after electron donor addition.
    - After injection, methanogen populations also increased to a relatively high concentration (83rd percentile) suggesting generation of methanogenic conditions.
- With sulfate depletion and generation of highly anaerobic conditions more conducive to reductive dechlorination, *Dehalococcoides* populations may continue to increase and exceed the 10^4 *Dehalococcoides* cells/mL threshold in subsequent monitoring events.
- Overall, QuantArray analysis conclusively demonstrated that electron donor addition stimulated growth of halorespiring bacteria with the estimated percentiles retrieved from the MI Database providing the "low, medium or high" perspective to the observed changes in microbial populations.

Figure 4: Total Bacteria (EBAC), Sulfate Reducering Bacteria (APS) and Methanogens (MGN)



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☐ More samples to follow
☒ No Additional Samples

Report Type: ☒ Standard (default) ☐ Microbial Insights Level III raw data(15% surcharge) ☐ Microbial Insights Level IV (25% surcharge) ☐ Comprehensive Interpretive(15%) ☐ Historical Interpretive (30%)
EDD type: ☐ Microbial Insights Standard (default) ☐ All other available EDDs (5% surcharge) Specify EDD Type:

Please contact us with any questions about the analyses or filling out the COC at (865) 573-8188 (9:00 am to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com

Sample Information					Analyses					CENSUS: Please select the target organism/gene																							
MI ID (Laboratory Use Only)	Sample Name	Date Sampled	Time Sampled	Matrix	PLFA	DGGE+3ID	DGGE+5ID	QuantArray Chlor	QuantArray Petro	DHC (Dehalococcoides)	DHC Functional genes (bvc, tce, vcr)	DHBt (Dehalobacter)	DSM (Desulfuromonas)	DSB (Desulfitobacterium)	EBAC (Total)	SRB (Sulfate Reducing Bacteria-APS)	MGN (Methanogens)	MOB (Methanotrophs)	SMMO	DNF (Denitrifiers-nirS and nirK)	AOB (ammonia oxidizing bacteria)	PM1 (MTBE aerobic)	RMO (Toluene Monooxygenase)	RDEG (Toluene Monooxygenase)	PHE (Phenol Hydroxylase)	NAH (Napthalene-aerobic)	BSSA (Toluene/Xylene-Anaerobic)	add. qPCR:	add. qPCR:	RNA (Expression Option)*	Other:	Other:	Other:
105RC1	35AWW11_032420	3/24/20	0745	WG							X	X																					
2	35AWW20_032420	3/24/20	0905	WG							X	X																					
3	LHSMW07_032420	3/24/20	1015	WG							X	X																					
4	35AWW06_032420	3/24/20	1110	WG							X	X																					
5	35AWW23_032420	3/24/20	1205	WG							X	X																					
6	35AWW19_032420	3/24/20	1300	WG							X	X																					

Relinquished by: Scott Deering 3/24/20 1430
Received by: AJ Hussak Date 3/25/20 0945

It is vital that chain of custody is filled out correctly & that all relative information is provided.
Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable.

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

WorkOrder: HS20040727

LHAAP-58

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

17-Apr-2020

RIGHT SOLUTIONS | RIGHT PARTNER

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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April 17, 2020

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS20040727**

Laboratory Results for: **LHAAP-58**

Dear Marcia,

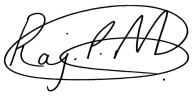
ALS Environmental received 1 sample(s) on Apr 08, 2020 for the analysis presented in the following report.

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: 17-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS20040727

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20040727-01	35AWW06_032420	Groundwater		07-Apr-2020 09:00	08-Apr-2020 09:20	☐

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ALS Houston, US Date: 17-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS20040727

CASE NARRATIVE

Work Order Comments

- The analysis for Volatile Fatty Acids was subcontracted to ALS Environmental in Rochester NY. Final report attached.

- Samples were sent directly by the client to ALS Rochester. No chain was received in Houston Lab

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ALS Houston, US Date: 17-Apr-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06_032420
Collection Date: 07-Apr-2020 09:00

ANALYTICAL REPORT
WorkOrder:HS20040727
Lab ID:HS20040727-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS	**Method:NA**							Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	17-Apr-2020 13:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20040727

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R360165 (0)	**Test Name :** SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS				**Matrix:** Groundwater	
HS20040727-01	35AWW06_032420	07 Apr 2020 09:00			17 Apr 2020 13:37	1

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Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: **HS20040727**

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

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CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2020	31-Dec-2020
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	T104704231-19-25	30-Apr-2020

April 17, 2020 Service Request No:R2002879

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

Laboratory Results for: LHAAP / Site 58

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory April 08, 2020
For your reference, these analyses have been assigned our service request number **R2002879.**

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7471. You may also contact me via email at Brady.Kalkman@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Brady Kalkman
Project Manager

CC: Joni Blankfield

ADDRESS 1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
PHONE +1 585 288 5380 | FAX +1 585 288 8475
ALS Group USA, Corp.
dba ALS Environmental

ALS Environmental
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ALS Environmental—Rochester Laboratory
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Phone (585) 288-5380 Fax (585) 288-8475
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ALS Environmental

Client: ALS Environmental - US
Project: LHAAP / Site 58
Sample Matrix: Water

Service Request: R2002879
Date Received: 04/08/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

One water sample was received for analysis at ALS Environmental on 04/08/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivoa GC:

No significant anomalies were noted with this analysis.

Approved by _____ Date 04/17/2020

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Sample Receipt Information

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client: ALS Environmental - US **Service Request:**R2002879
Project: LHAAP / Site 58/NW01312.0150

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
R2002879-001	35AWW06_040720	4/7/2020	0900

bhate ENVIRONMENTAL CONSTRUCTION EMBASY

Page: of

Project/Phase No: NWO1312.0150

COC Number(1):

LIMS Number:

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Sample Analysis Requested (5): Number of containers	Volatile Fatty Acids										Quality Assurance Samples (6): Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35AWW06_040720	07 Apr 2020	0900	-		N	WG	1	X													
			-																		
			-																		
			-																		
			-																		
			-																		
			-																		
			-																		
			-																		

COMMENTS:

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received By (Signed)	Date	Time
1. Scott Beesinger	4/7/20	1430	1.	3-8-2020	09:20
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Shipped No.:

Method of Shipment:

Fed Ex Airbill Number:

Analytical Lab: ALS 10450 Stancliff Rd, Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

le Analysis Requested: Analytical method requested and number of containers provided for each.

ty assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipmer

R2002879 5
ALS Laboratory Group
LHAAP / Site 58

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00997883

Cooler Receipt and Preservation Check Form

R2002879 5
ALS Laboratory Group
LHAAP / Site 68

Project/Client Blade Folder Number

Cooler received on 4-8-2020 by: JE

COURIER: ALS UPS (FEDEX) VELOCITY CLIENT

1	Were **Custody seals** on outside of cooler?	(Y)	N
2	**Custody papers** properly completed (ink, signed)?	(Y)	N
3	Did all bottles arrive in good **condition** (unbroken)?	(Y)	N
4	Circle: (**Wet Ice**) **Dry Ice** **Gel packs** present?	(Y)	N

5a	**Perchlorate** samples have required headspace?	Y	N	(NA)
5b	Did VOA vials, Alk,or Sulfide have sig* **bubbles**?	Y	N	(NA)
6	Where did the bottles originate?	(ALS/ROC)	CLIENT	
7	Soil VOA received as: Bulk Encore 5035set	(NA)		

3. Temperature Readings Date: 4820 20 Time: 09:41 ID: IR#7 (IR#10) From: (Temp Blank) Sample Bottle

Observed Temp (°C)	2.4						
Within 0-6°C?	(Y) N	Y N	Y N	Y N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed (described below) Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R-002 by JE on 4821 at 09:44
5035 samples placed in storage location: _____ by _____ on _____ at _____ within 48 hours of sampling? Y N

Cooler Breakdown/Preservation Check**: Date: 4/8/2020 Time: 1330 by: JW

9. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? (YES) NO
10. Did all bottle labels and tags agree with custody papers? (YES) NO
11. Were correct containers used for the tests indicated? (YES) NO
12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO (NA)
13. Air Samples: Cassettes / Tubes Intact with MS? Canisters Pressurized Tedlar® Bags Inflated (NA)

pH	Lot of test paper	Reagent	Preserved? Yes	Preserved? No	Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
≥12		NaOH								
≤2		HNO_3								
≤2		H_2SO_4								
<4		$NaHSO_4$								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add $Na_2S_2O_3$ (625, 608, CN), ascorbic (phenol).					
		$Na_2S_2O_3$								
		ZnAcetate	-	-			**VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).			
		HCl	**	**						

Bottle lot numbers: 91119-01
Explain all Discrepancies/ Other Comments:

HPROD	BULK
HTR	FLDT
SUB	HGFB
ALS	LL3541

els secondary reviewed by: _____
Secondary Review: _____

*Significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

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ALS Group USA, Corp.
dba ALS Environmental

Internal Chain of Custody Report

Client: ALS Laboratory Group **Service Request:** R2002879
Project: LHAAP / Site 58/NW01312.0150

Bottle ID	Methods	Date	Time	Sample Location / User	Disposed On
R2002879-001.01					
	Organic Acids				
		4/8/2020	1332	R-002 / GLAFORCE	
		4/8/2020	1332	SMO / GLAFORCE	
		4/9/2020	0729	In Lab / AFELSER	
		4/9/2020	1302	R-002 / AFELSER	

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Miscellaneous Forms

ALS Environmental—Rochester Laboratory
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ALS Environmental

REPORT QUALIFIERS AND DEFINITIONS

U	Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.
J	Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).
B	Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.
E	Inorganics- Concentration is estimated due to the serial dilution was outside control limits.
E	Organics- Concentration has exceeded the calibration range for that specific analysis.
D	Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.
*	Indicates that a quality control parameter has exceeded laboratory limits. Under the ñNotesò column of the Form I, this qualifier denotes analysis was performed out of Holding Time.
H	Analysis was performed out of hold time for tests that have an ñimmediateò hold time criteria.
#	Spike was diluted out.
+	Correlation coefficient for MSA is <0.995.
N	Inorganics- Matrix spike recovery was outside laboratory limits.
N	Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.
S	Concentration has been determined using Method of Standard Additions (MSA).
W	Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.
P	Concentration >40% difference between the two GC columns.
C	Confirmed by GC/MS
Q	DoD reports: indicates a pesticide/Aroclor is not confirmed (Ó100% Difference between two GC columns).
X	See Case Narrative for discussion.
MRL LOQ	Method Reporting Limit. Also known as: Limit of Quantitation (LOQ) The lowest concentration at which the method analyte may be reliably quantified under the method conditions.
MDL	Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).
LOD	Limit of Detection. A value at or above the MDL which has been verified to be detectable.
ND	Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

Rochester Lab ID # for State Certifications[1]

Connecticut ID # PH0556	Maine ID #NY0032	Pennsylvania ID# 68-786
Delaware Approved	New Hampshire ID # 2941	Rhode Island ID # 158
DoD ELAP #65817	New York ID # 10145	Virginia #460167
Florida ID # E87674	North Carolina #676	

[1] Analyses were performed according to our laboratoryôs NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.
dba ALS Environmental

Client: ALS Environmental - US **Service Request:** R2002879
Project: LHAAP / Site 58/NW01312.0150

Non-Certified Analytes

Certifying Agency: New York Department of Health

Method	Matrix	Analyte
Organic Acids	Water	Acetic Acid
Organic Acids	Water	Butanoic Acid (Butyric Acid)
Organic Acids	Water	Lactic Acid
Organic Acids	Water	Propionic Acid
Organic Acids	Water	Pyruvic Acid

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client:	ALS Environmental - US	**Service Request:**	R2002879
Project:	LHAAP / Site 58/NW01312.0150		

Sample Name:	35AWW06_040720	**Date Collected:**	04/7/20
Lab Code:	R2002879-001	**Date Received:**	04/8/20
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

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INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	

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Sample Results

ALS Environmental—Rochester Laboratory
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Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Semivolatile Organic Compounds by GC

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2002879
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	04/07/20 09:00
Sample Matrix:	Water	**Date Received:**	04/08/20 09:20
Sample Name:	35AWW06_040720	**Units:**	mg/L
Lab Code:	R2002879-001	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	04/09/20 15:44	
Acetic Acid	**1.5 J**	4.0	2.0	0.56	1	04/09/20 15:44	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	04/09/20 15:44	
Lactic Acid	ND U	2.0	1.0	0.14	1	04/09/20 15:44	
Propionic Acid	ND U	2.0	1.0	0.19	1	04/09/20 15:44	

QC Summary Forms

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Semivolatile Organic Compounds by GC

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ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	R2002879
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	04/07/20
Sample Matrix:	Water	**Date Received:**	04/08/20
		Date Analyzed:	04/9/20

Duplicate Matrix Spike Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Sample Name:	35AWW06_040720	**Units:**	mg/L
Lab Code:	R2002879-001	**Basis:**	NA
Analysis Method:	Organic Acids		

		Matrix Spike RQ2003624-05			Duplicate Matrix Spike RQ2003624-06					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	ND U	1.70	2.00	85	1.55	2.00	78	73-122	9	30
Acetic Acid	1.5 J	20.4	20.1	94	21.0	20.1	97	80-130	3	30
Butanoic Acid (Butyric Acid)	ND U	19.4	20.1	97	20.8	20.1	104	86-128	7	30
Lactic Acid	ND U	20.1	20.0	100	18.7	20.0	93	81-114	7	30
Propionic Acid	ND U	20.1	20.0	100	21.1	20.0	105	63-153	5	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

eries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58/NW01312.0150
Sample Matrix: Water

Service Request: R2002879
Date Analyzed: 04/09/20 12:35

Method Blank Summary

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Sample Name: Method Blank
Lab Code: RQ2003624-02

Instrument ID:R-HPLC-05
File ID:I:\ACQUDATA\hplc05\data\040920\A0004923.D\

Analysis Method: Organic Acids

Analysis Lot:676686

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	RQ2003624-03	I:\ACQUDATA\hplc05\data\040920\A0004924.D\	04/09/20 13:38
Duplicate Lab Control Sample	RQ2003624-04	I:\ACQUDATA\hplc05\data\040920\A0004925.D\	04/09/20 14:41
35AWW06_040720	R2002879-001	I:\ACQUDATA\hplc05\data\040920\A0004926.D\	04/09/20 15:44
35AWW06_040720MS	RQ2003624-05	I:\ACQUDATA\hplc05\data\040920\A0004927.D\	04/09/20 16:47
35AWW06_040720DMS	RQ2003624-06	I:\ACQUDATA\hplc05\data\040920\A0004928.D\	04/09/20 17:47

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2002879
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	mg/L
Lab Code:	RQ2003624-02	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	04/09/20 12:35	
Acetic Acid	ND U	4.0	2.0	0.56	1	04/09/20 12:35	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	04/09/20 12:35	
Lactic Acid	ND U	2.0	1.0	0.14	1	04/09/20 12:35	
Propionic Acid	ND U	2.0	1.0	0.19	1	04/09/20 12:35	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58/NW01312.0150
Sample Matrix: Water

Service Request: R2002879
Date Analyzed: 04/09/20 13:38

Lab Control Sample Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Sample Name: Lab Control Sample
Lab Code: RQ2003624-03

Instrument ID:R-HPLC-05
File ID:I:\ACQUDATA\hplc05\data\040920\A0004924.D\

Analysis Method: Organic Acids

Analysis Lot:676686

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	RQ2003624-02	I:\ACQUDATA\hplc05\data\040920\A0004923.D\	04/09/20 12:35
Duplicate Lab Control Sample	RQ2003624-04	I:\ACQUDATA\hplc05\data\040920\A0004925.D\	04/09/20 14:41
35AWW06_040720	R2002879-001	I:\ACQUDATA\hplc05\data\040920\A0004926.D\	04/09/20 15:44
35AWW06_040720MS	RQ2003624-05	I:\ACQUDATA\hplc05\data\040920\A0004927.D\	04/09/20 16:47
35AWW06_040720DMS	RQ2003624-06	I:\ACQUDATA\hplc05\data\040920\A0004928.D\	04/09/20 17:47

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58/NW01312.0150
Sample Matrix: Water

Service Request: R2002879
Date Analyzed: 04/09/20

Duplicate Lab Control Sample Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Units:mg/L
Basis:NA

		Lab Control Sample			Duplicate Lab Control Sample					
		RQ2003624-03			RQ2003624-04					
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	Organic Acids	1.65	2.00	83	1.71	2.00	85	73-122	3	30
Acetic Acid	Organic Acids	20.7	20.1	103	21.0	20.1	105	80-130	1	30
Butanoic Acid (Butyric Acid)	Organic Acids	18.7	20.1	93	20.3	20.1	101	86-128	8	30
Lactic Acid	Organic Acids	18.5	20.0	92	18.4	20.0	92	81-114	<1	30
Propionic Acid	Organic Acids	21.6	20.0	108	22.0	20.0	110	63-153	2	30

Raw Data

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2002879
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	04/07/20 09:00
Sample Matrix:	Water	**Date Received:**	04/08/20 09:20
Sample Name:	35AWW06_040720	**Units:**	mg/L
Lab Code:	R2002879-001	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	04/09/20 15:44	
Acetic Acid	**1.5 J**	4.0	2.0	0.56	1	04/09/20 15:44	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	04/09/20 15:44	
Lactic Acid	ND U	2.0	1.0	0.14	1	04/09/20 15:44	
Propionic Acid	ND U	2.0	1.0	0.19	1	04/09/20 15:44	

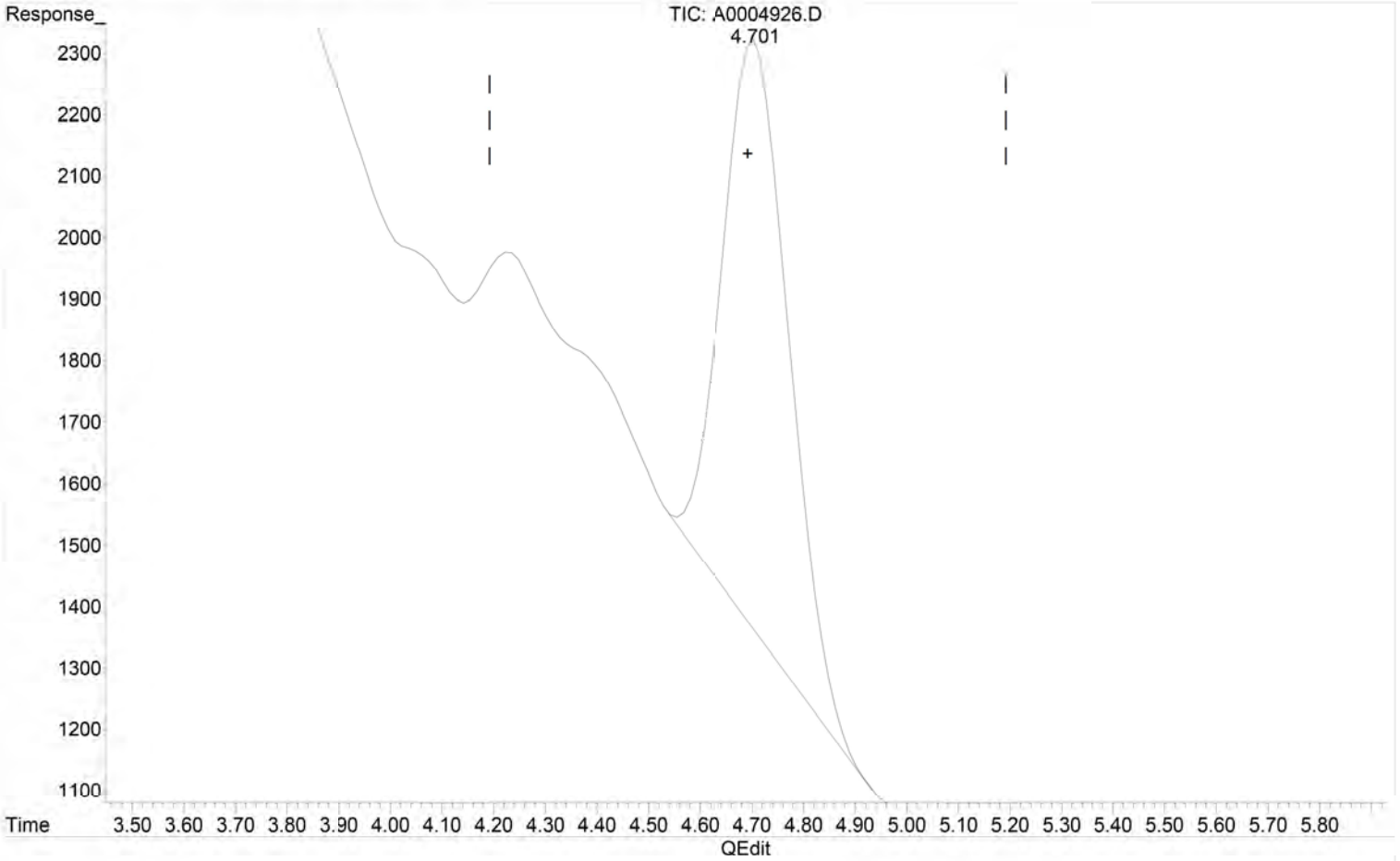
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004926.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 15:44:31
Operator : A.Felser
Sample : R2002879-001
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.701min 1.548 ppm m
response 86766

Manual Integration:
After
Peak not found.
04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

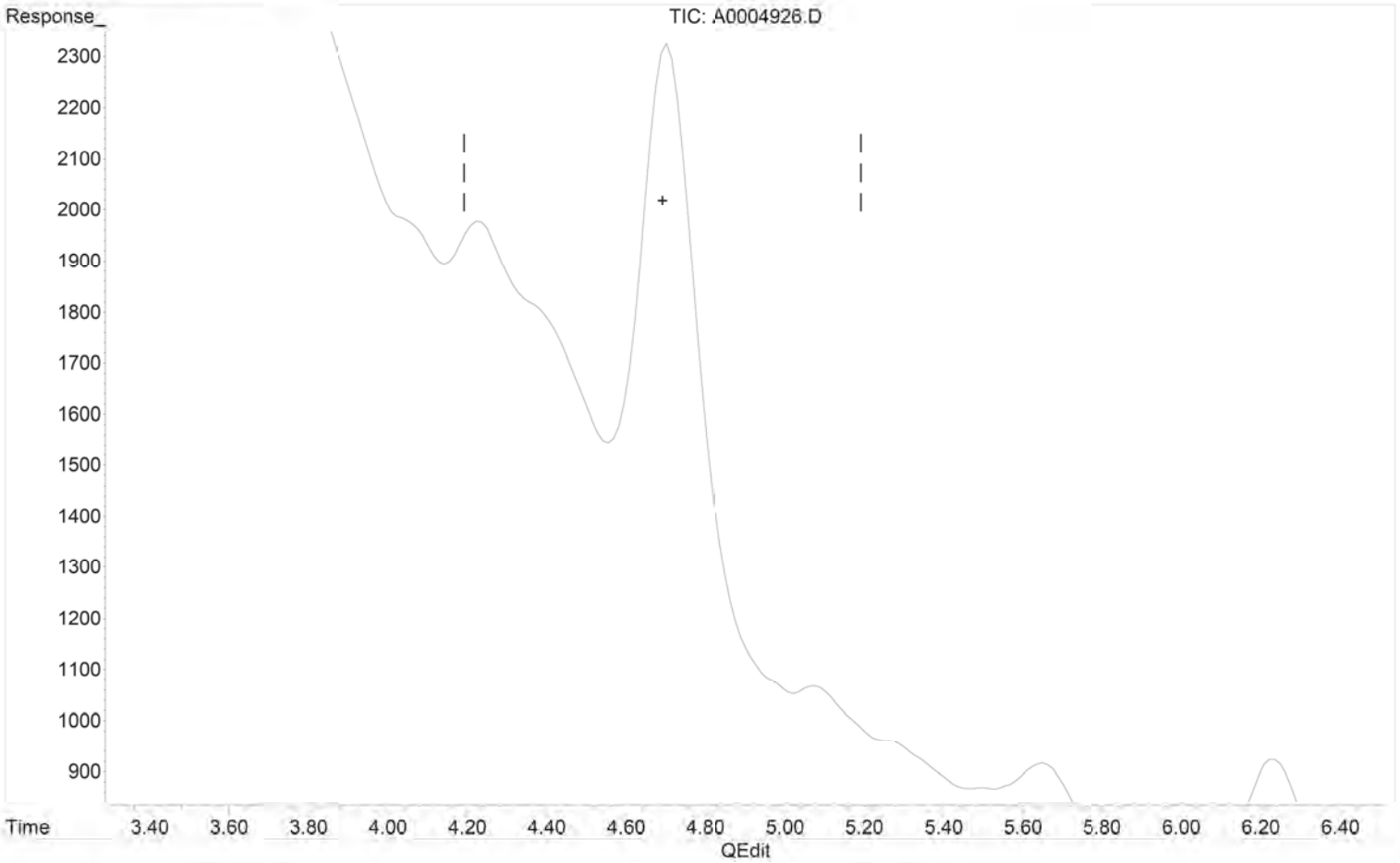
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004926.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 15:44:31
Operator : A.Felser
Sample : R2002879-001
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.705min -0.044 ppm

response -2459

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004926.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 15:44:31
Operator : A.Felser
Sample : R2002879-001
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	0.000	0	N.D.	ppm	
2) T	Pyruvic acid	0.000	0	N.D.	ppm	
3) T	Lactic Acid	0.000	0	N.D.	ppm	
4) T	Acetic Acid	4.701	86766	1.548	ppm	m
5) T	Propionic Acid	0.000	0	N.D.	ppm	
6) T	Butyric Acid	0.000	0	N.D.	ppm	

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

RIGHT SOLUTIONS | RIGHT PARTNER

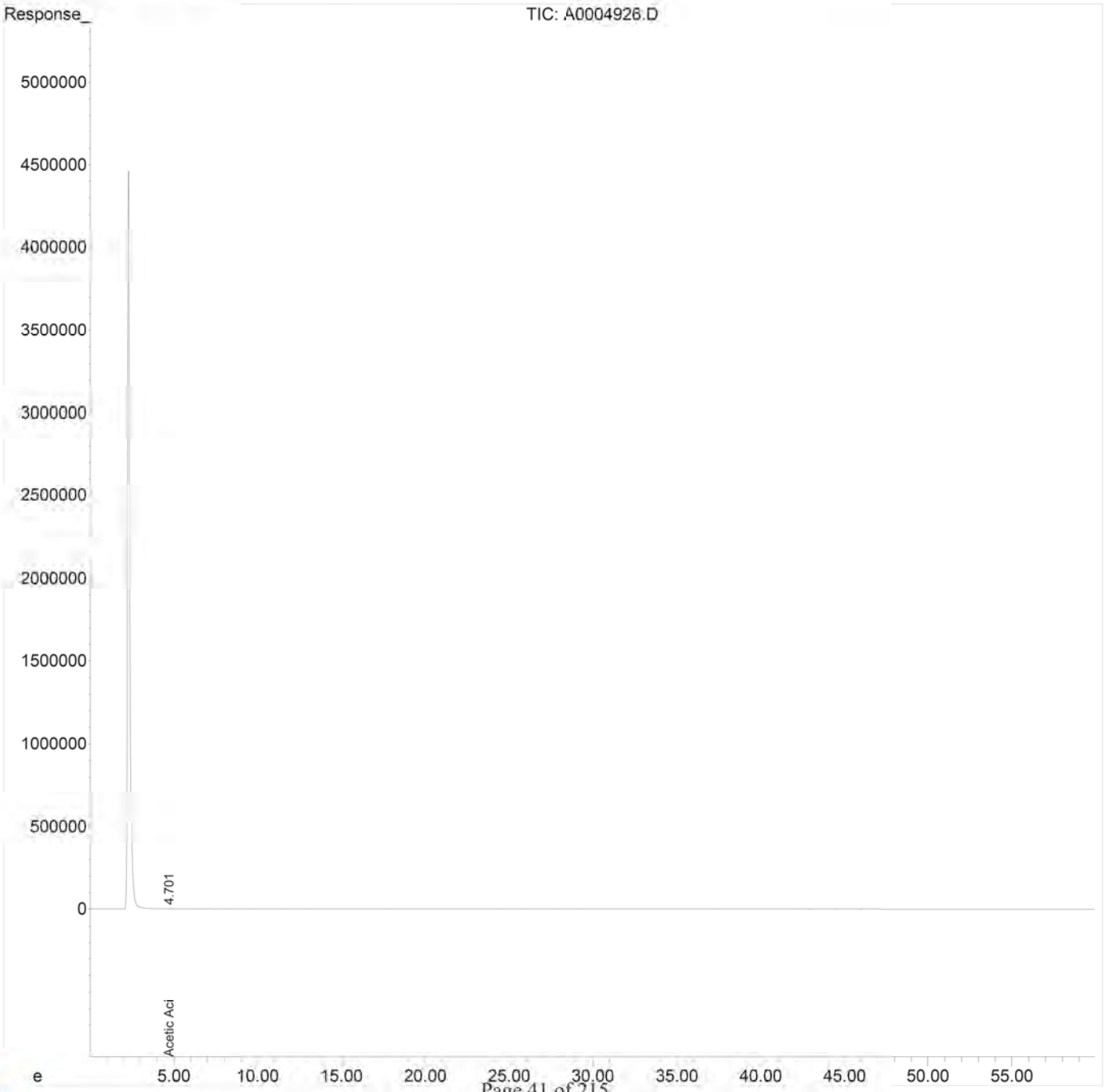
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004926.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 15:44:31
Operator : A.Felser
Sample : R2002879-001
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004923.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 12:35:28
Operator : A.Felser
Sample : MB
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 15:21:30 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	0.000	0	N.D.	ppm	
2) T	Pyruvic acid	0.000	0	N.D.	ppm	
3) T	Lactic Acid	0.000	0	N.D.	ppm	
4) T	Acetic Acid	0.000	0	N.D.	ppm	
5) T	Propionic Acid	0.000	0	N.D.	ppm	d
6) T	Butyric Acid	0.000	0	N.D.	ppm	

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

RIGHT SOLUTIONS | RIGHT PARTNER

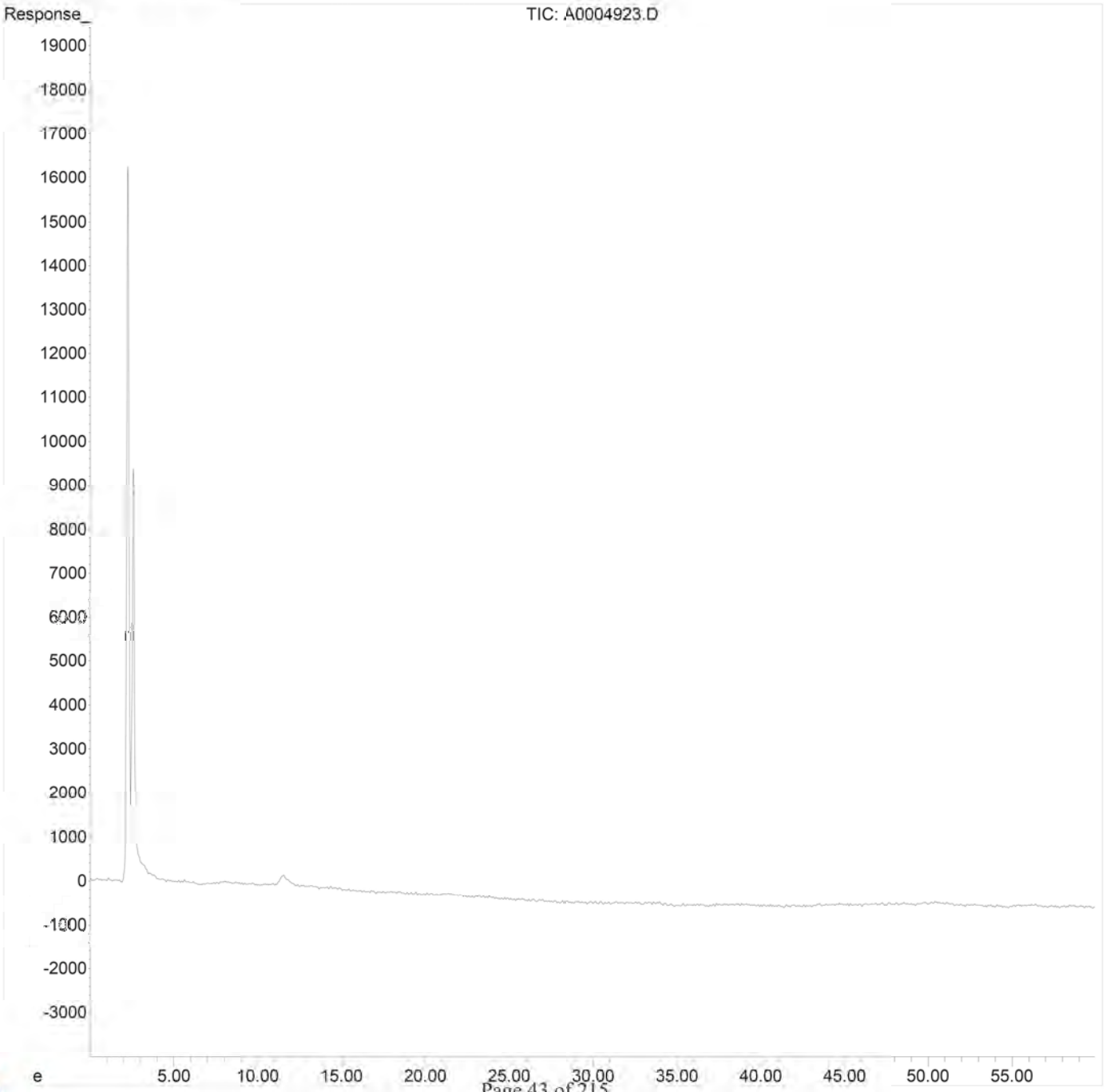
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004923.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 12:35:28
Operator : A.Felser
Sample : MB
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 15:21:30 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

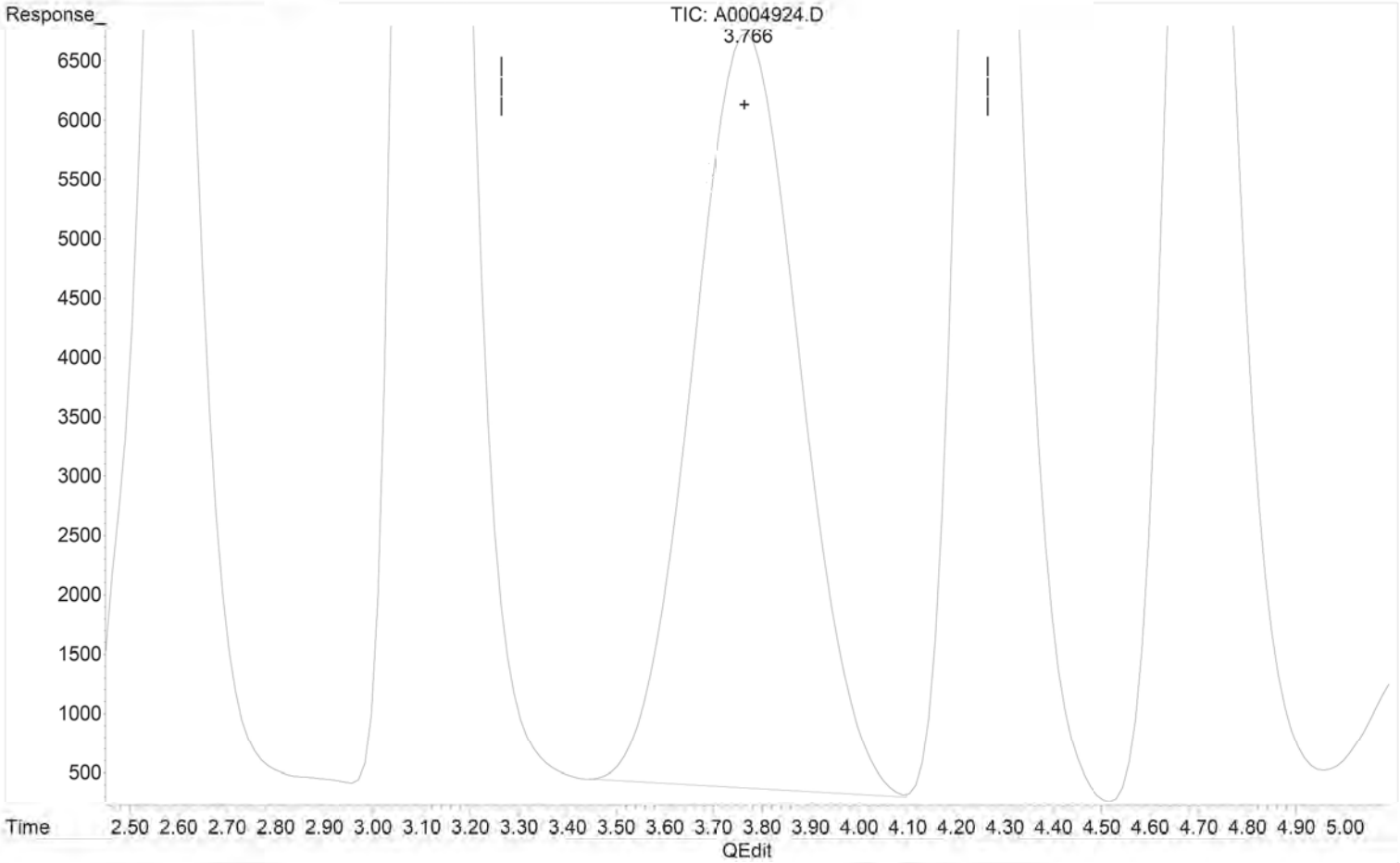
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004924.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 13:38:30
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 15:22:04 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.766min 1.650 ppm m

response 975965

Manual Integration:

After

Poor integration.

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

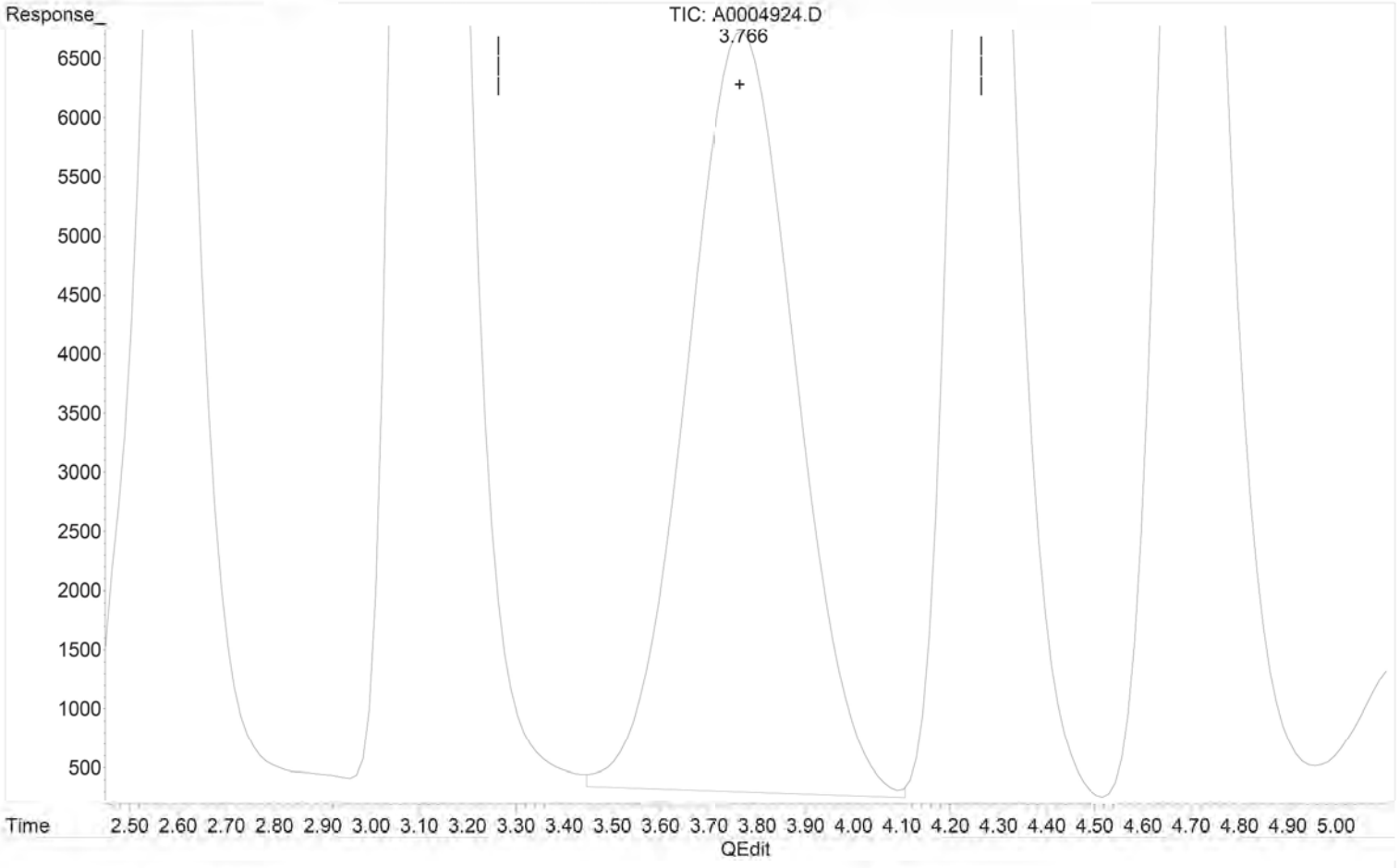
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004924.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 13:38:30
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 15:22:04 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.771min 1.699 ppm

response 1004913

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

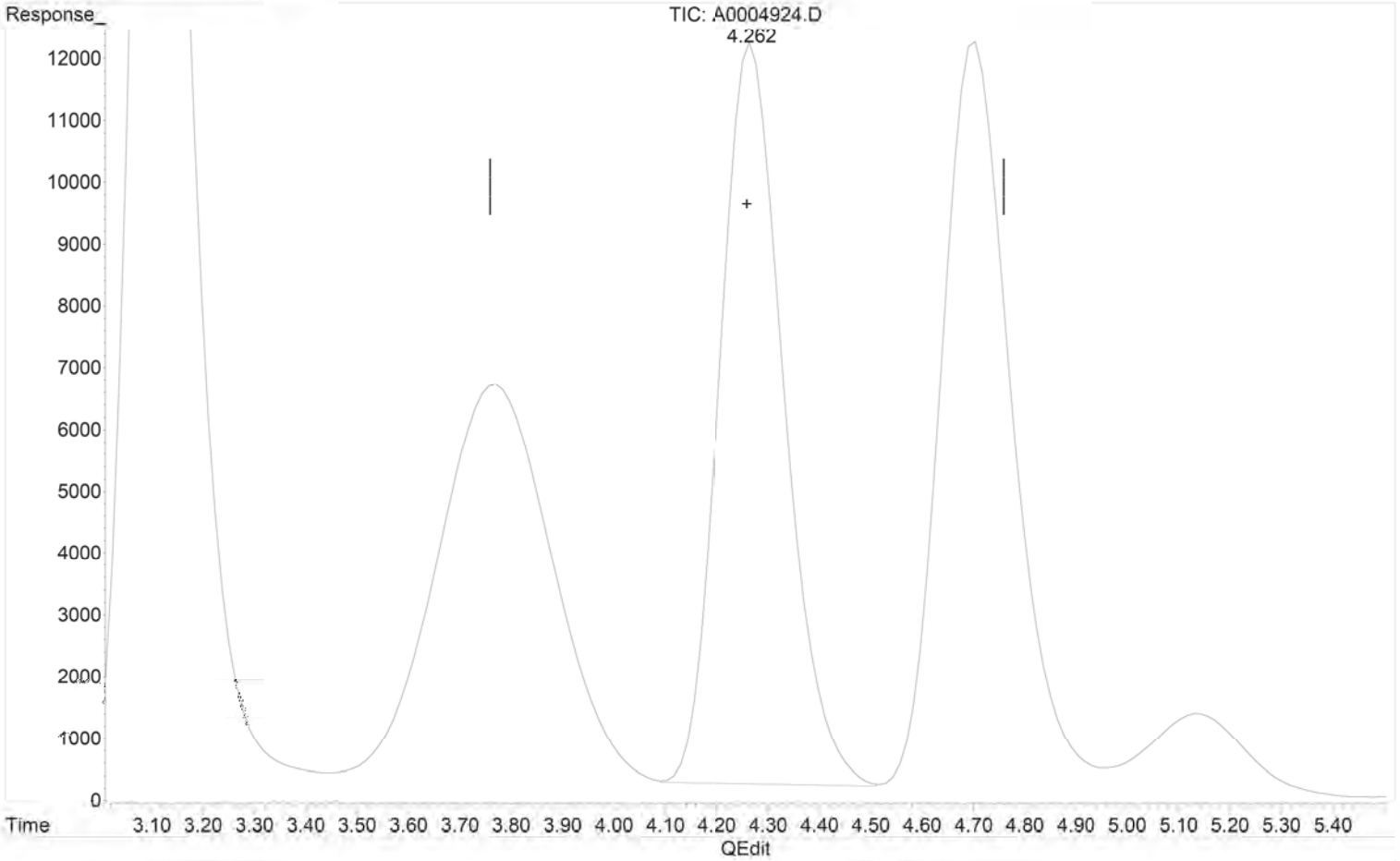
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004924.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 13:38:30
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 15:22:04 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.262min 18.467 ppm m

response 1041853

Manual Integration:

After

Poor integration.

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

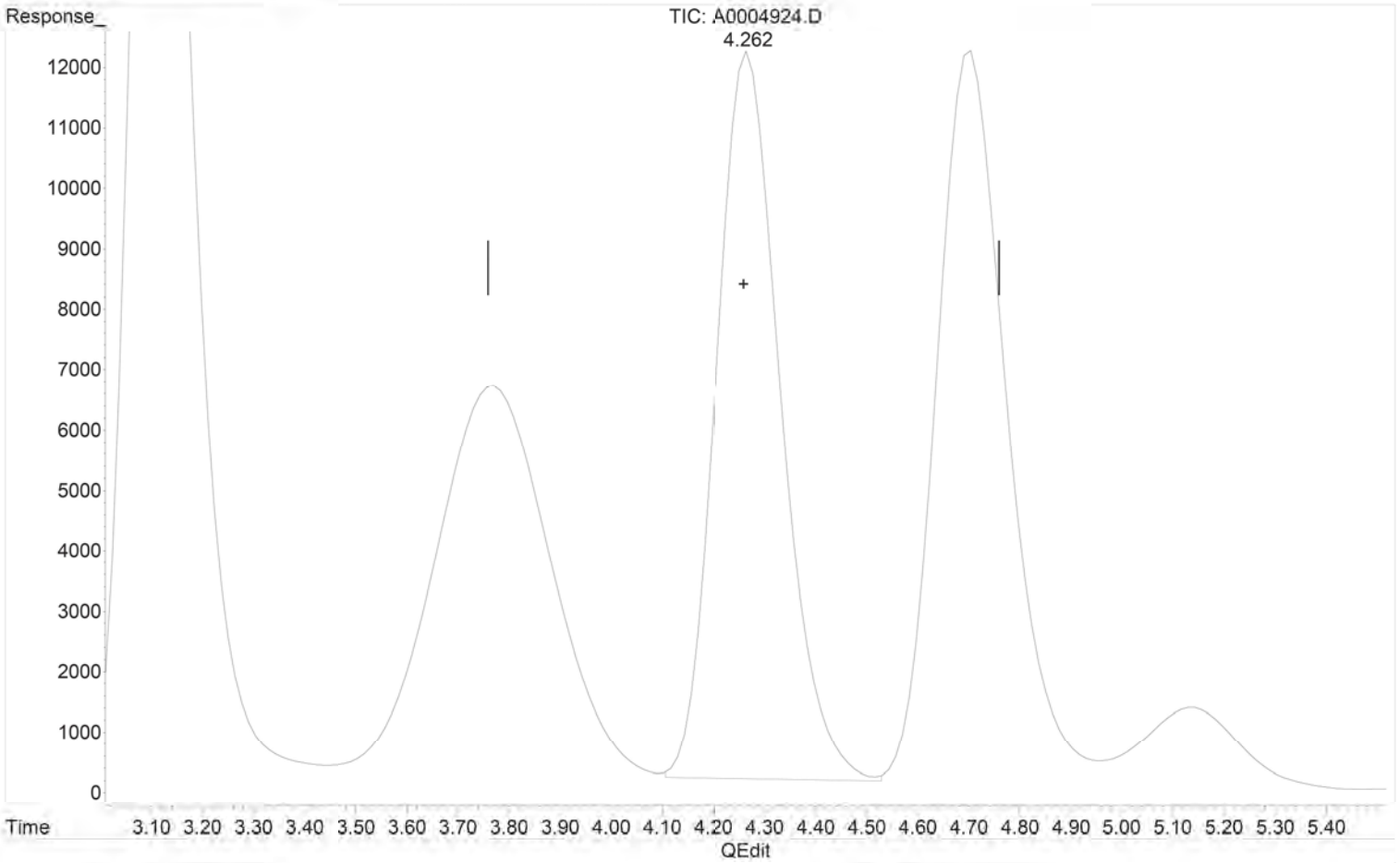
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004924.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 13:38:30
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 15:22:04 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.269min 18.642 ppm

response 1051720

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

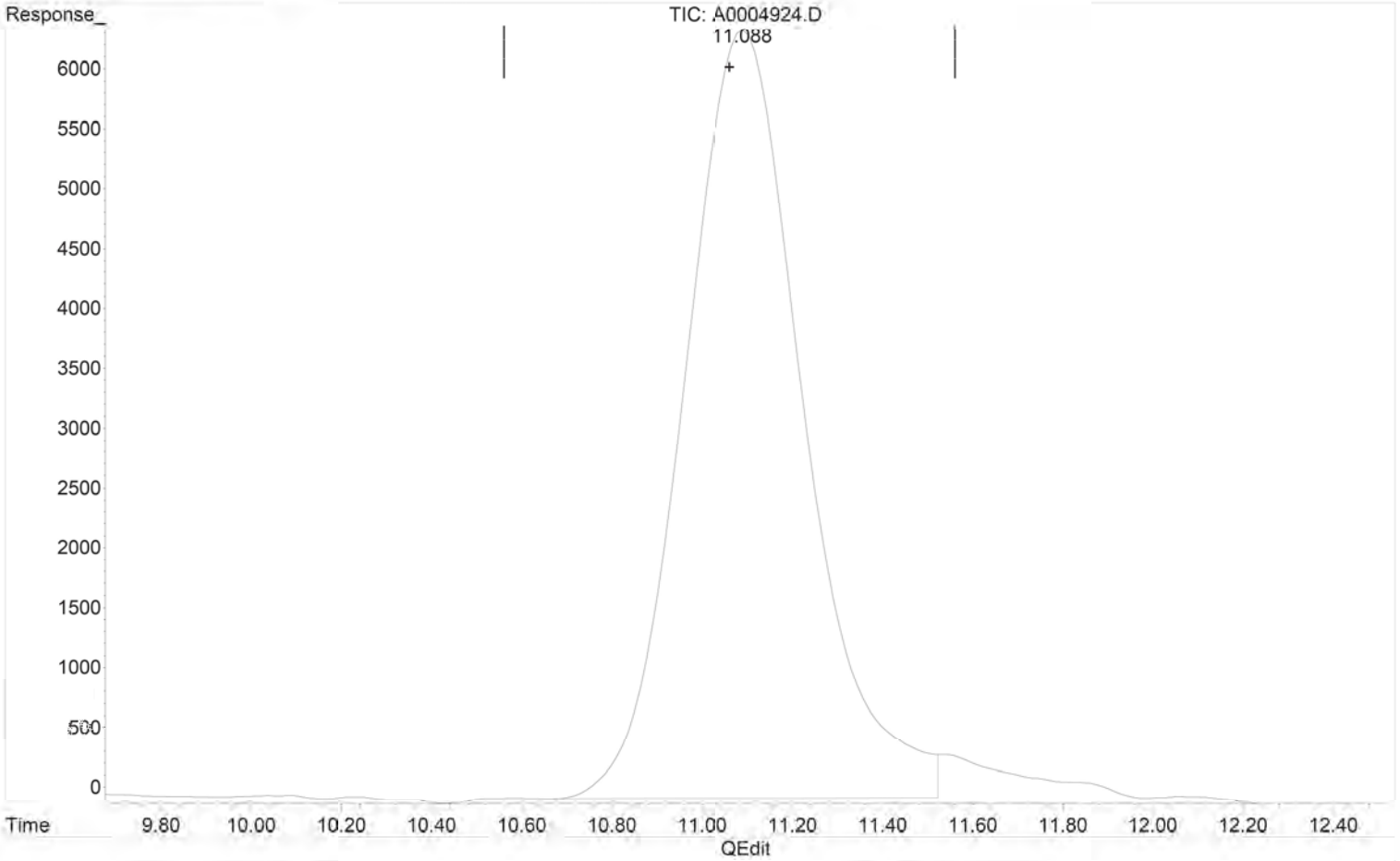
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004924.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 13:38:30
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 15:22:04 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

11.088min 21.571 ppm m

response 1172570

Manual Integration:

After

Poor integration.

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

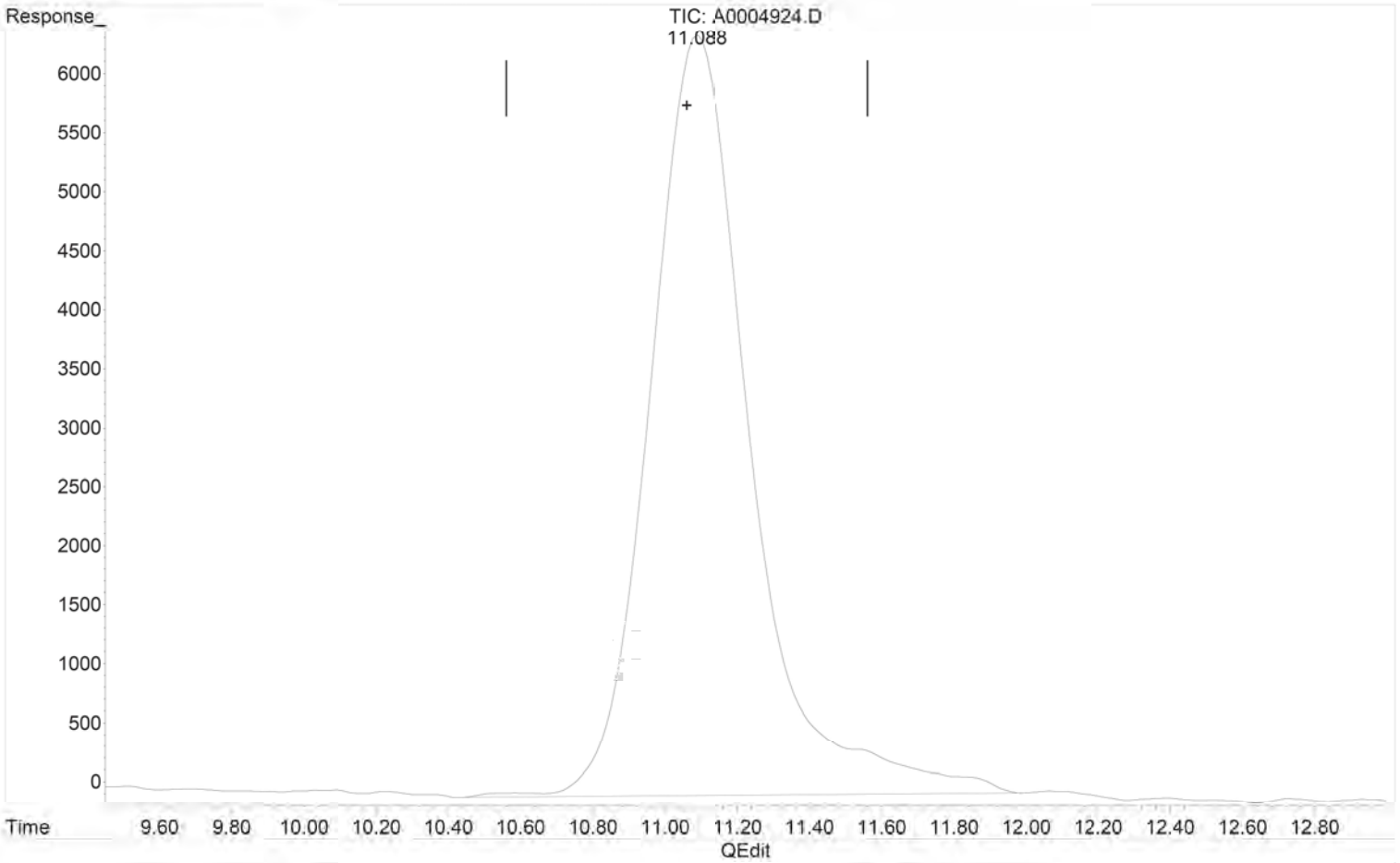
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004924.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 13:38:30
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 15:22:04 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

11.093min 22.772 ppm

response 1237850

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

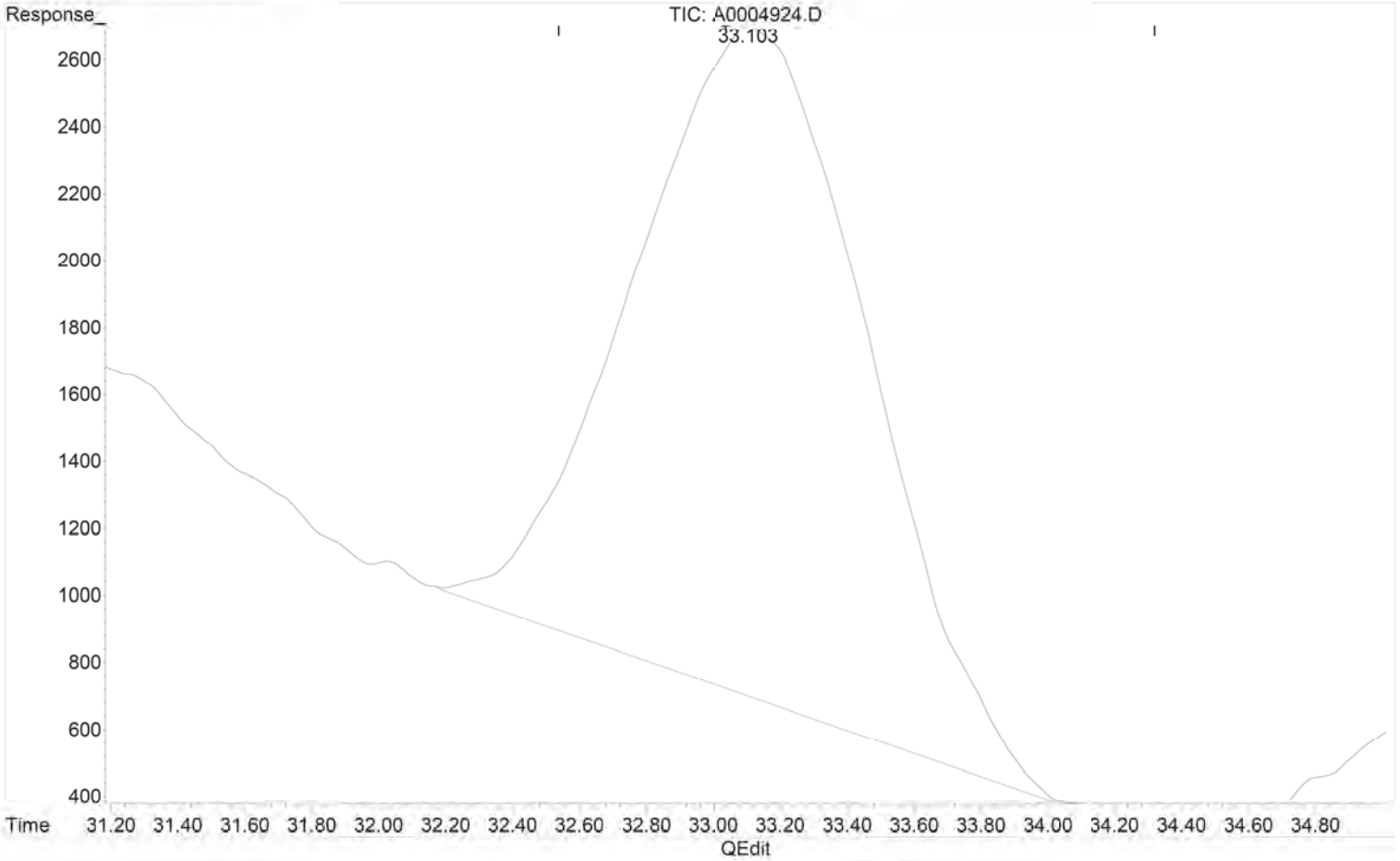
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004924.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 13:38:30
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 15:22:04 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

33.103min 18.706 ppm m

response 983218

Manual Integration:

After

Poor integration.

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

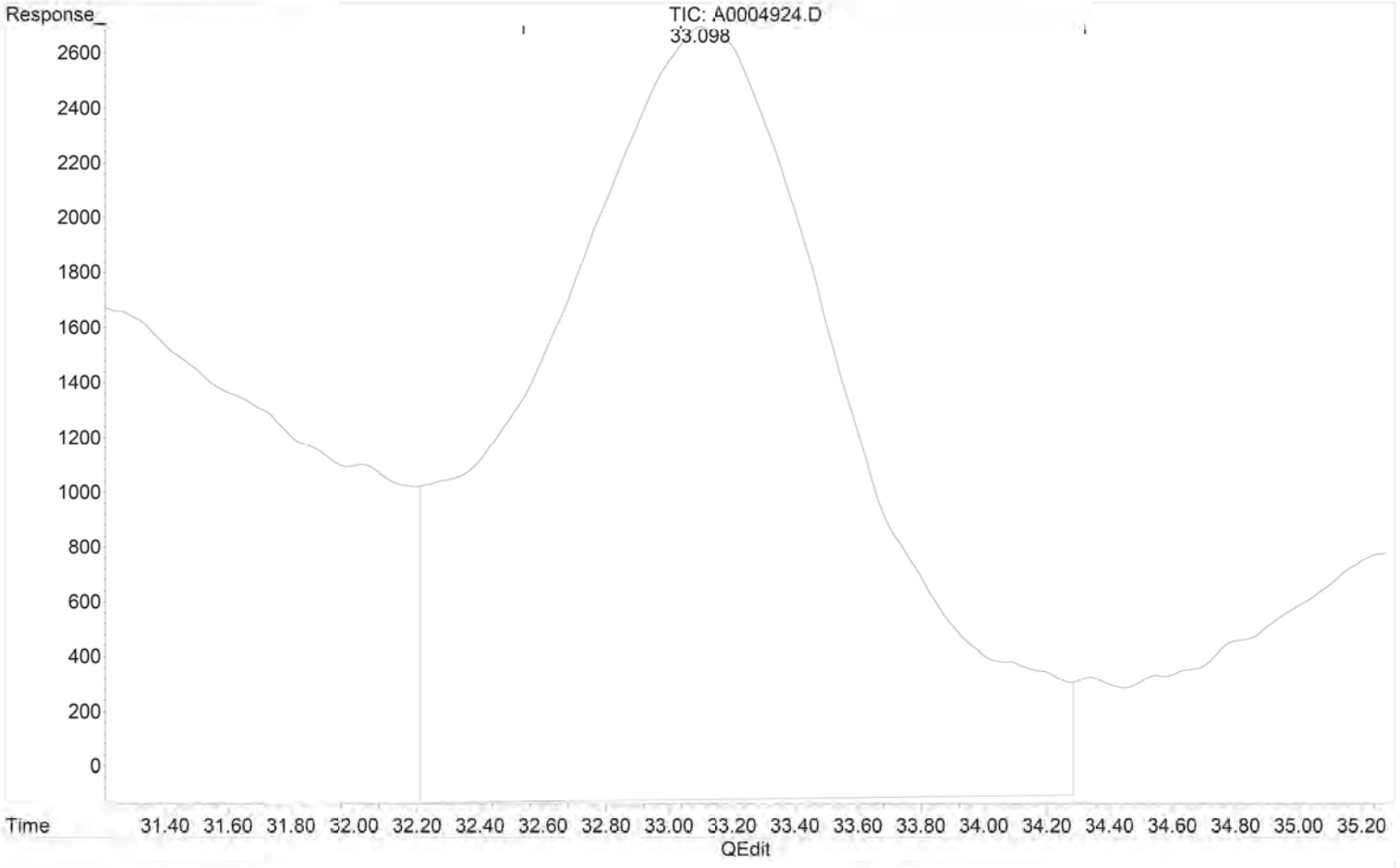
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004924.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 13:38:30
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 15:22:04 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

33.109min 36.995 ppm

response 1944520

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004924.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 13:38:30
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 15:22:04 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.118	1879905	20.164	ppm	
2) T	Pyruvic acid	3.766	975965	1.650	ppm	m
3) T	Lactic Acid	4.262	1041853	18.467	ppm	m
4) T	Acetic Acid	4.705	1162372	20.739	ppm	
5) T	Propionic Acid	11.088	1172570	21.571	ppm	m
6) T	Butyric Acid	33.103	983218	18.706	ppm	m

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

RIGHT SOLUTIONS | RIGHT PARTNER

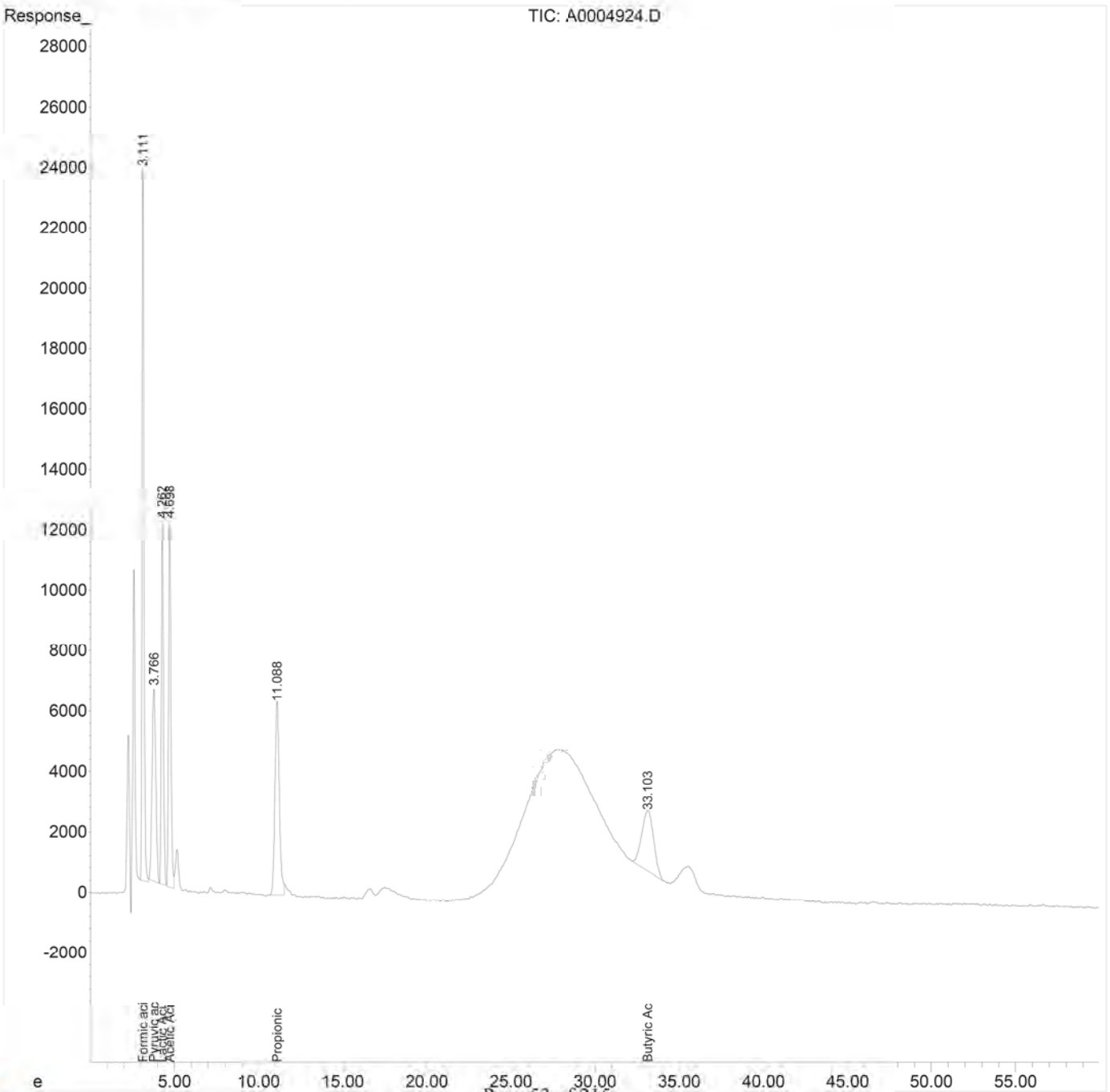
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004924.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 13:38:30
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 15:22:04 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

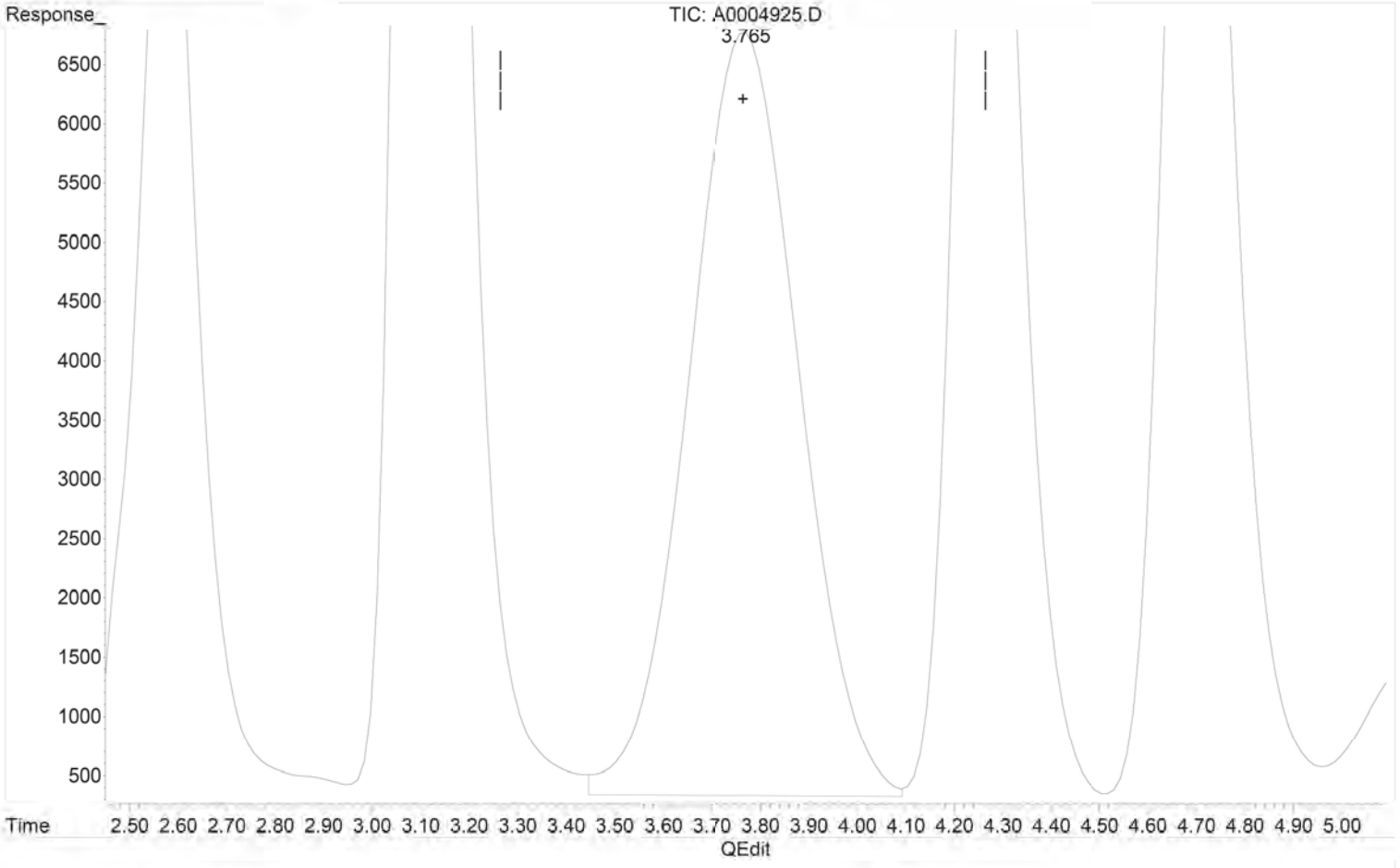
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004925.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 14:41:36
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:23 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.765min 1.706 ppm m

response 1009385

Manual Integration:

After

Poor integration.

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

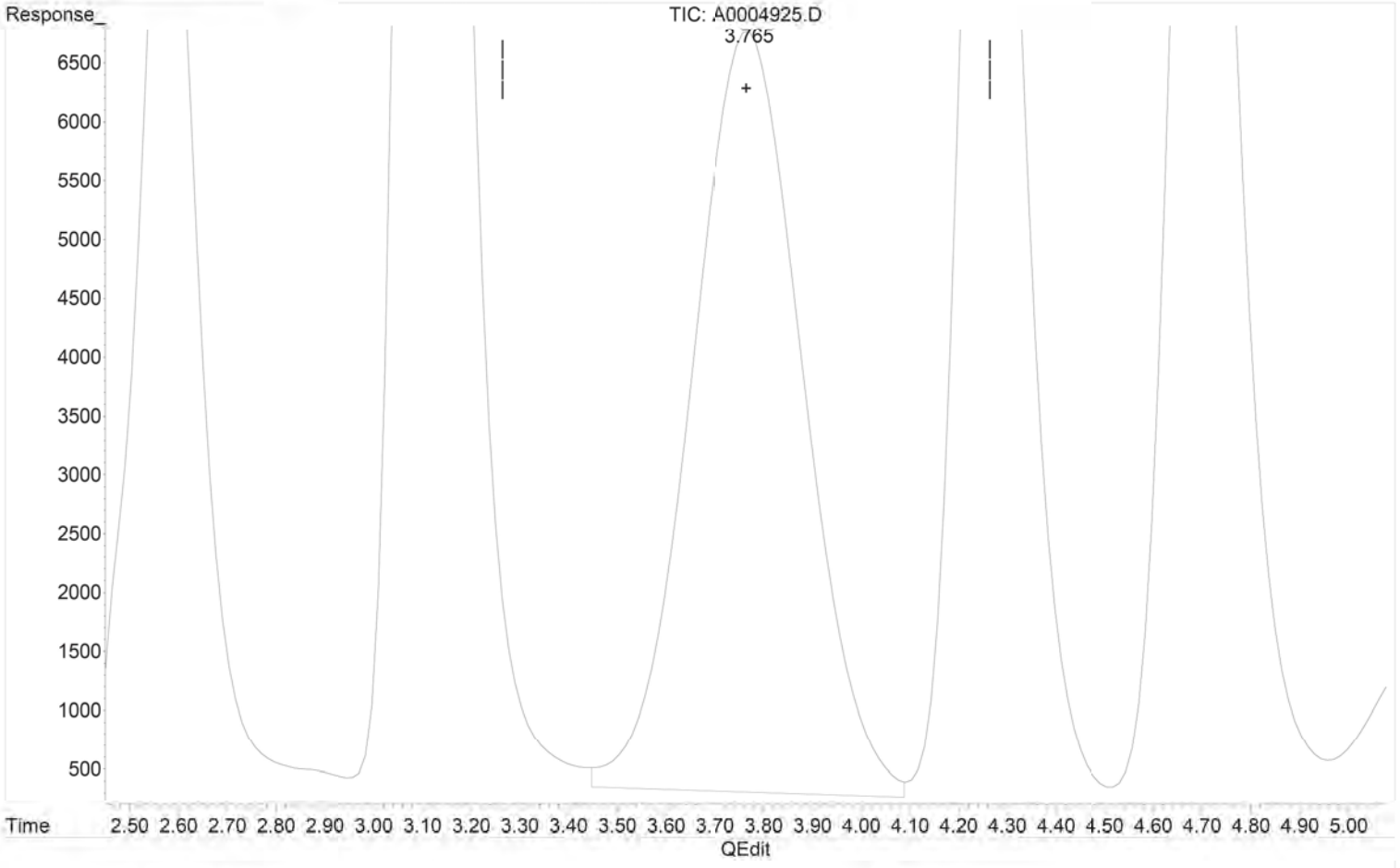
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004925.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 14:41:36
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:23 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.770min 1.724 ppm

response 1020069

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

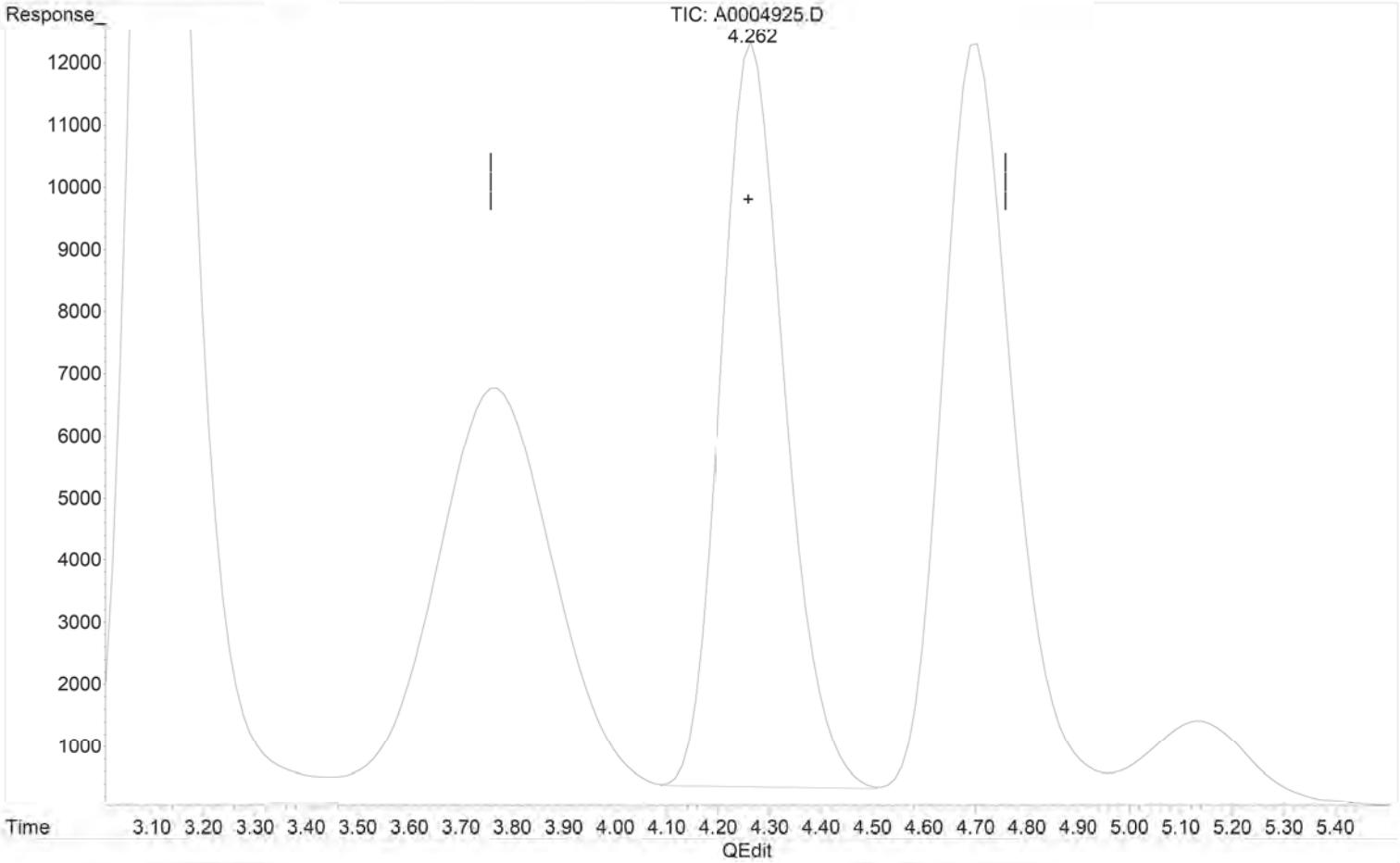
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004925.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 14:41:36
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:23 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.262min 18.381 ppm m

response 1037011

Manual Integration:

After

Poor integration.

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

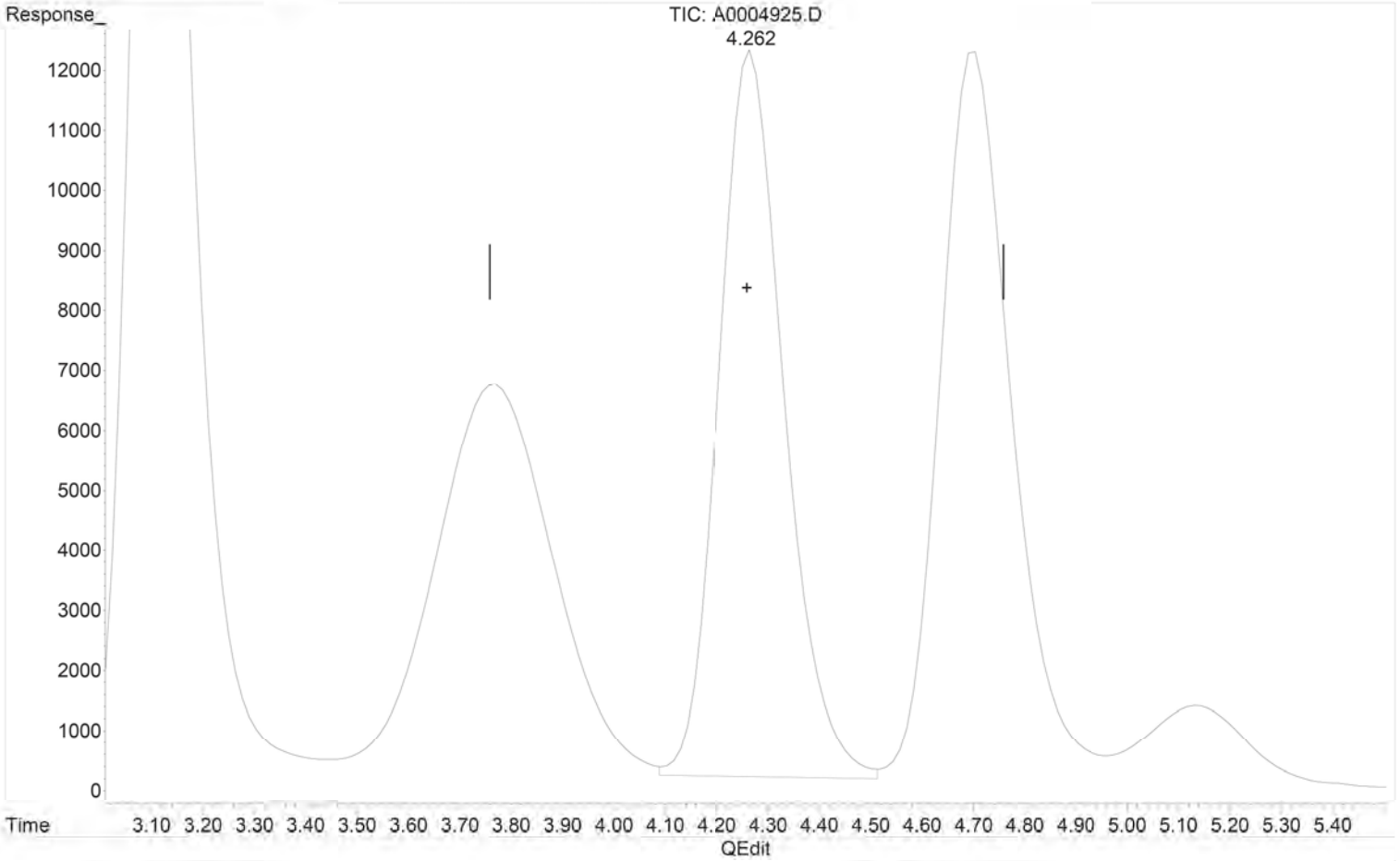
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004925.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 14:41:36
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:23 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.268min 18.922 ppm

response 1067511

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

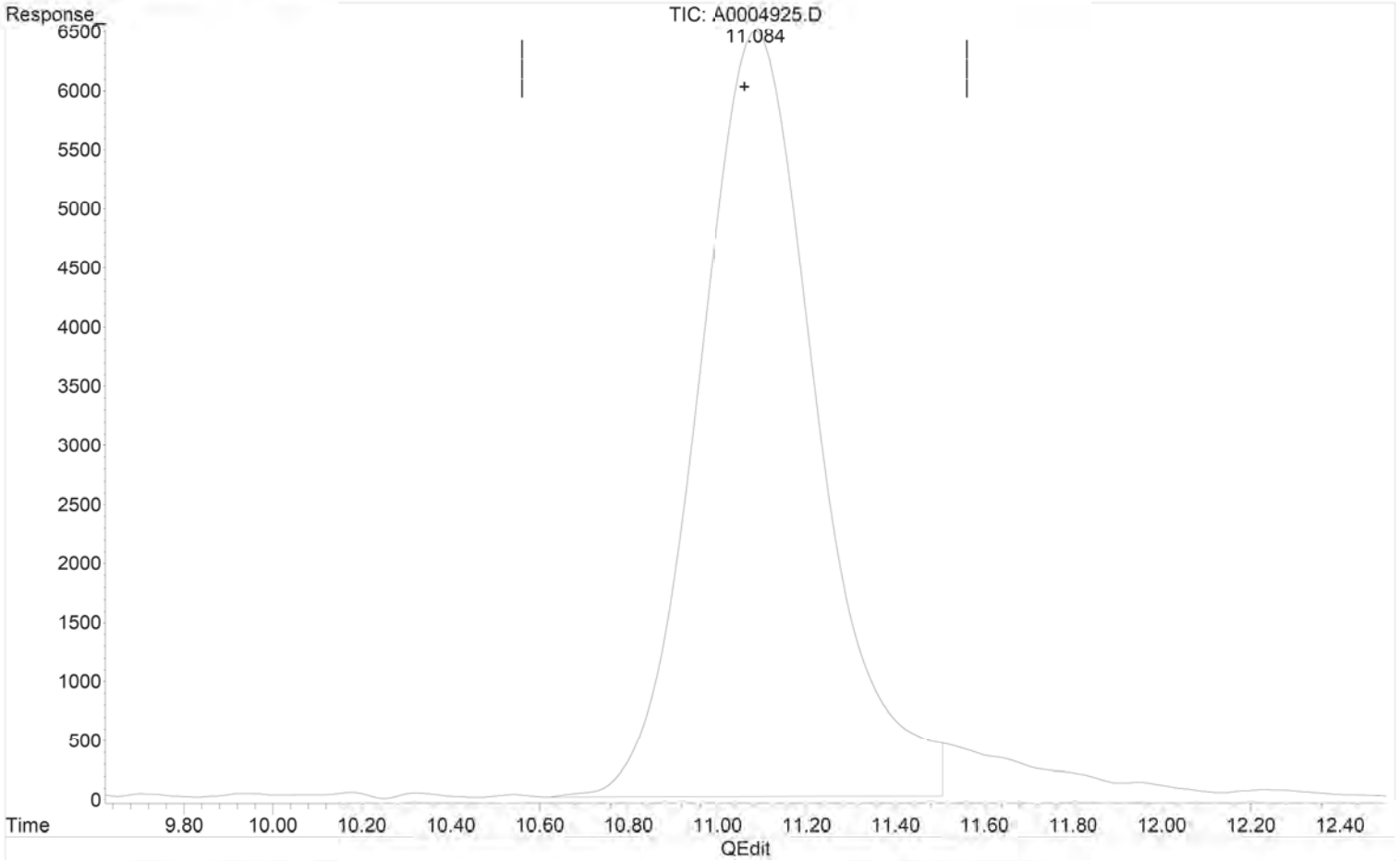
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004925.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 14:41:36
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:23 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

11.084min 21.960 ppm m

response 1193682

Manual Integration:

After

Poor integration.

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

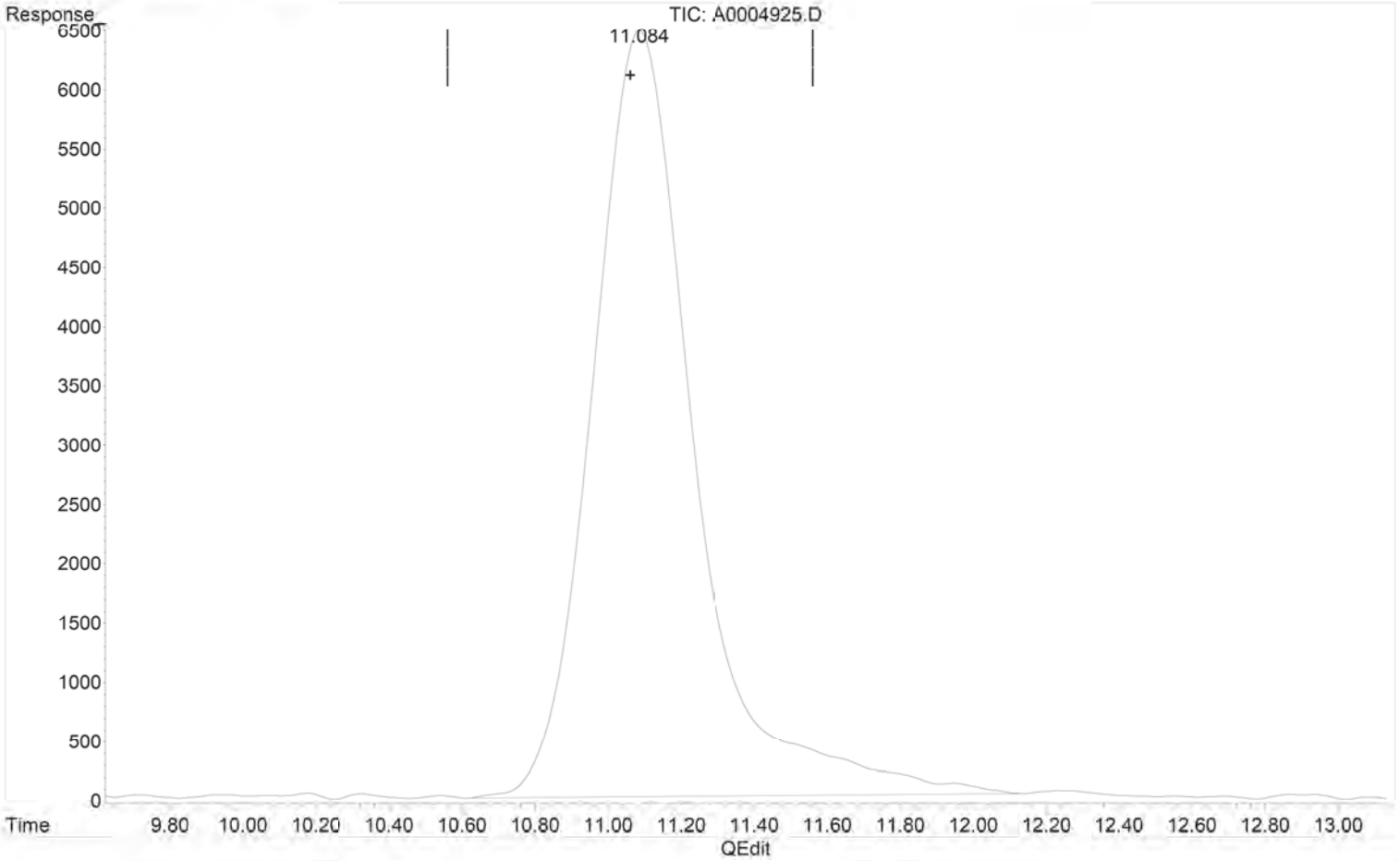
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004925.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 14:41:36
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:23 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

11.090min 23.057 ppm

response 1253300

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

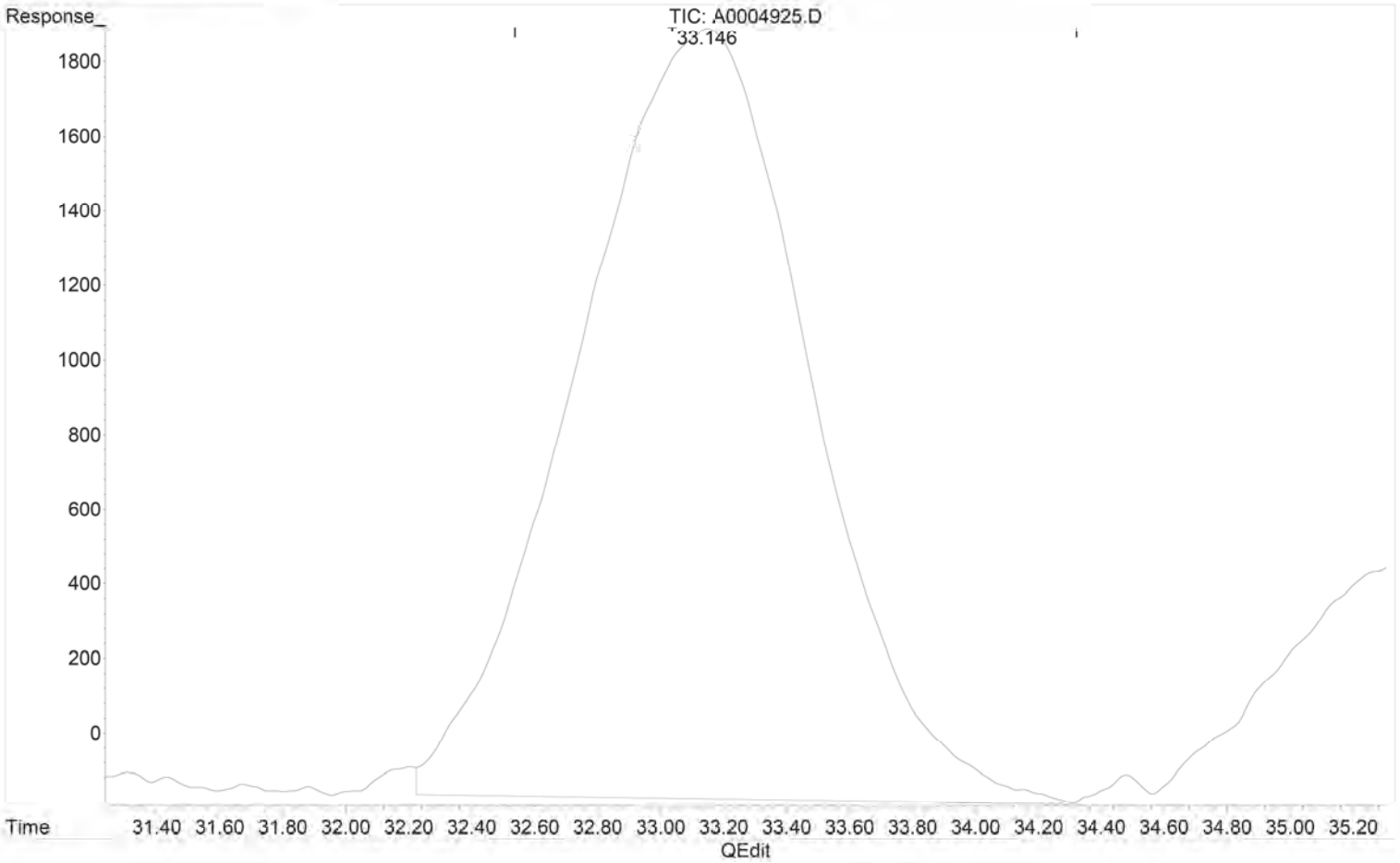
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004925.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 14:41:36
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:23 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

33.146min 20.297 ppm m

response 1066840

Manual Integration:

After

Poor integration.

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

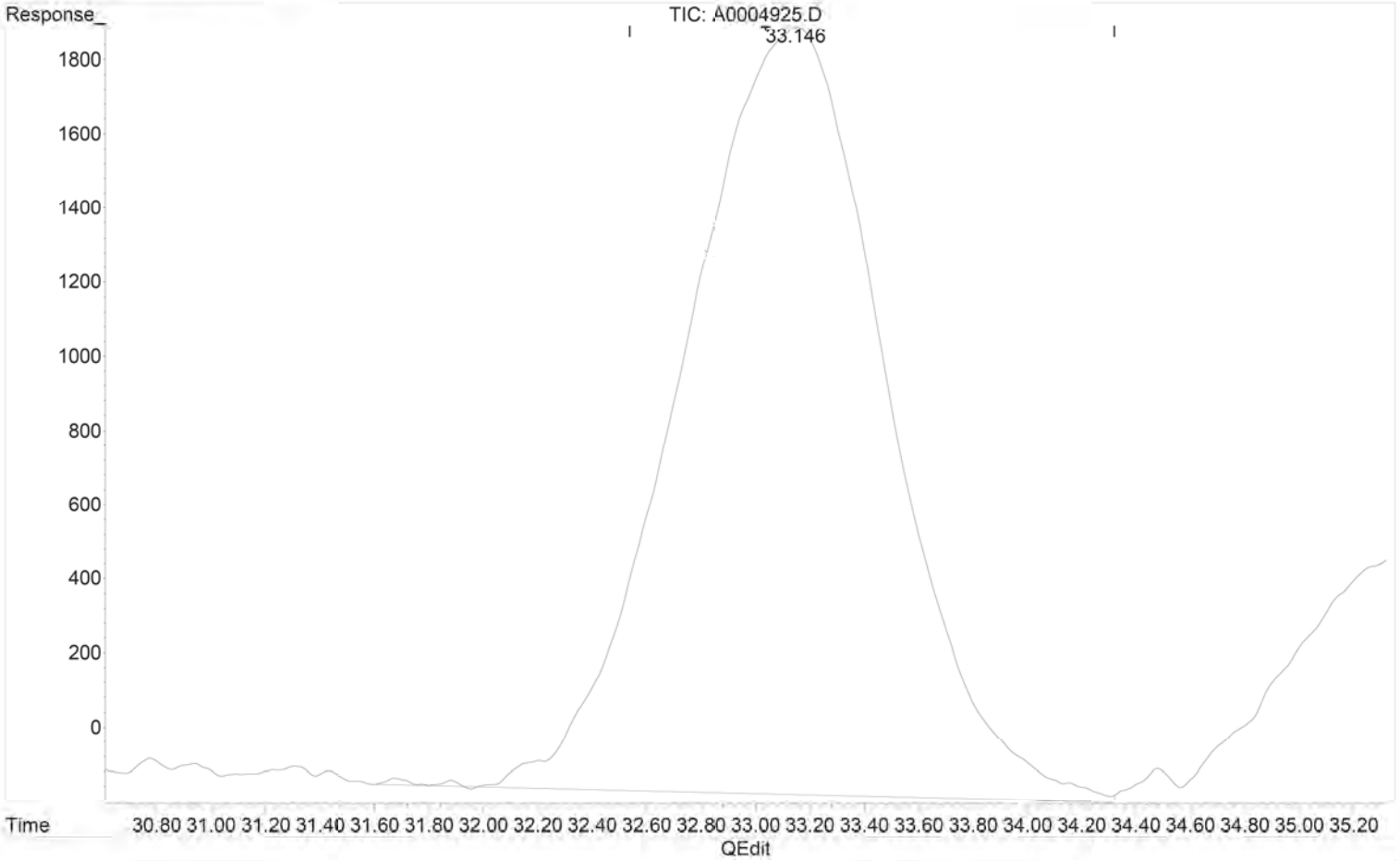
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004925.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 14:41:36
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:23 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

33.155min 20.581 ppm

response 1081793

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004925.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 14:41:36
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:23 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.118	1872872	20.088	ppm	
2) T	Pyruvic acid	3.765	1009385	1.706	ppm	m
3) T	Lactic Acid	4.262	1037011	18.381	ppm	m
4) T	Acetic Acid	4.704	1176112	20.984	ppm	
5) T	Propionic Acid	11.084	1193682	21.960	ppm	m
6) T	Butyric Acid	33.146	1066840	20.297	ppm	m

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

RIGHT SOLUTIONS | RIGHT PARTNER

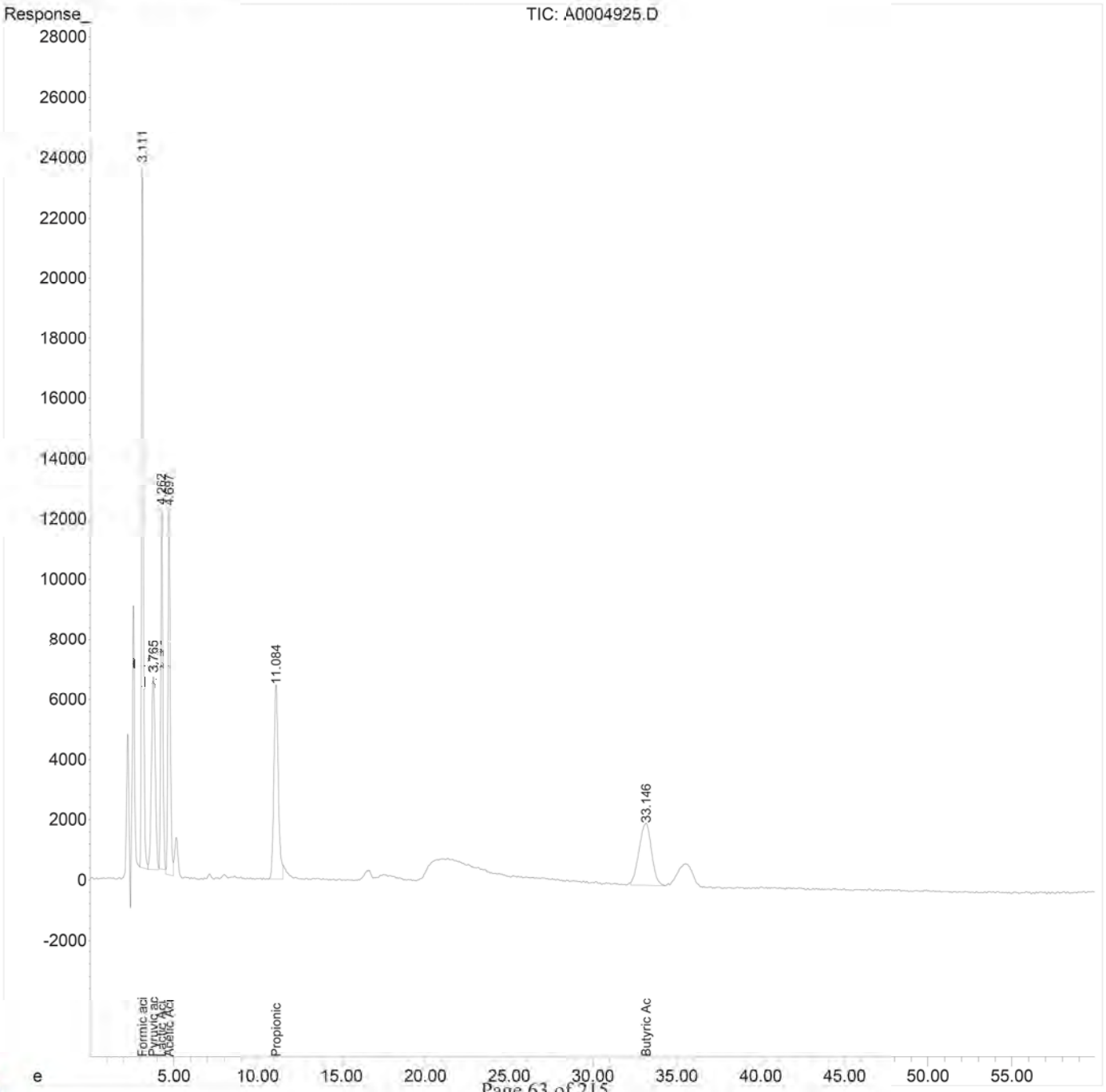
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004925.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 14:41:36
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:23 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

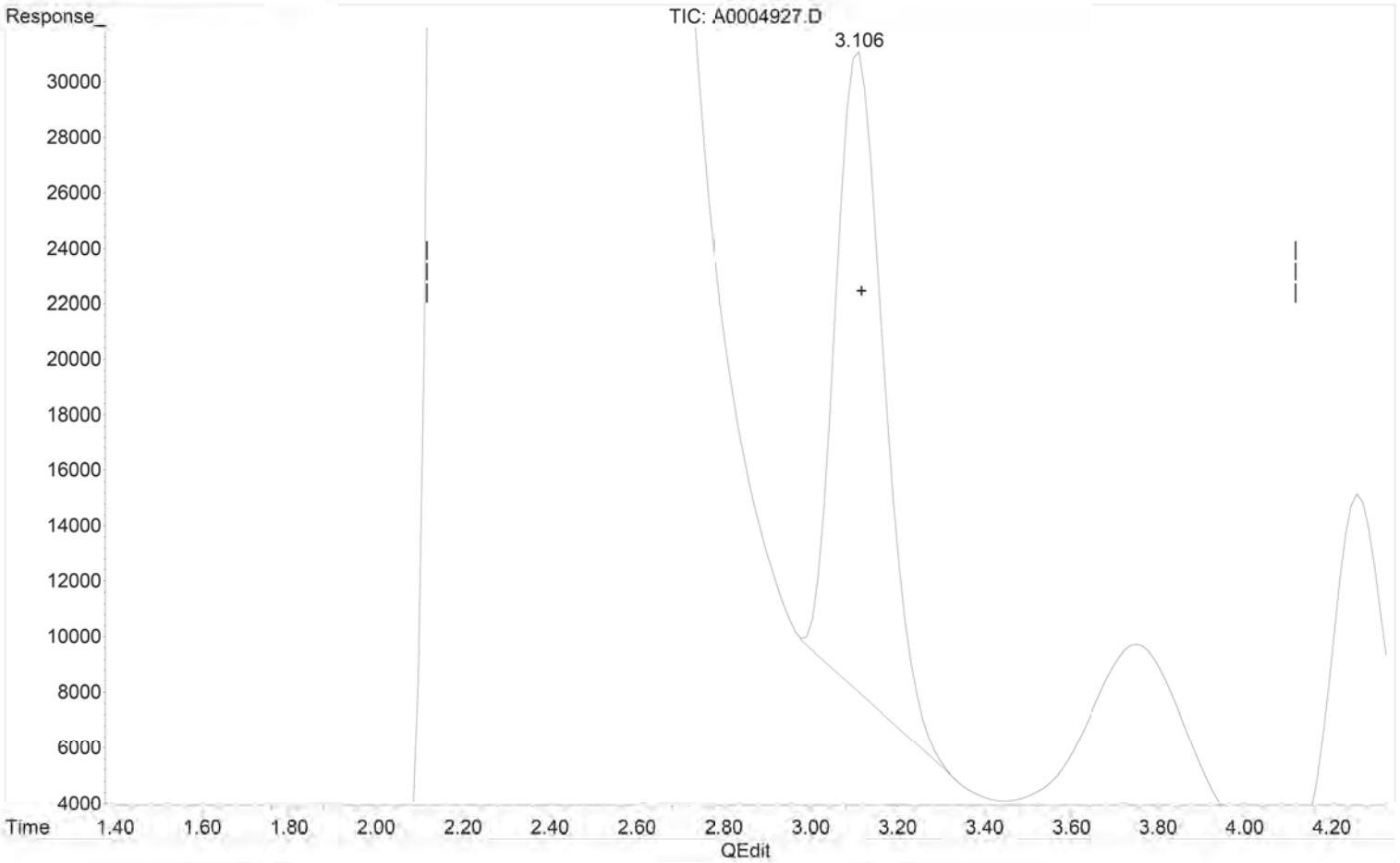
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004927.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 16:47:25
Operator : A.Felser
Sample : R2002879-001MS
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

3.106min 19.147 ppm m

response 1785162

Manual Integration:

After

Poor integration.

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

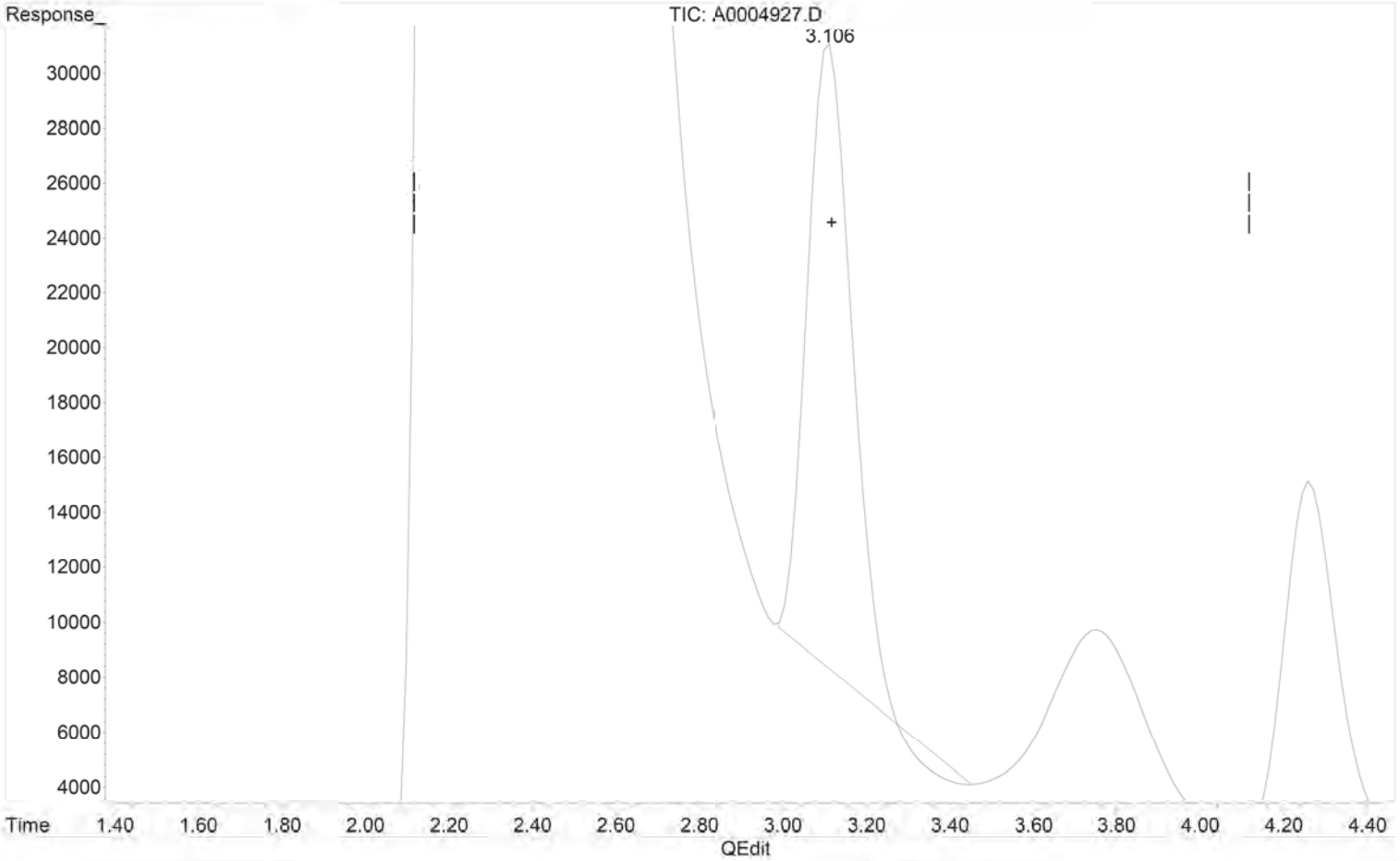
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004927.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 16:47:25
Operator : A.Felser
Sample : R2002879-001MS
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

3.112min 18.076 ppm

response 1685310

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

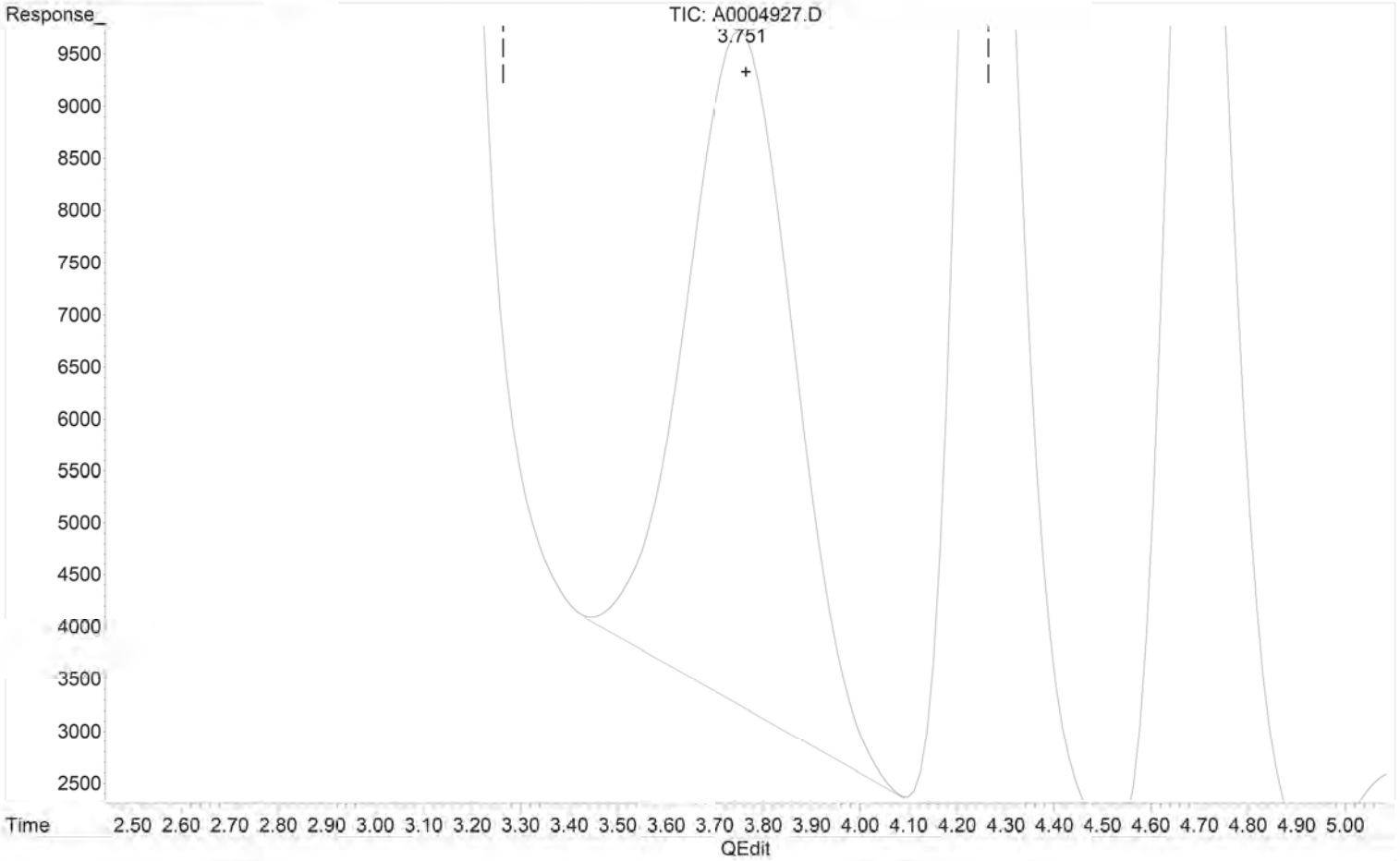
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004927.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 16:47:25
Operator : A.Felser
Sample : R2002879-001MS
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.751min 1.700 ppm m

response 1005940

Manual Integration:

After

Poor integration.

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

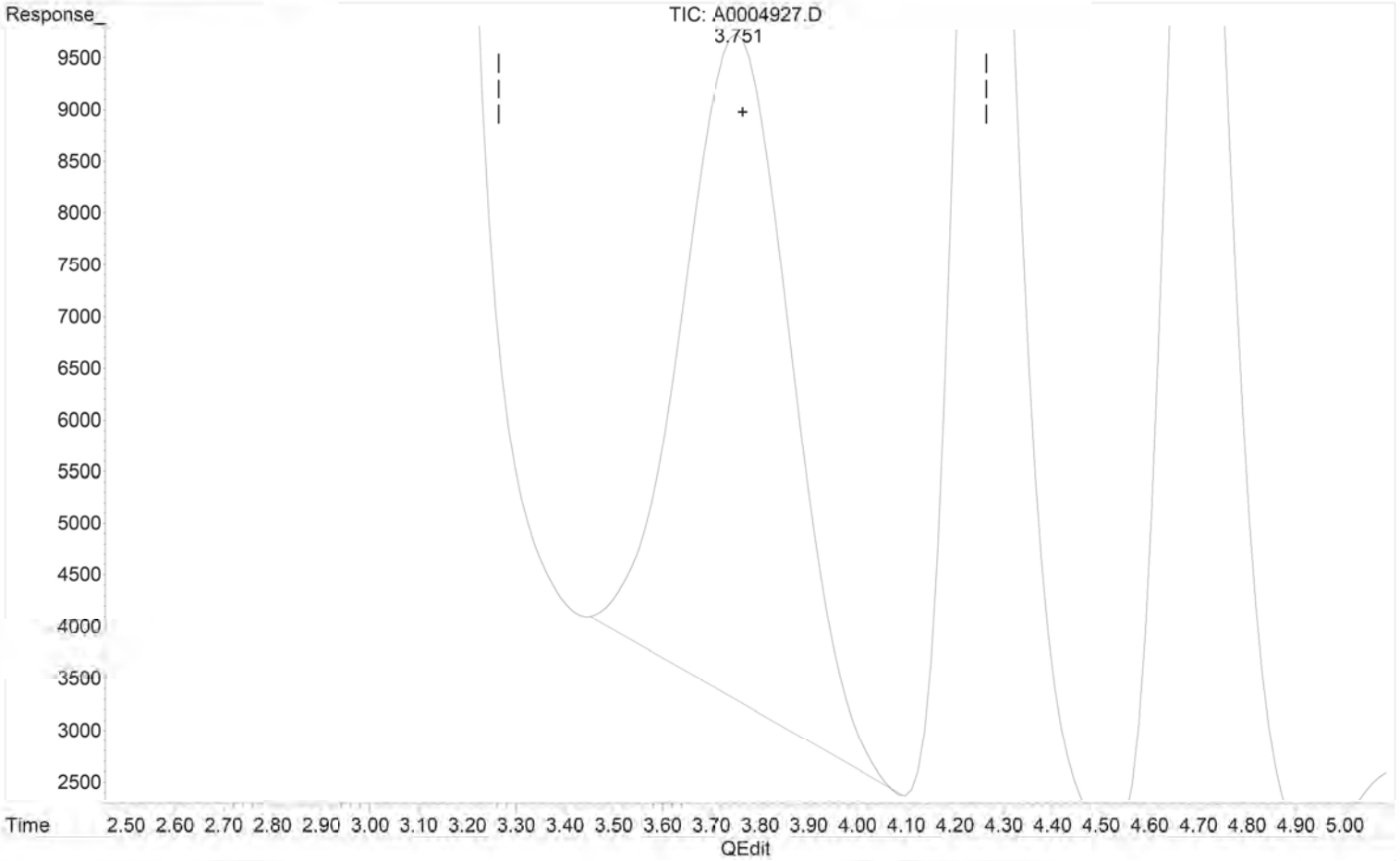
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004927.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 16:47:25
Operator : A.Felser
Sample : R2002879-001MS
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.755min 1.682 ppm

response 994825

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

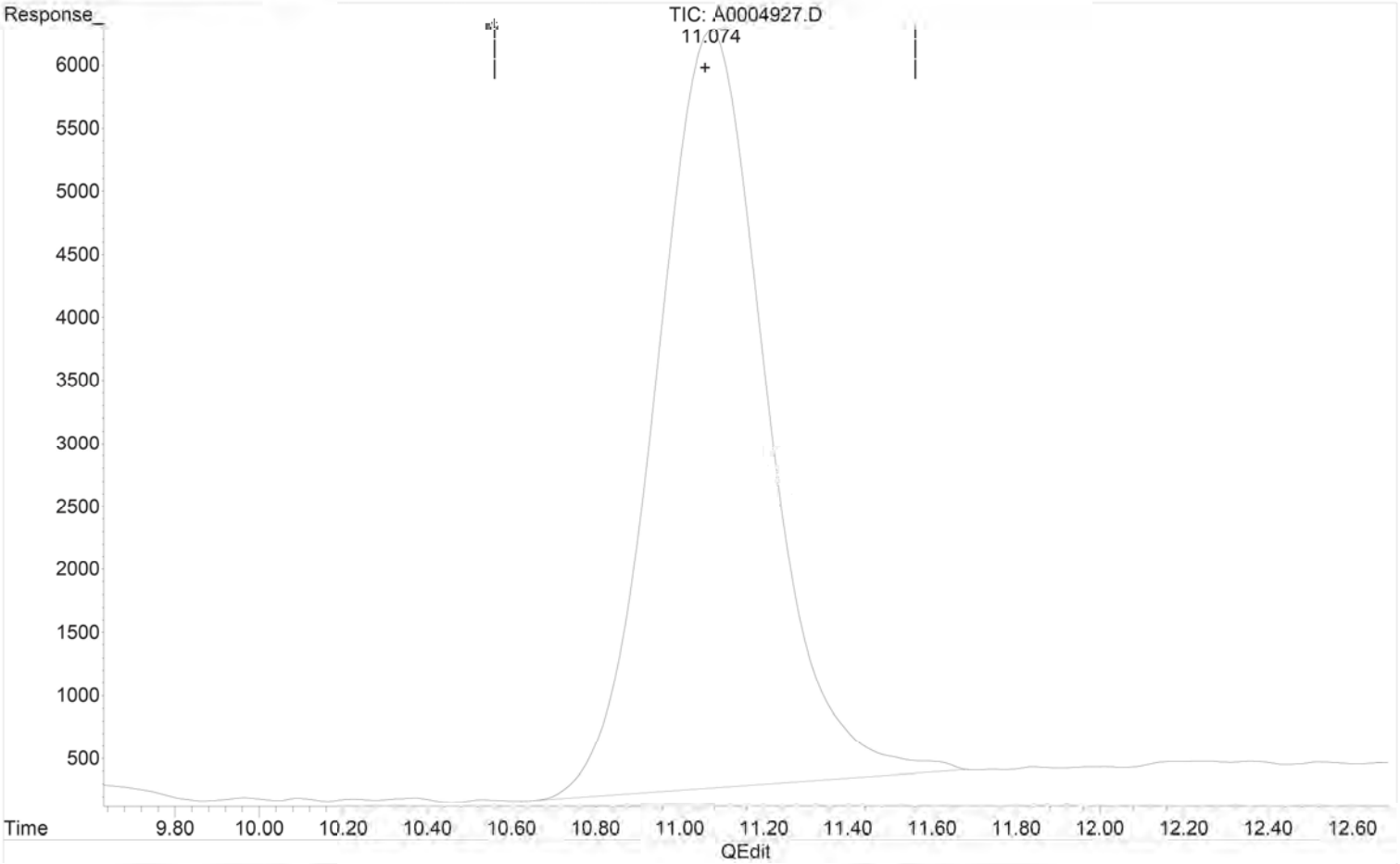
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004927.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 16:47:25
Operator : A.Felser
Sample : R2002879-001MS
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

11.074min 20.126 ppm m

response 1094024

Manual Integration:

After

Poor integration.

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

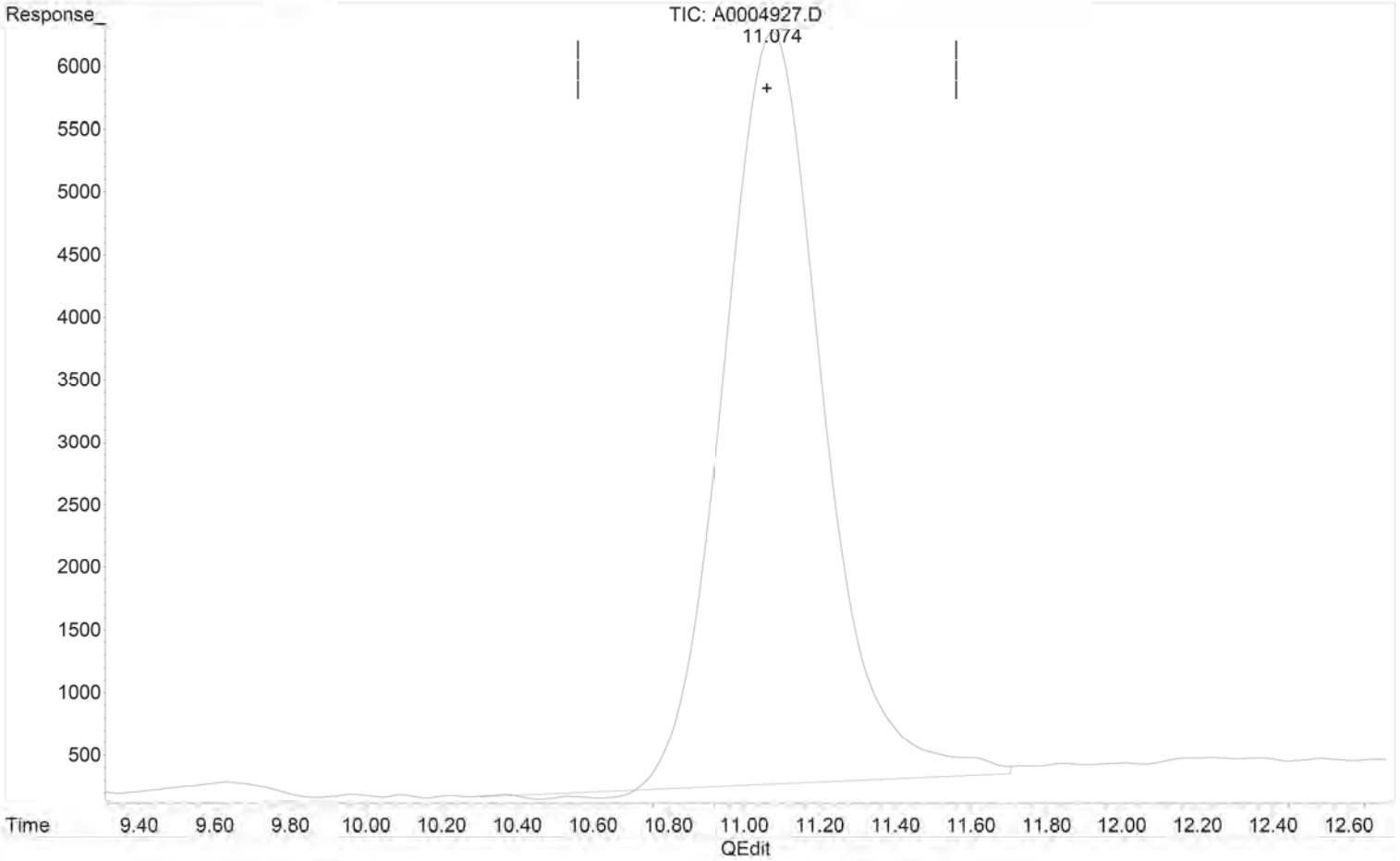
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004927.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 16:47:25
Operator : A.Felser
Sample : R2002879-001MS
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

11.079min 20.112 ppm

response 1093241

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004927.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 16:47:25
Operator : A.Felser
Sample : R2002879-001MS
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.106	1785162	19.147	ppm	m
2) T	Pyruvic acid	3.751	1005940	1.700	ppm	m
3) T	Lactic Acid	4.264	1131187	20.051	ppm	
4) T	Acetic Acid	4.701	1142467	20.384	ppm	
5) T	Propionic Acid	11.074	1094024	20.126	ppm	m
6) T	Butyric Acid	33.098	1021110	19.427	ppm	

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

RIGHT SOLUTIONS | RIGHT PARTNER

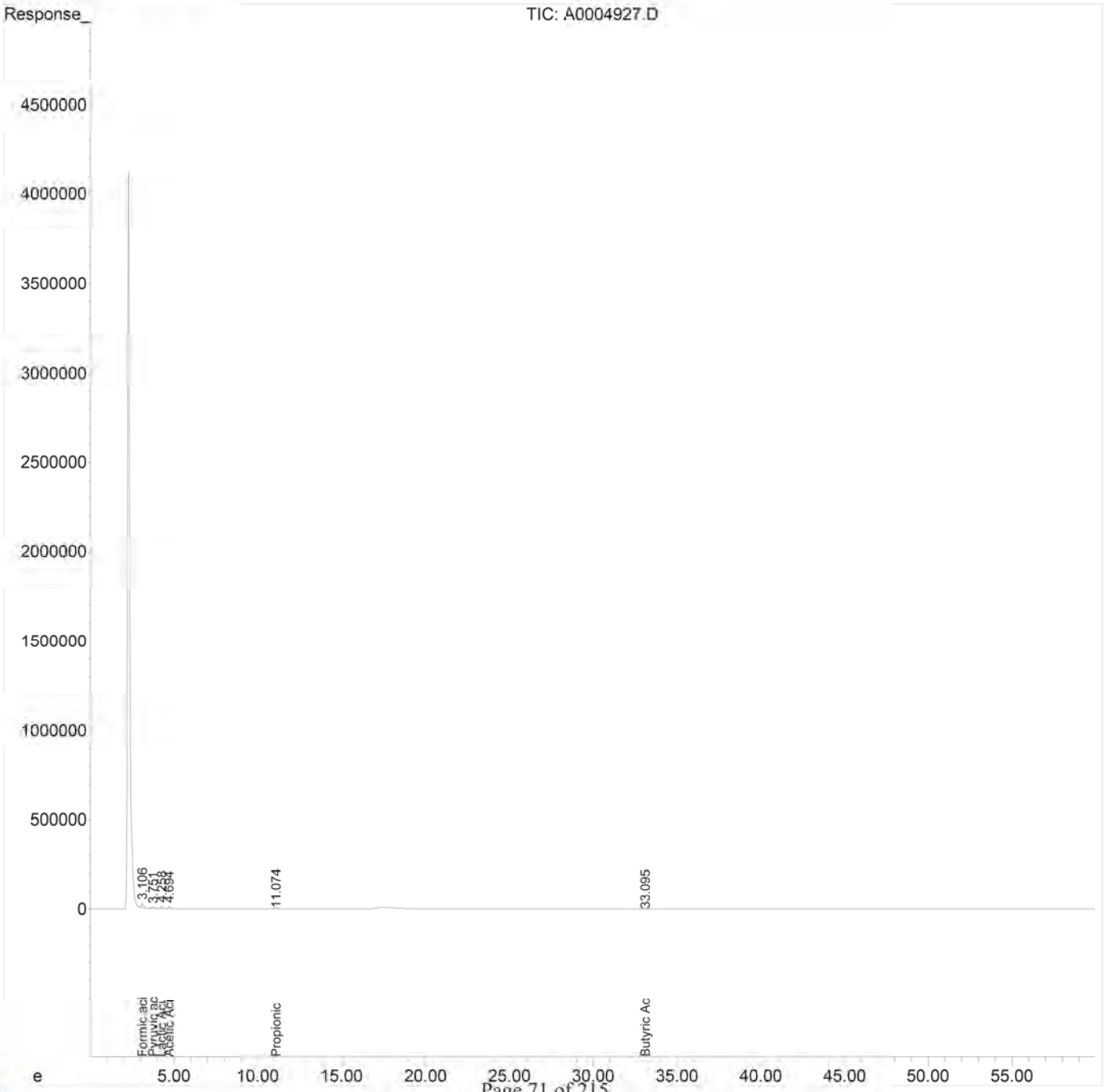
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004927.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 16:47:25
Operator : A.Felser
Sample : R2002879-001MS
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

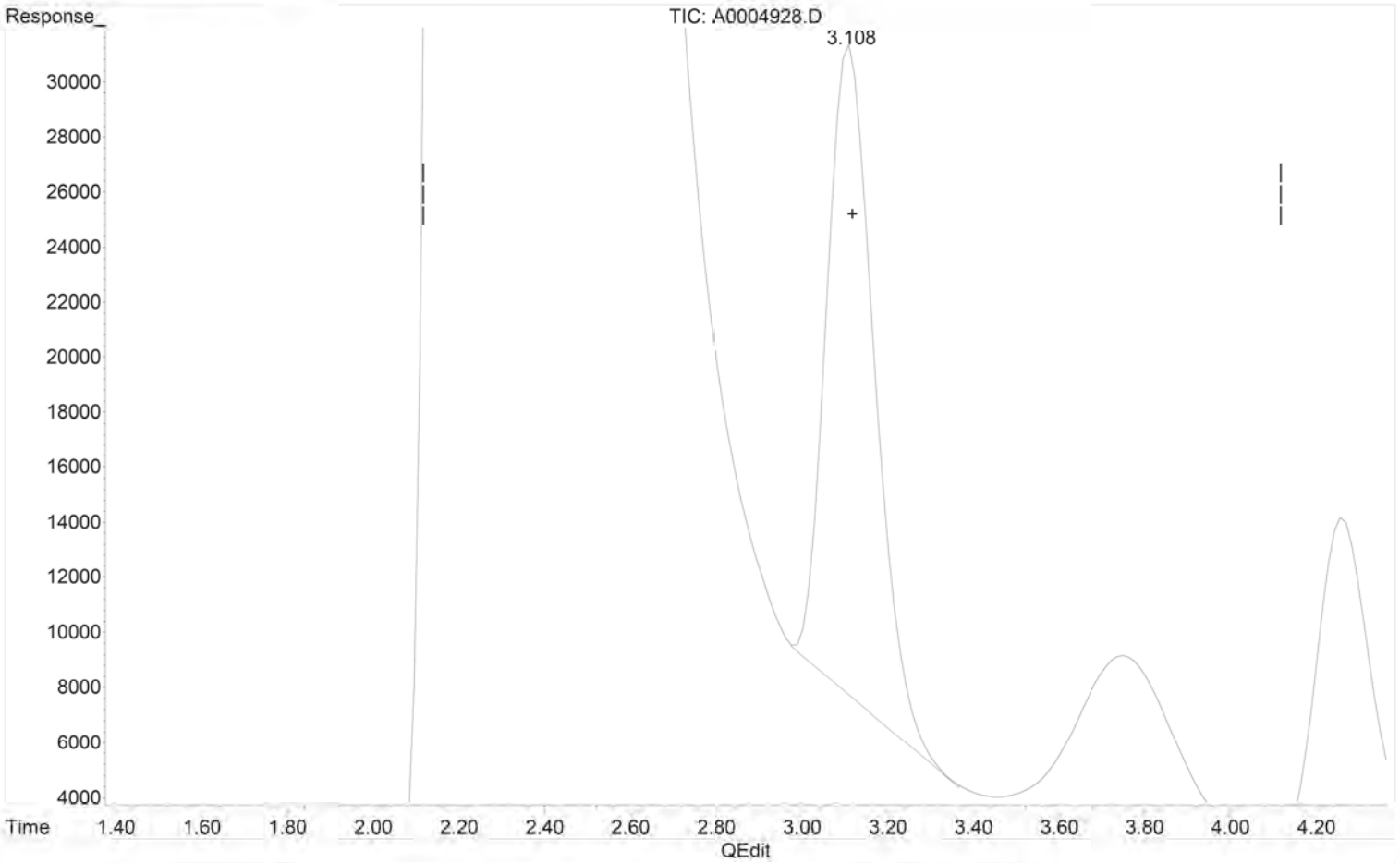
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004928.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:47:45
Operator : A.Felser
Sample : R2002879-001DMS
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:30 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

3.108min 19.711 ppm m

response 1837743

Manual Integration:

After

Poor integration.

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

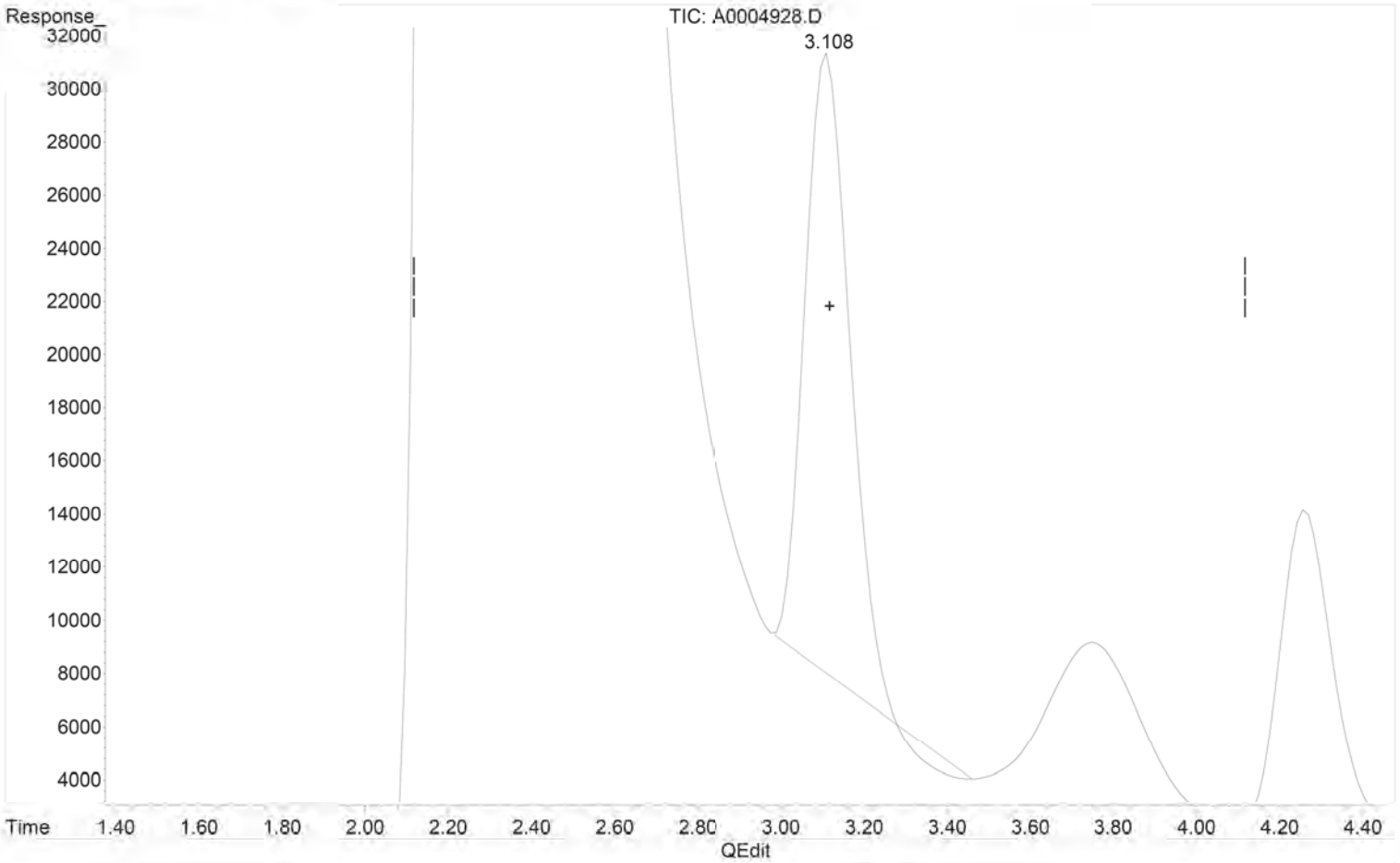
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004928.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:47:45
Operator : A.Felser
Sample : R2002879-001DMS
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:30 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

3.112min 18.639 ppm

response 1737763

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

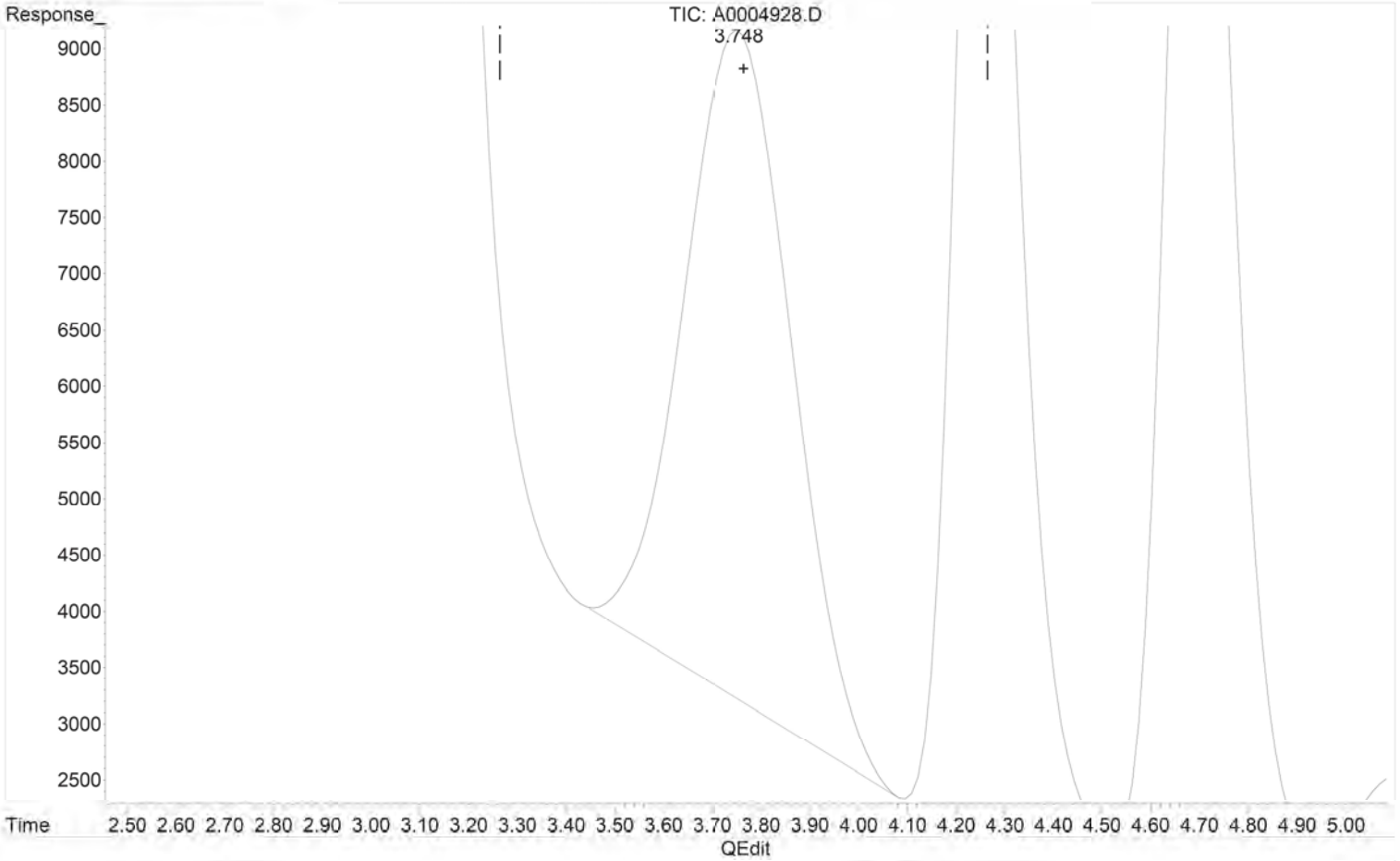
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004928.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:47:45
Operator : A.Felser
Sample : R2002879-001DMS
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:30 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.748min 1.553 ppm m

response 918777

Manual Integration:

After

Poor integration.

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

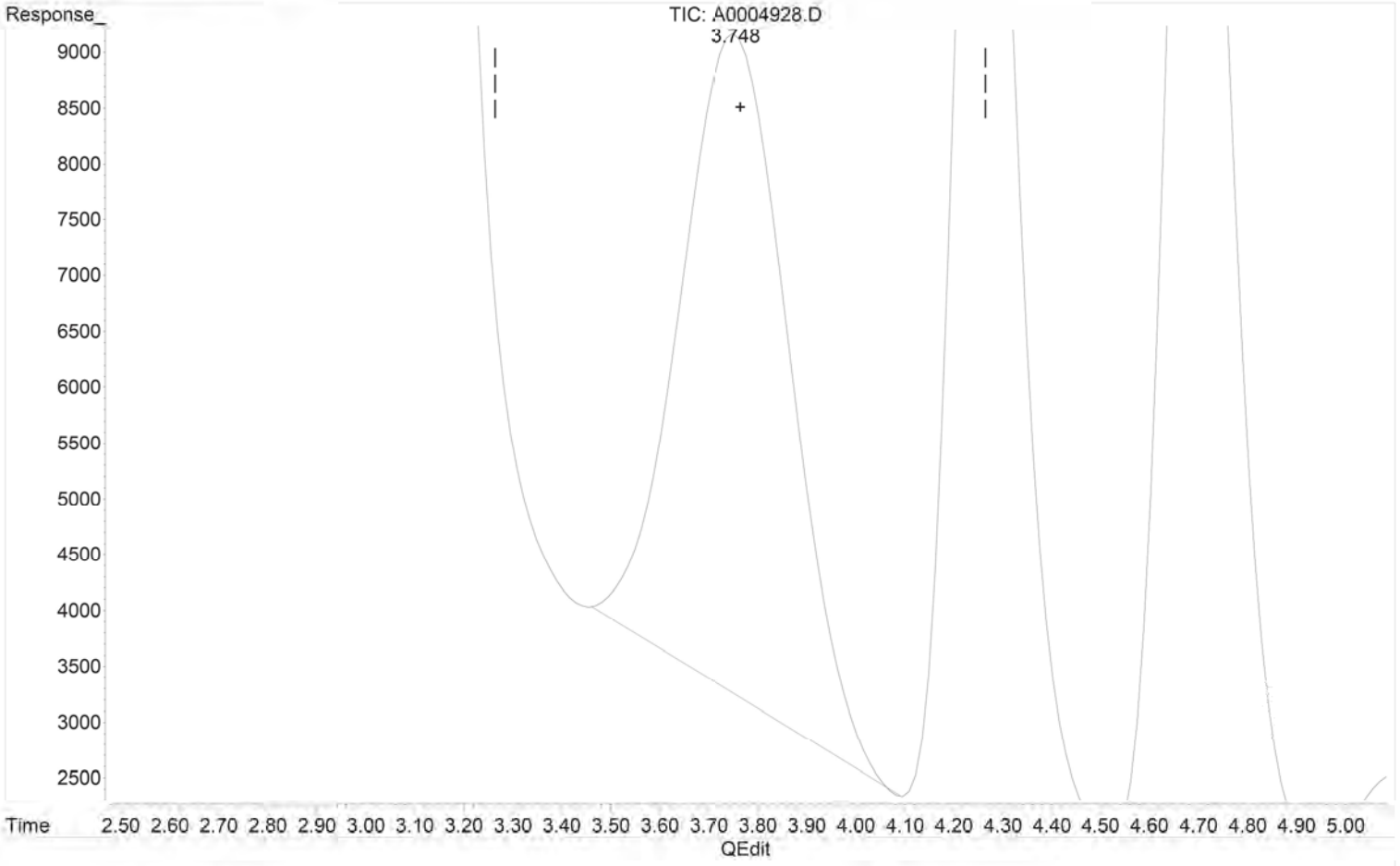
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004928.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:47:45
Operator : A.Felser
Sample : R2002879-001DMS
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:30 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.753min 1.542 ppm

response 912469

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

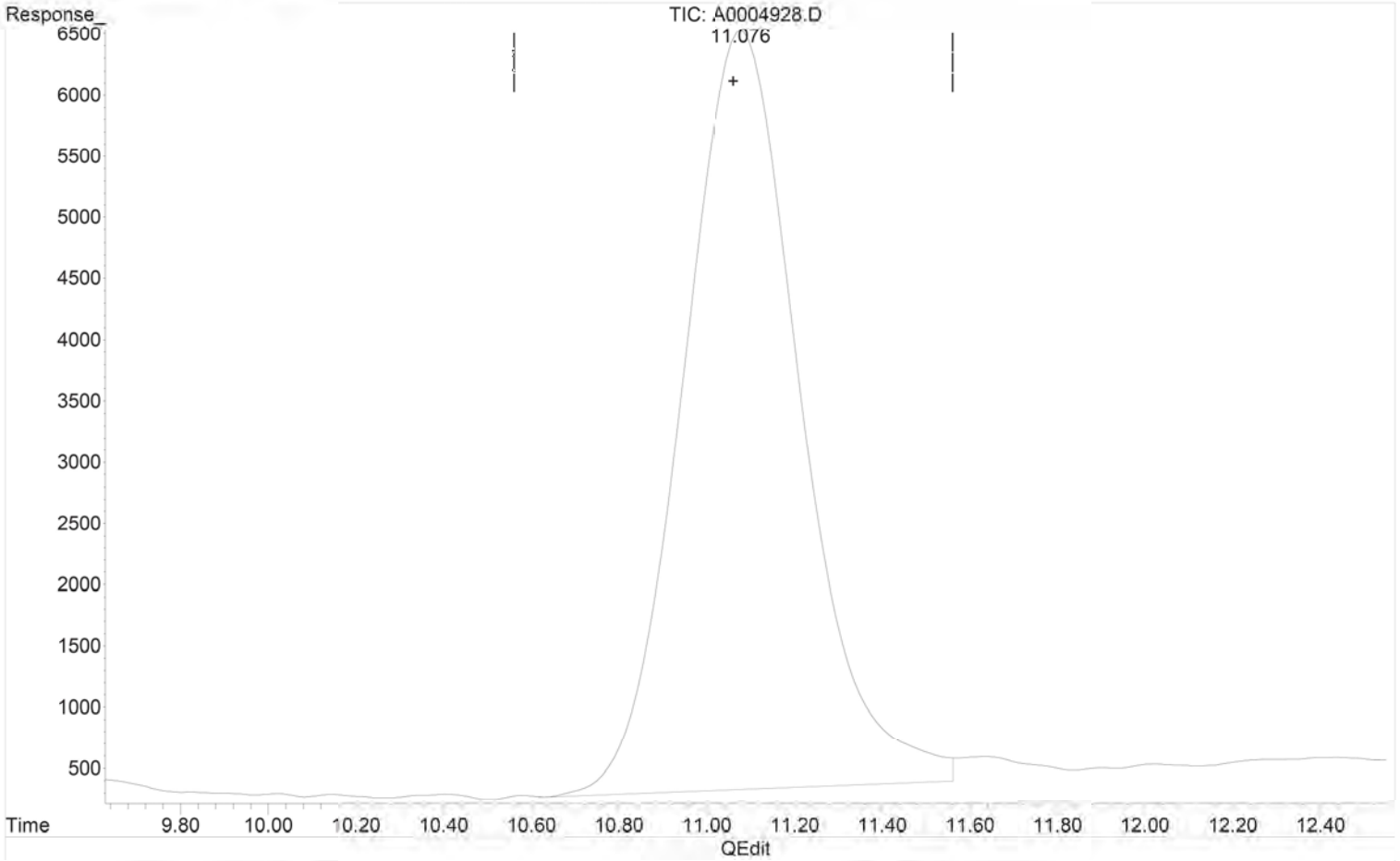
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004928.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:47:45
Operator : A.Felser
Sample : R2002879-001DMS
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:30 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.076min 21.116 ppm m
response 1147833

Manual Integration:
After
Poor integration.
04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

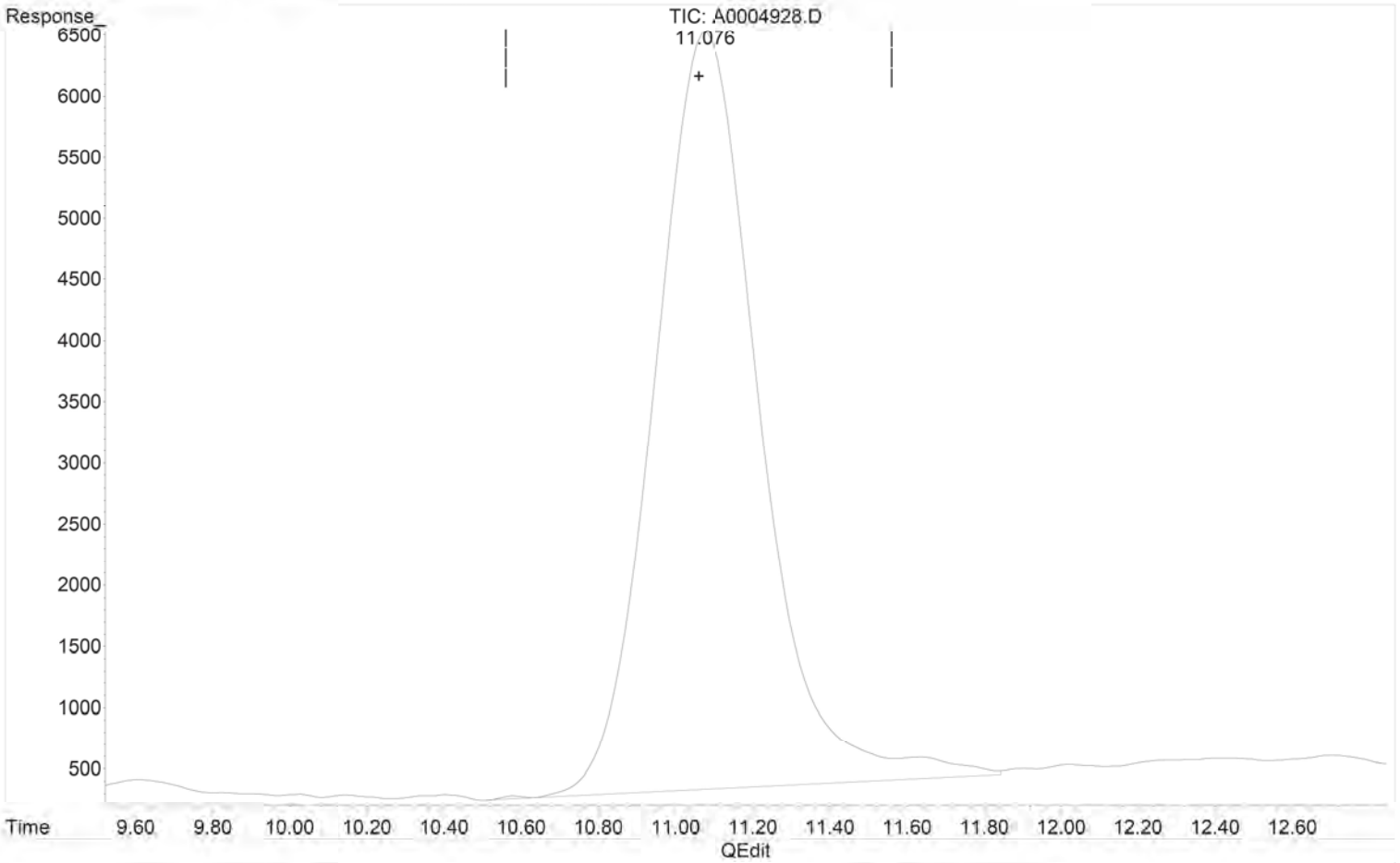
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004928.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:47:45
Operator : A.Felser
Sample : R2002879-001DMS
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:30 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

11.082min 21.429 ppm

response 1164844

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004928.D
Signal(s) : dad1C.ch
Acq On : ~~31-Dec-2000, 02:47:45~~ 09-Apr-2020, 17:47
Operator : A.Felser
Sample : R2002879-001DMS
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:30 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.108	1837743	19.711	ppm	m
2) T	Pyruvic acid	3.748	918777	1.553	ppm	m
3) T	Lactic Acid	4.264	1053023	18.665	ppm	
4) T	Acetic Acid	4.700	1178072	21.019	ppm	
5) T	Propionic Acid	11.076	1147833	21.116	ppm	m
6) T	Butyric Acid	33.072	1091804	20.772	ppm	

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

RIGHT SOLUTIONS | RIGHT PARTNER

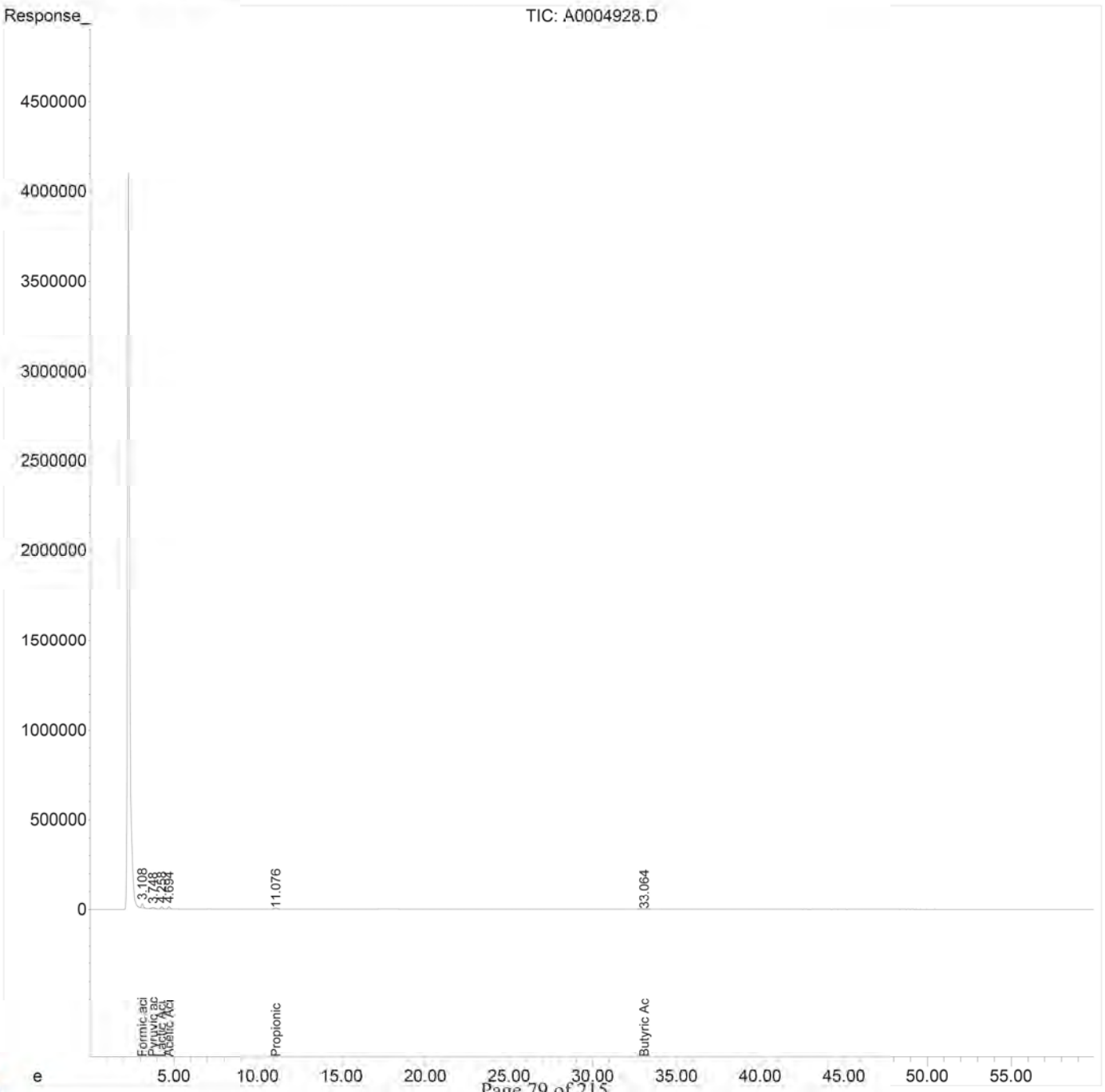
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004928.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:47:45
Operator : A.Felser
Sample : R2002879-001DMS
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:30 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

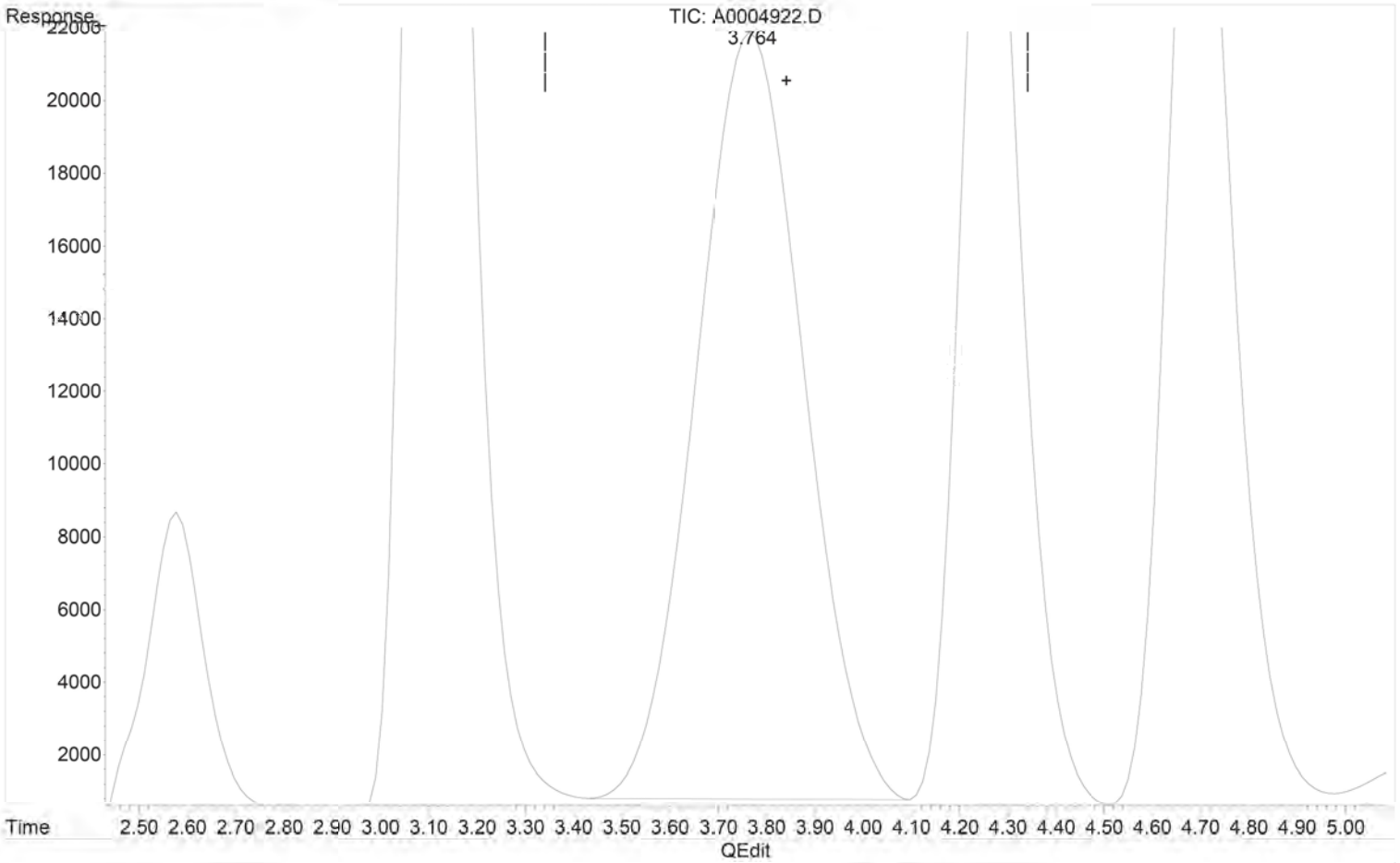
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004922.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 01:47:53
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 12:34:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:33:56 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.764min 5.478 ppm m

response 3240731

Manual Integration:

After

Poor integration.

04/09/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

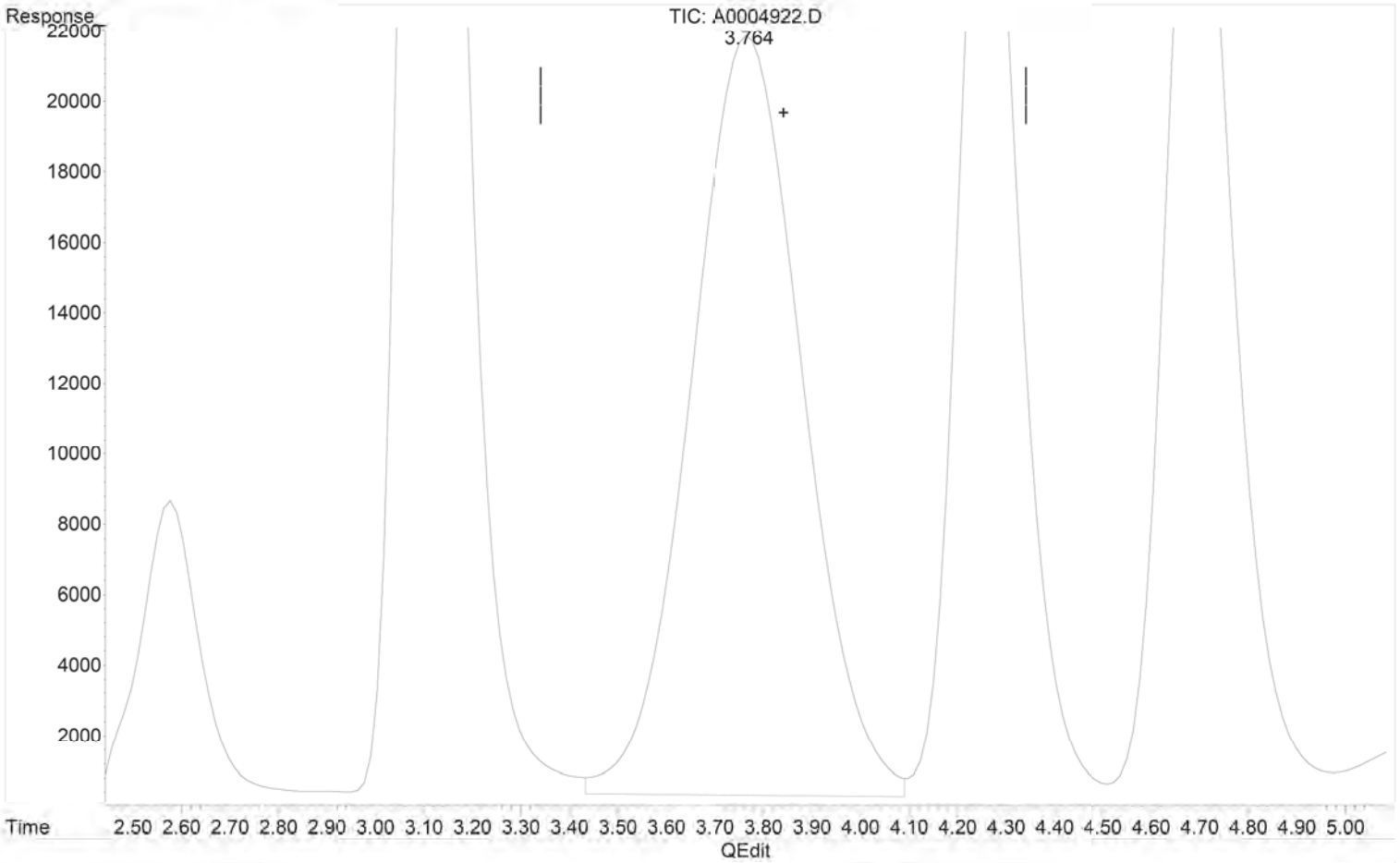
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004922.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 01:47:53
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 12:34:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:33:56 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.770min 5.796 ppm

response 3428875

Manual Integration:

Before

04/09/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

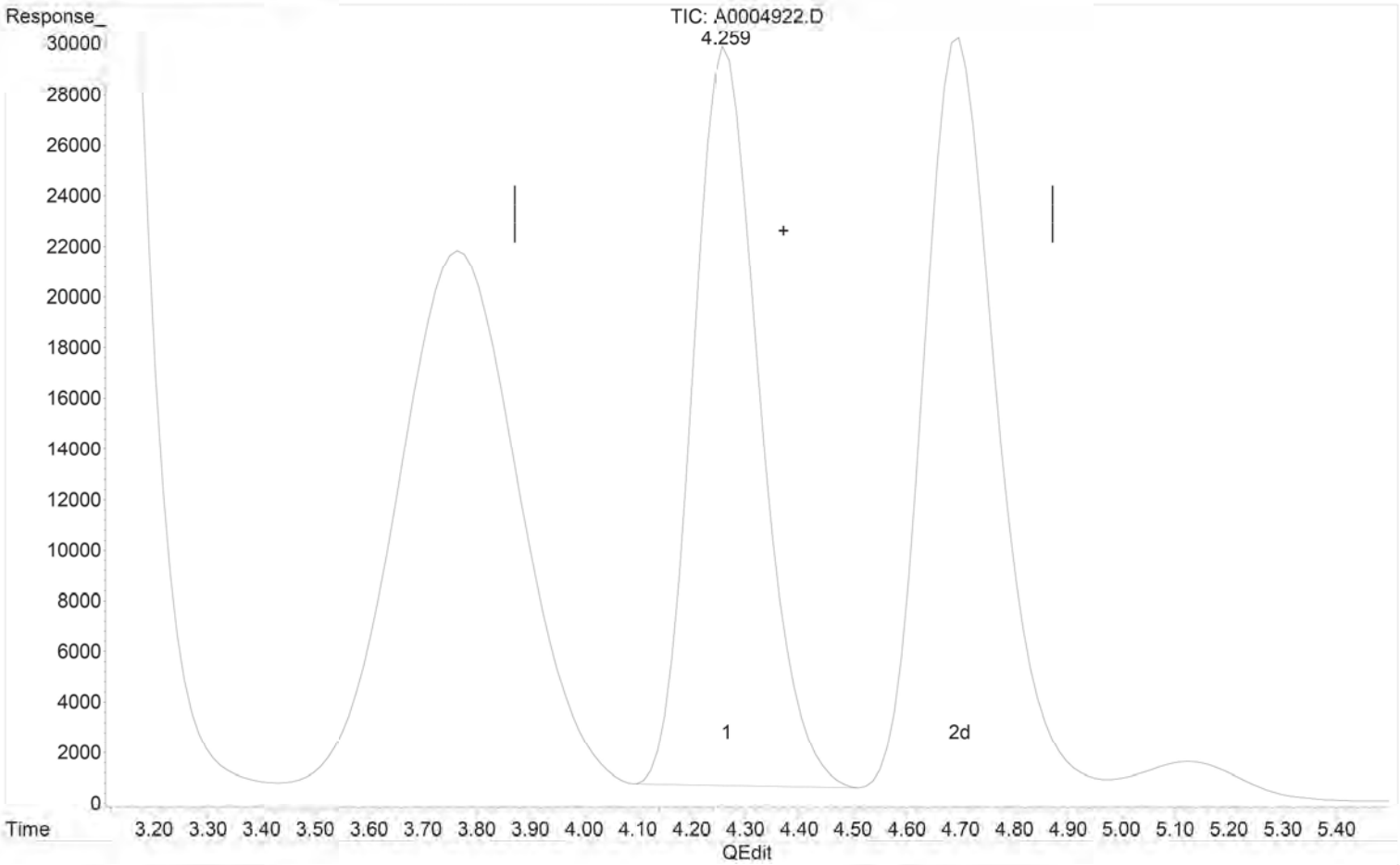
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004922.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 01:47:53
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 12:34:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:33:56 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.259min 44.440 ppm m

response 2507148

Manual Integration:

After

Poor integration.

04/09/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

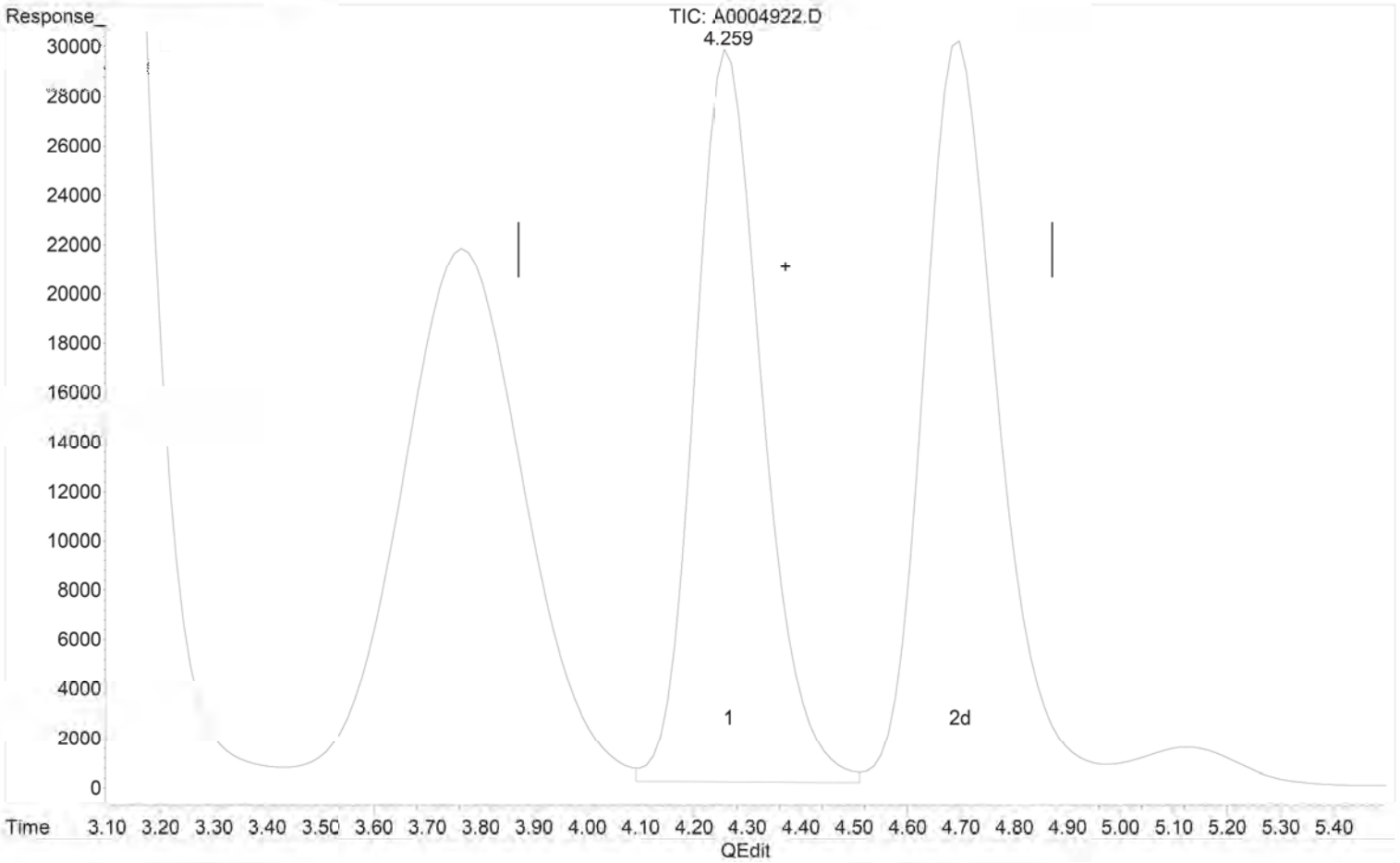
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004922.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 01:47:53
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 12:34:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:33:56 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.265min 46.480 ppm

response 2622220

Manual Integration:

Before

04/09/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

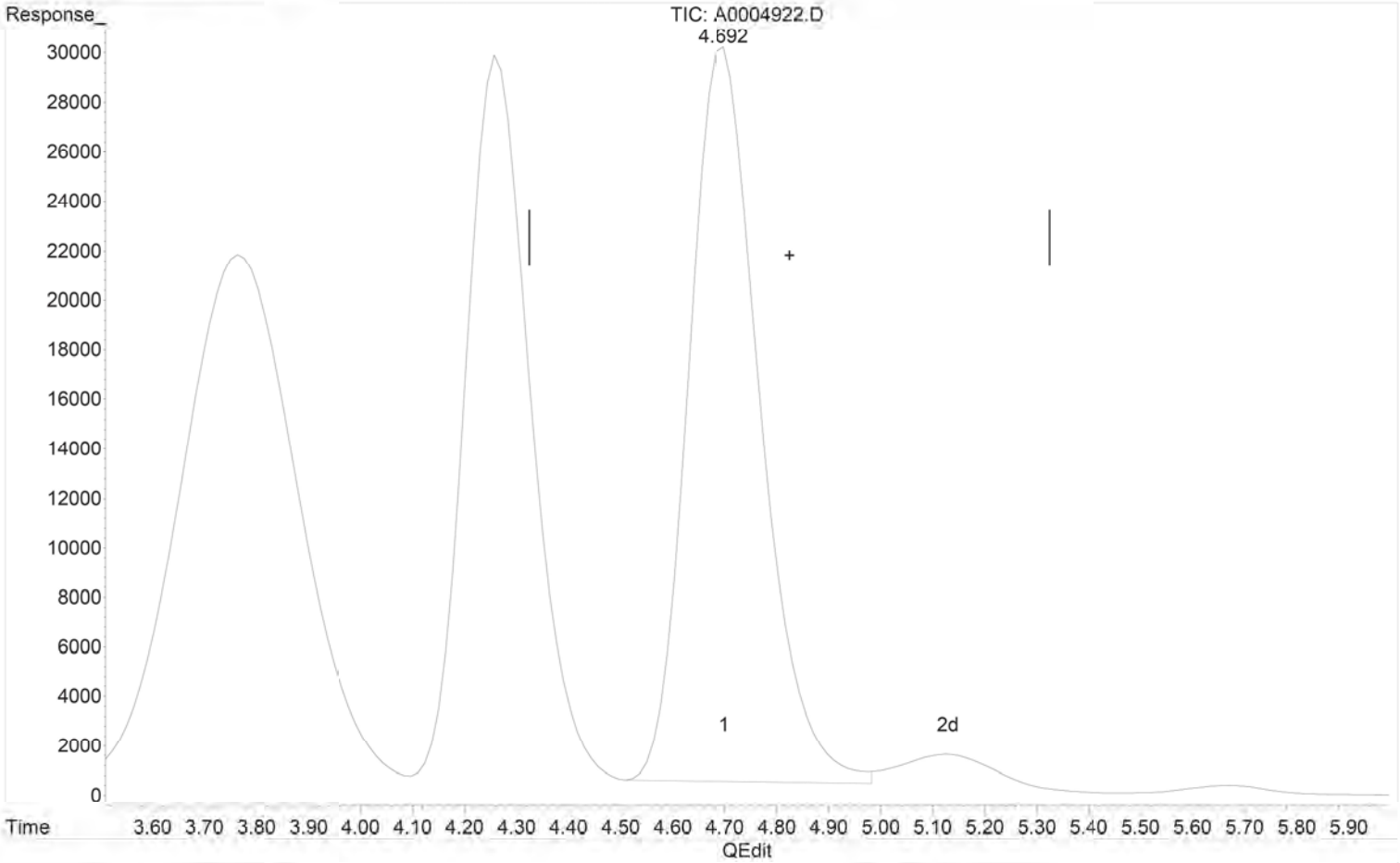
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004922.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 01:47:53
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 12:34:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:33:56 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.692min 50.213 ppm m

response 2814373

Manual Integration:

After

Poor integration.

04/09/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

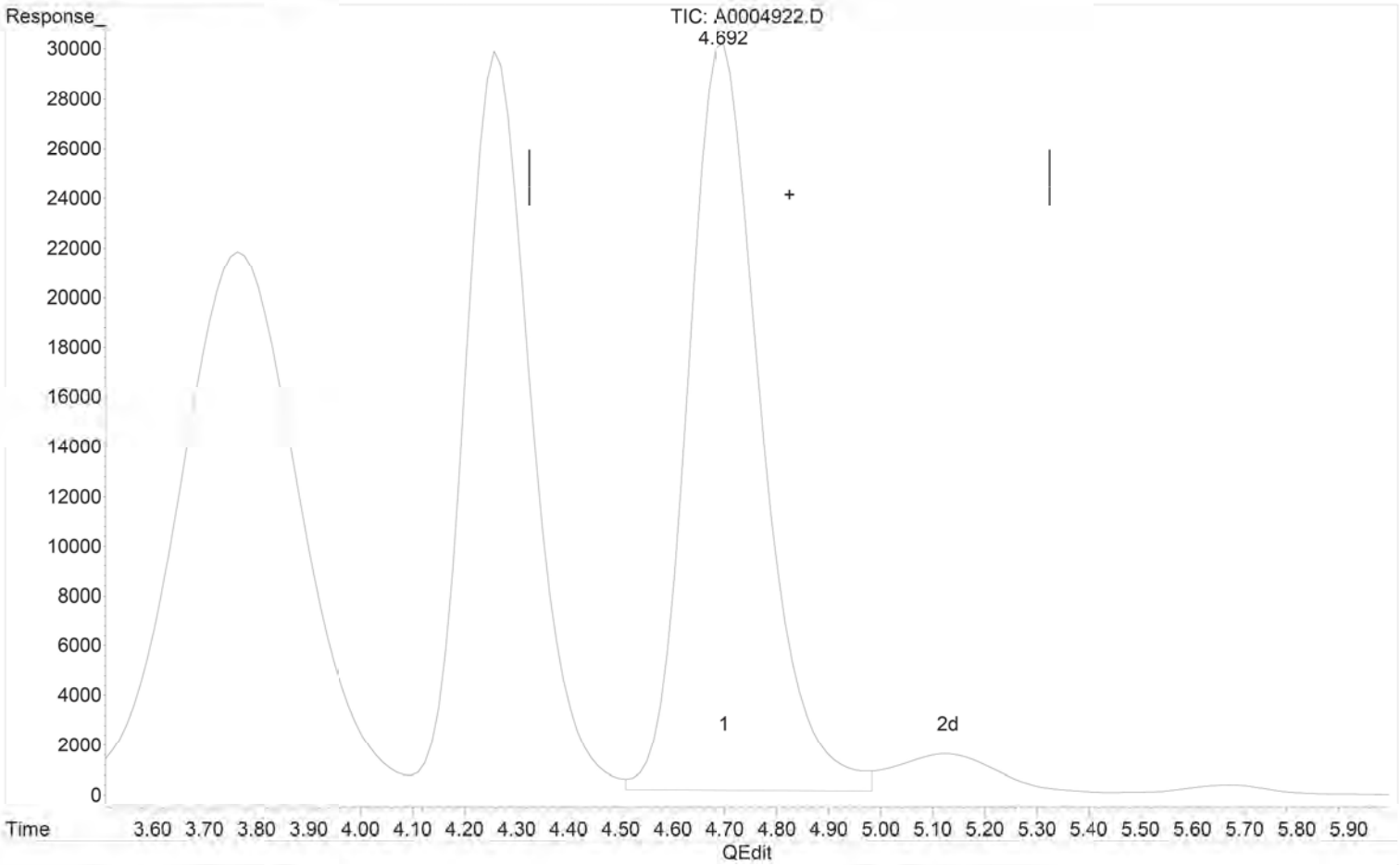
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004922.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 01:47:53
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 12:34:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:33:56 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.699min 52.021 ppm

response 2915660

Manual Integration:

Before

04/09/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

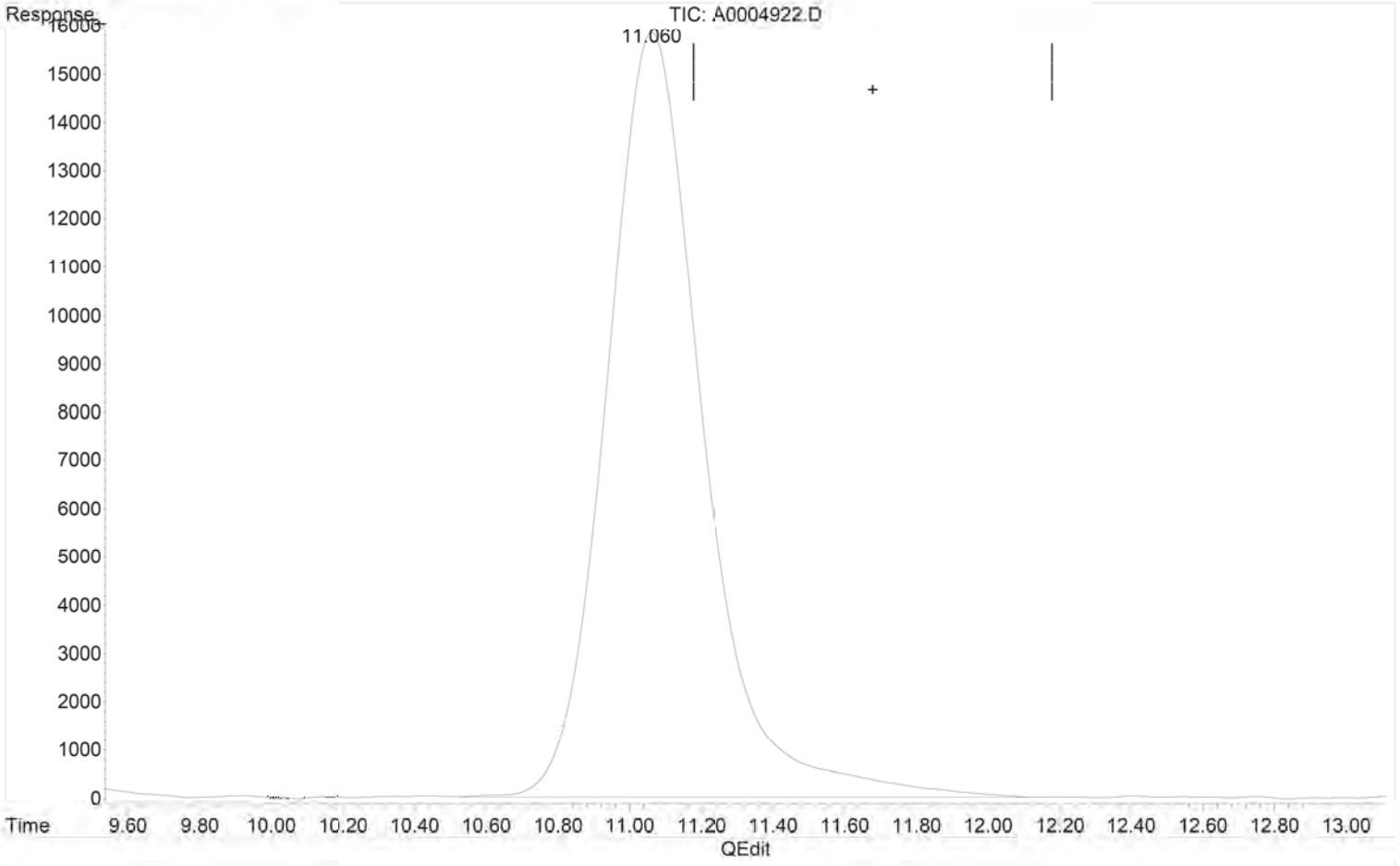
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004922.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 01:47:53
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 12:34:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:33:56 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

11.060min 54.436 ppm m

response 2958998

Manual Integration:

After

Peak not found.

04/09/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

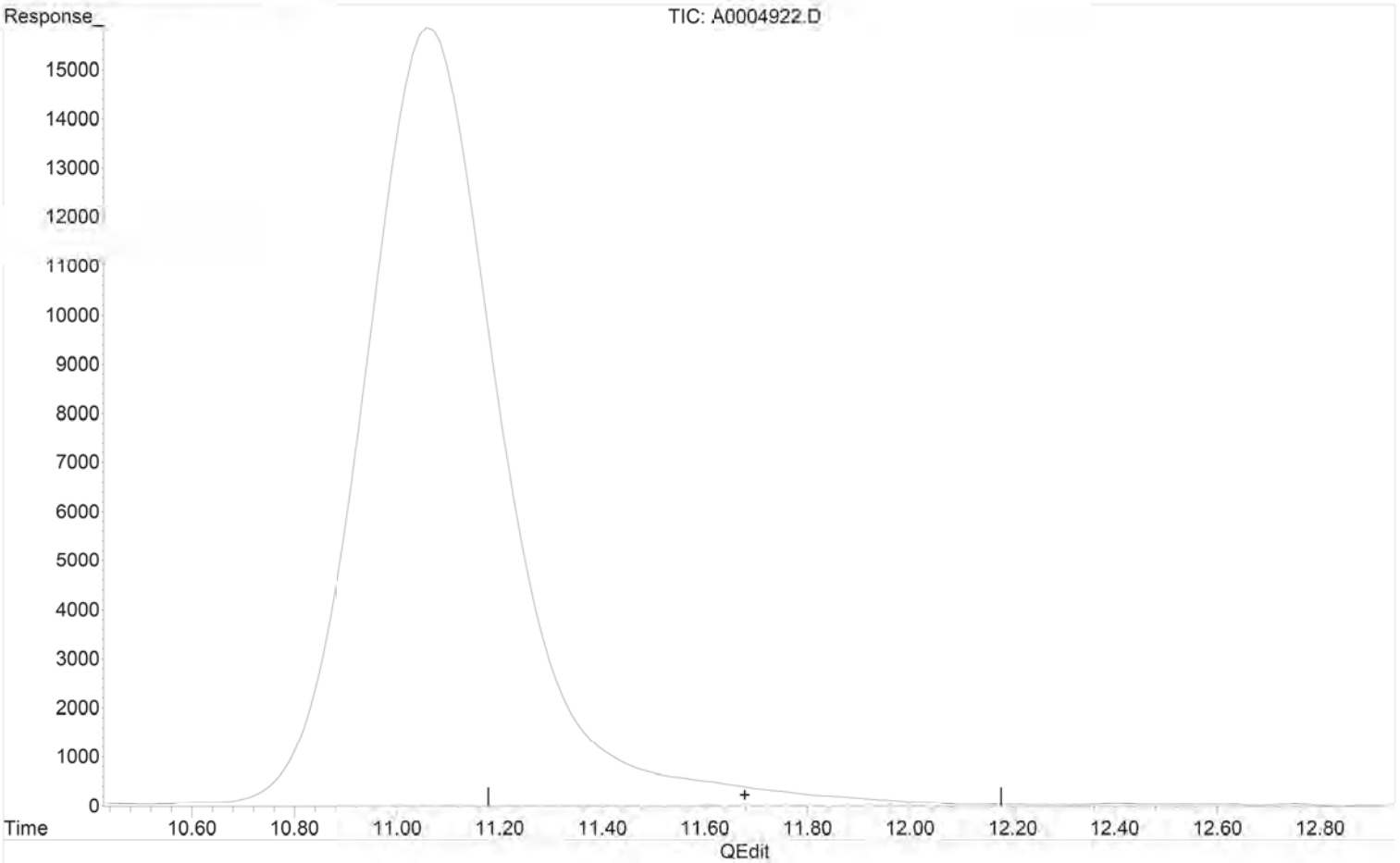
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004922.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 01:47:53
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 12:34:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:33:56 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

11.678min 0.000 ppm

response 0

Manual Integration:

Before

04/09/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

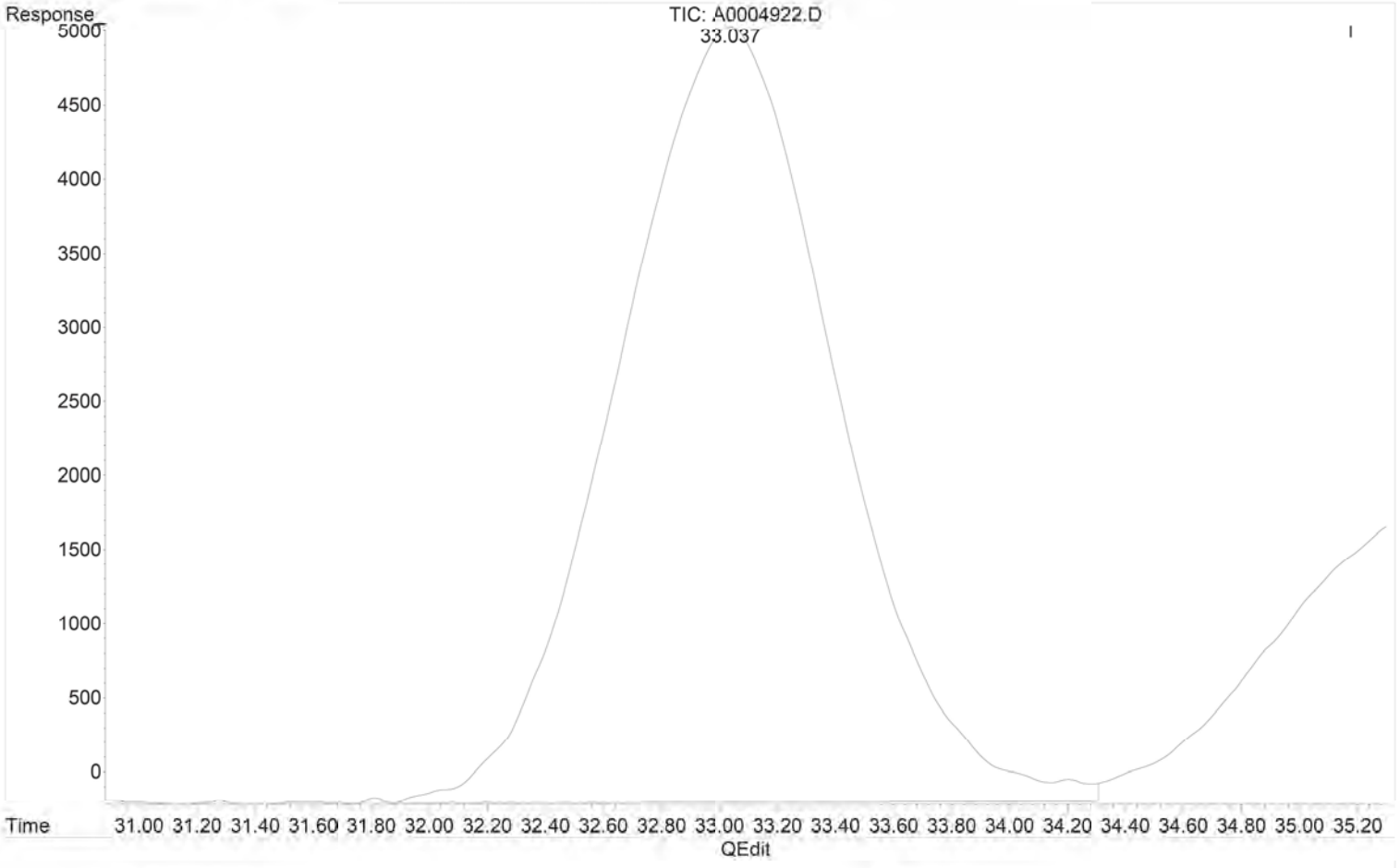
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004922.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 01:47:53
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 12:34:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:33:56 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

33.037min 52.083 ppm m

response 2737582

Manual Integration:

After

Wrong peak selected.

04/09/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

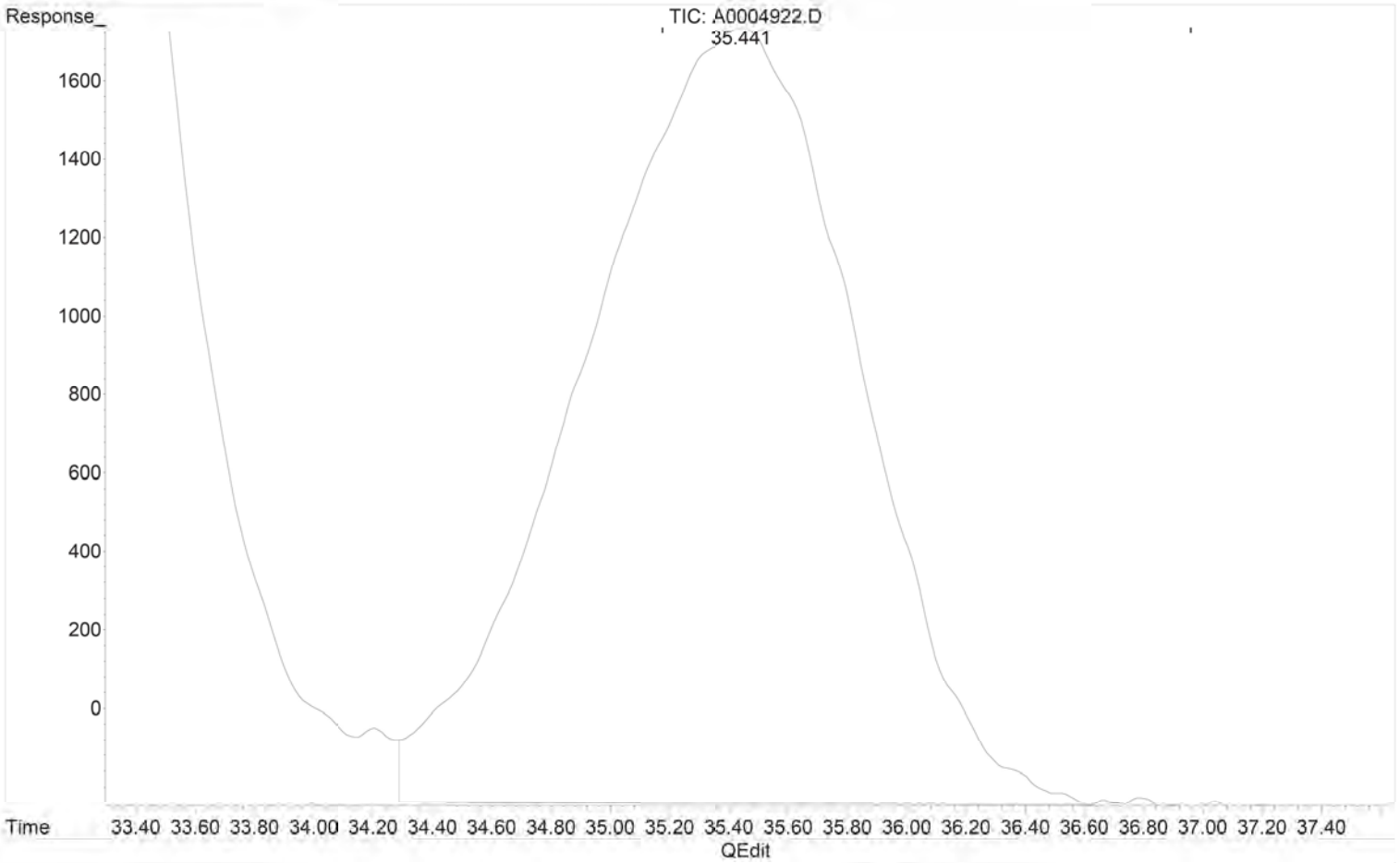
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004922.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 01:47:53
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 12:34:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:33:56 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

35.444min 24.150 ppm

response 1269364

Manual Integration:

Before

04/09/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 04/14/20
2nd BA 04/14/20

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004922.D
Signal(s) : dad1C.ch
Acq On : ~~30-Dec-2000, 01:47:53~~ 09-Apr-2020, 11:29
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 12:34:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:33:56 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.232	94.318 E3	-1.2	100	0.00
2 T	Pyruvic acid	591.568	648.146 E3	-9.6	110	0.00
3 T	Lactic Acid	56.417	50.143 E3	11.1	89	0.00
4 T	Acetic Acid	56.048	56.287 E3	-0.4	100	0.00
5 T	Propionic Acid	54.357	59.180 E3	-8.9	106	0.00
6 T	Butyric Acid	52.562	54.752 E3	-4.2	103	0.00

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004922.D
Signal(s) : dad1C.ch
Acq On : ~~30-Dec-2000, 01:47:53~~ 09-Apr-2020, 11:29
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 12:34:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:33:56 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.117	4715914	50.582	ppm	
2) T	Pyruvic acid	3.764	3240731	5.478	ppm	m
3) T	Lactic Acid	4.259	2507148	44.440	ppm	m
4) T	Acetic Acid	4.692	2814373	50.213	ppm	m
5) T	Propionic Acid	11.060f	2958998	54.436	ppm	m
6) T	Butyric Acid	33.037f	2737582	52.083	ppm	m

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

RIGHT SOLUTIONS | RIGHT PARTNER

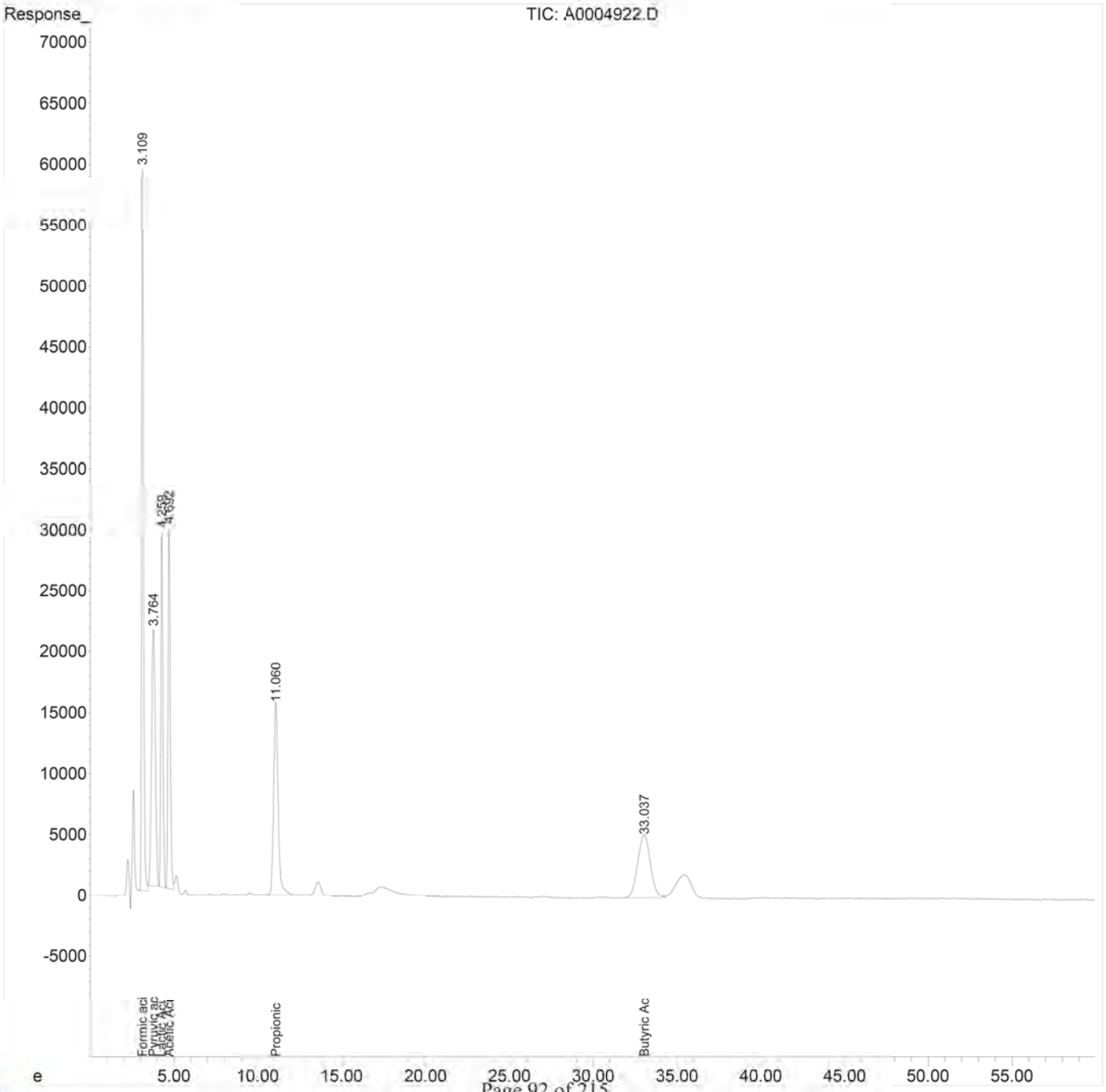
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004922.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 01:47:53
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 09 12:34:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:33:56 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

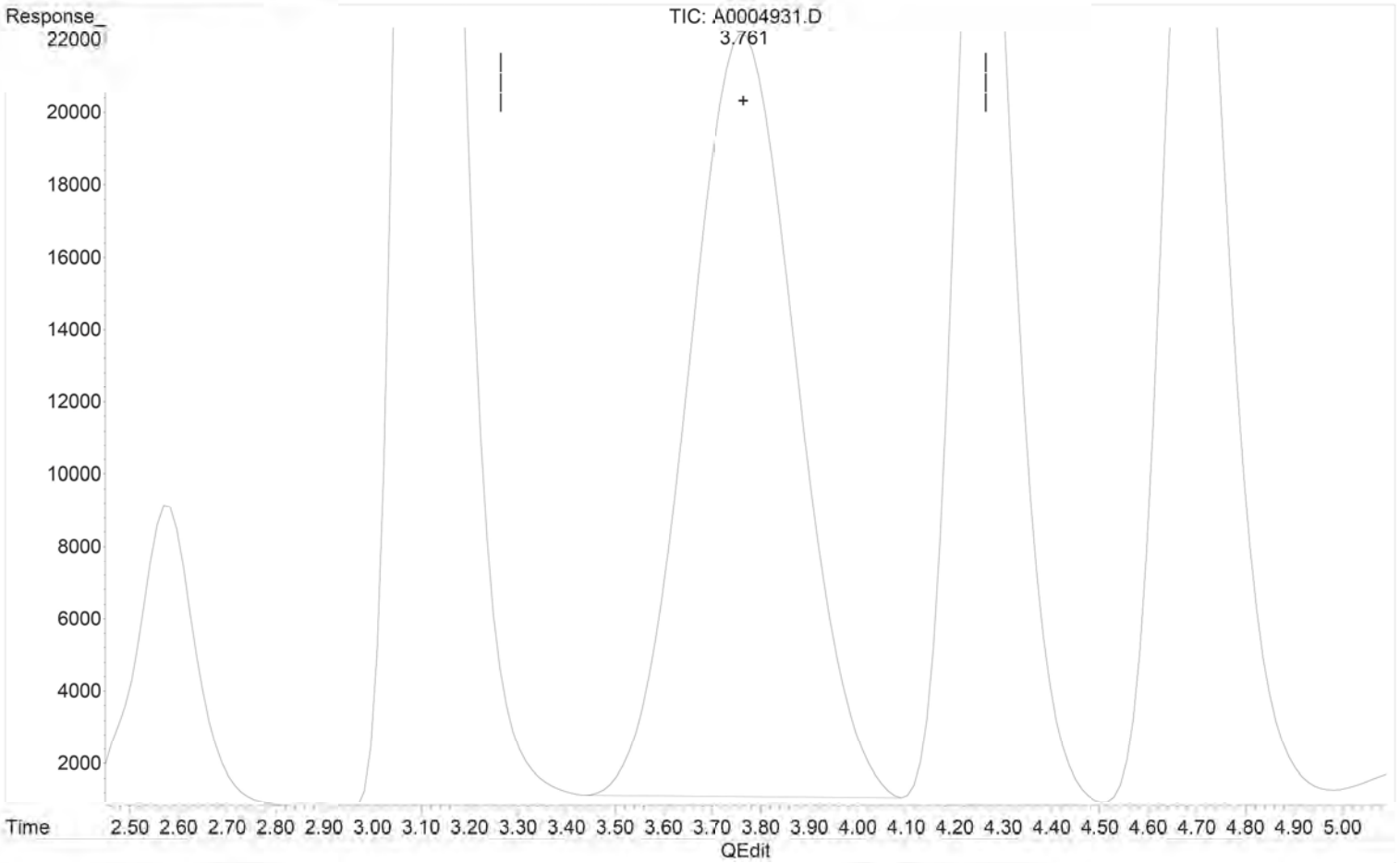
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004931.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 20:59:35
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:36 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.761min 5.485 ppm m

response 3244970

Manual Integration:

After

Poor integration.

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

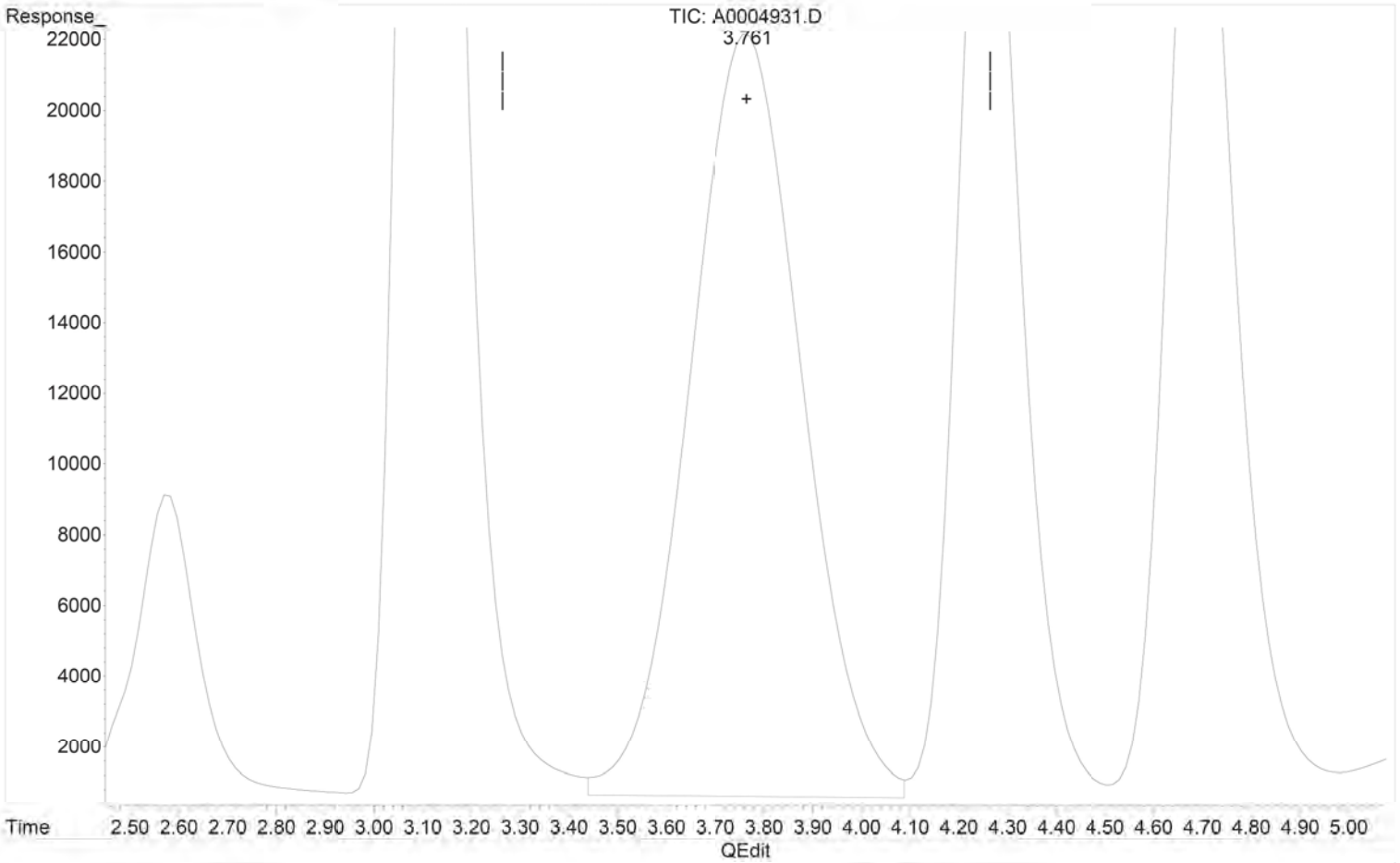
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004931.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 20:59:35
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:36 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.767min 5.808 ppm

response 3435749

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

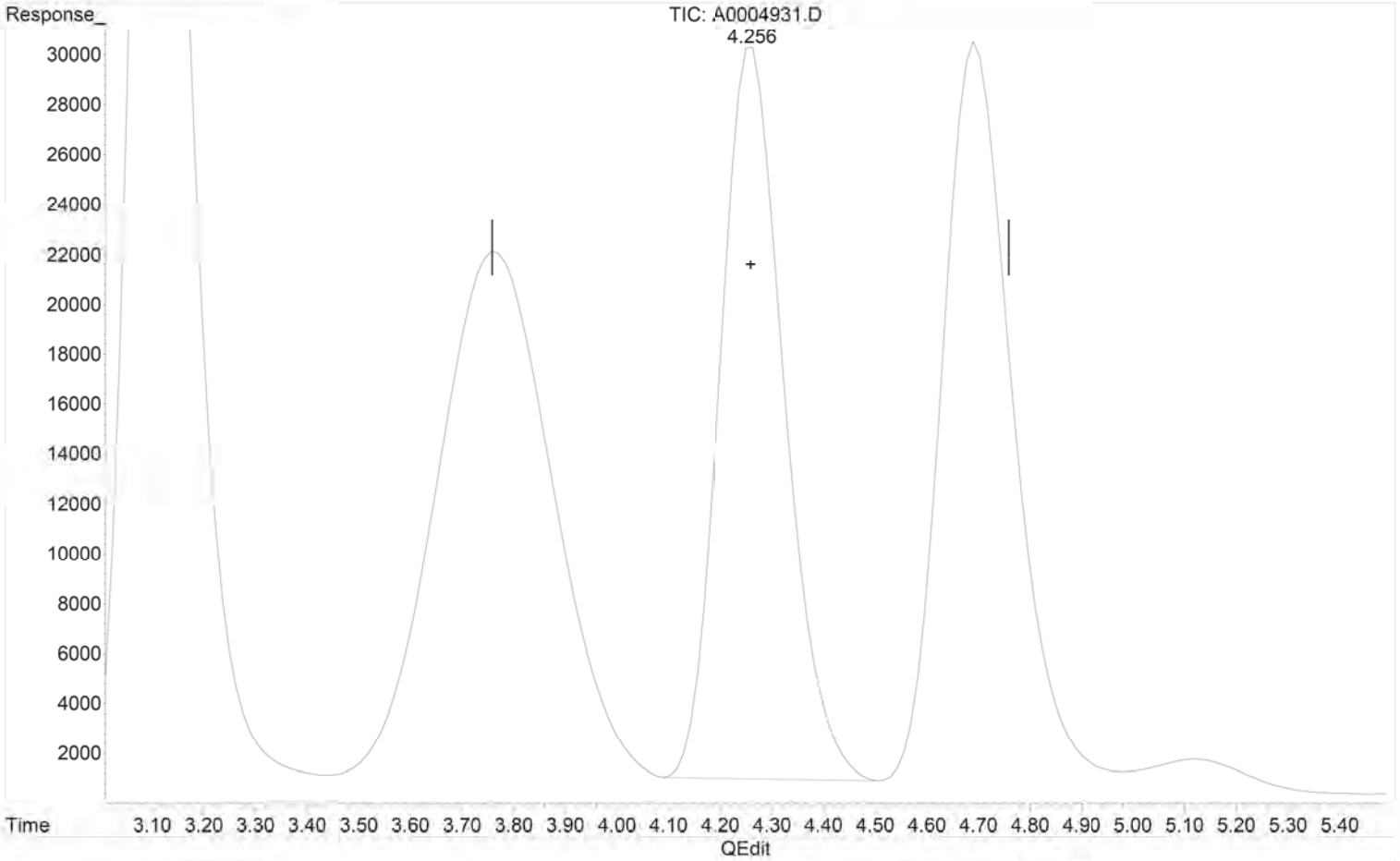
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004931.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 20:59:35
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:36 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.256min 44.979 ppm m

response 2537562

Manual Integration:

After

Poor integration.

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

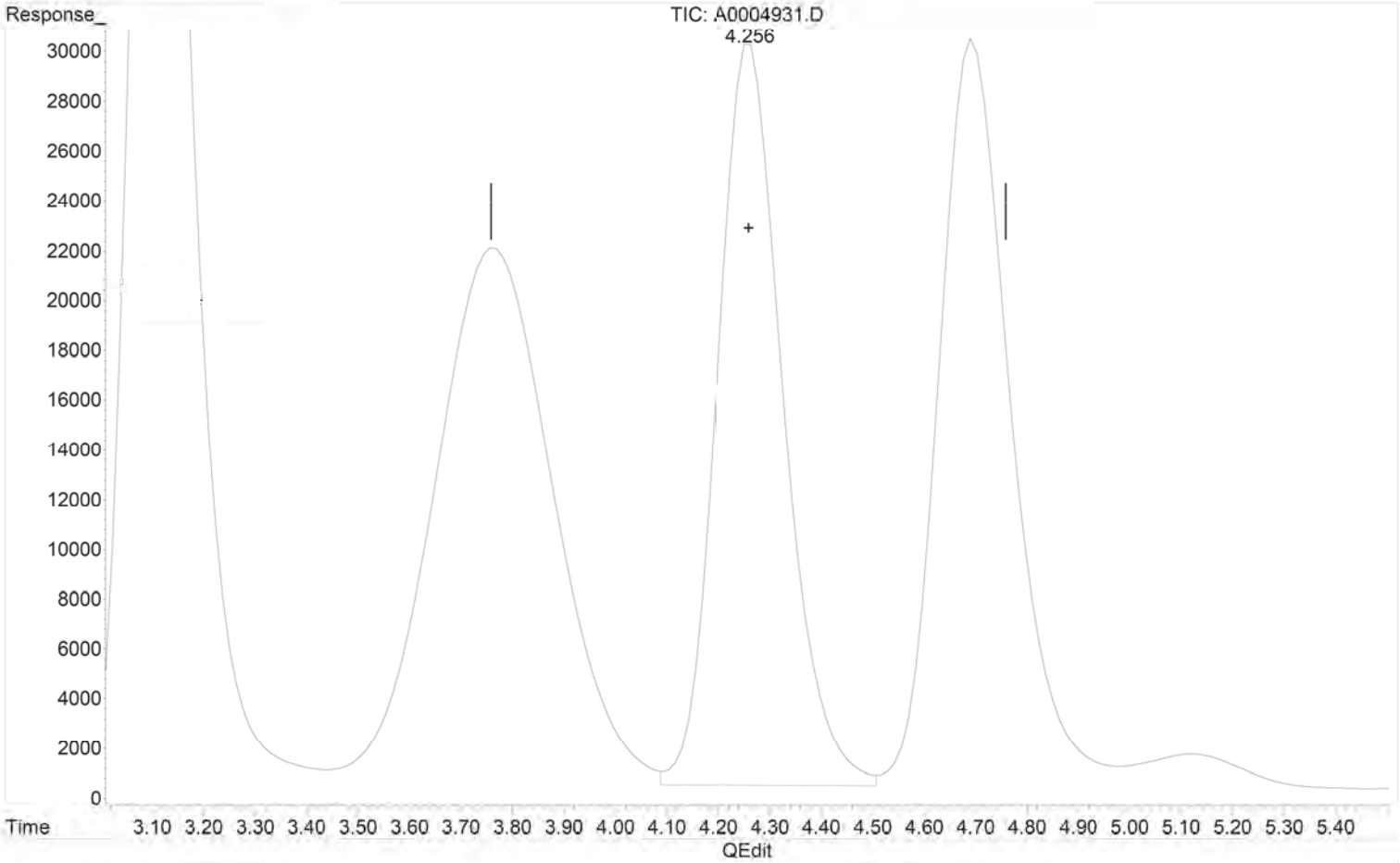
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004931.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 20:59:35
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:36 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.263min 47.015 ppm

response 2652422

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

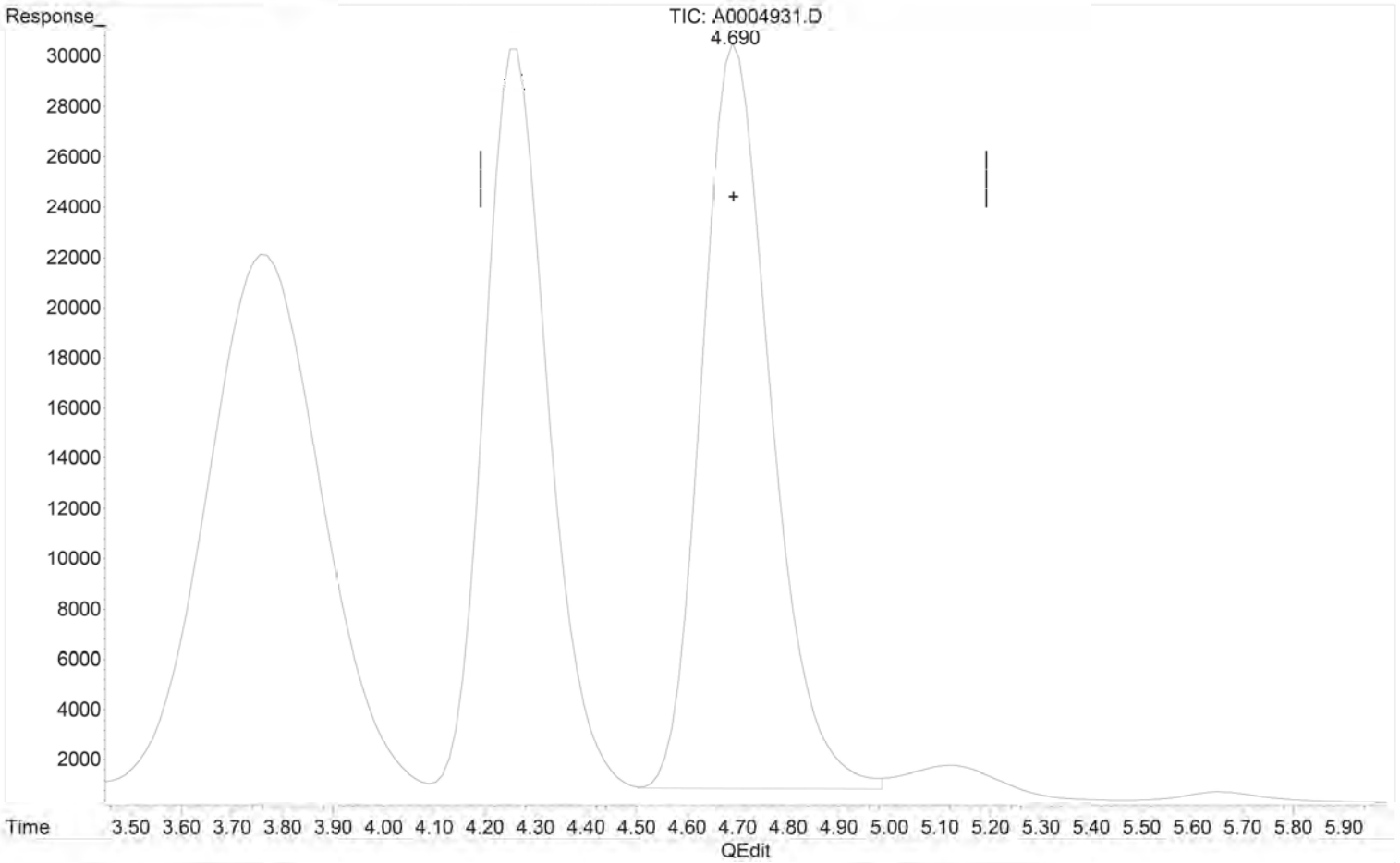
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004931.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 20:59:35
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:36 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.690min 50.235 ppm m

response 2815601

Manual Integration:

After

Poor integration.

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

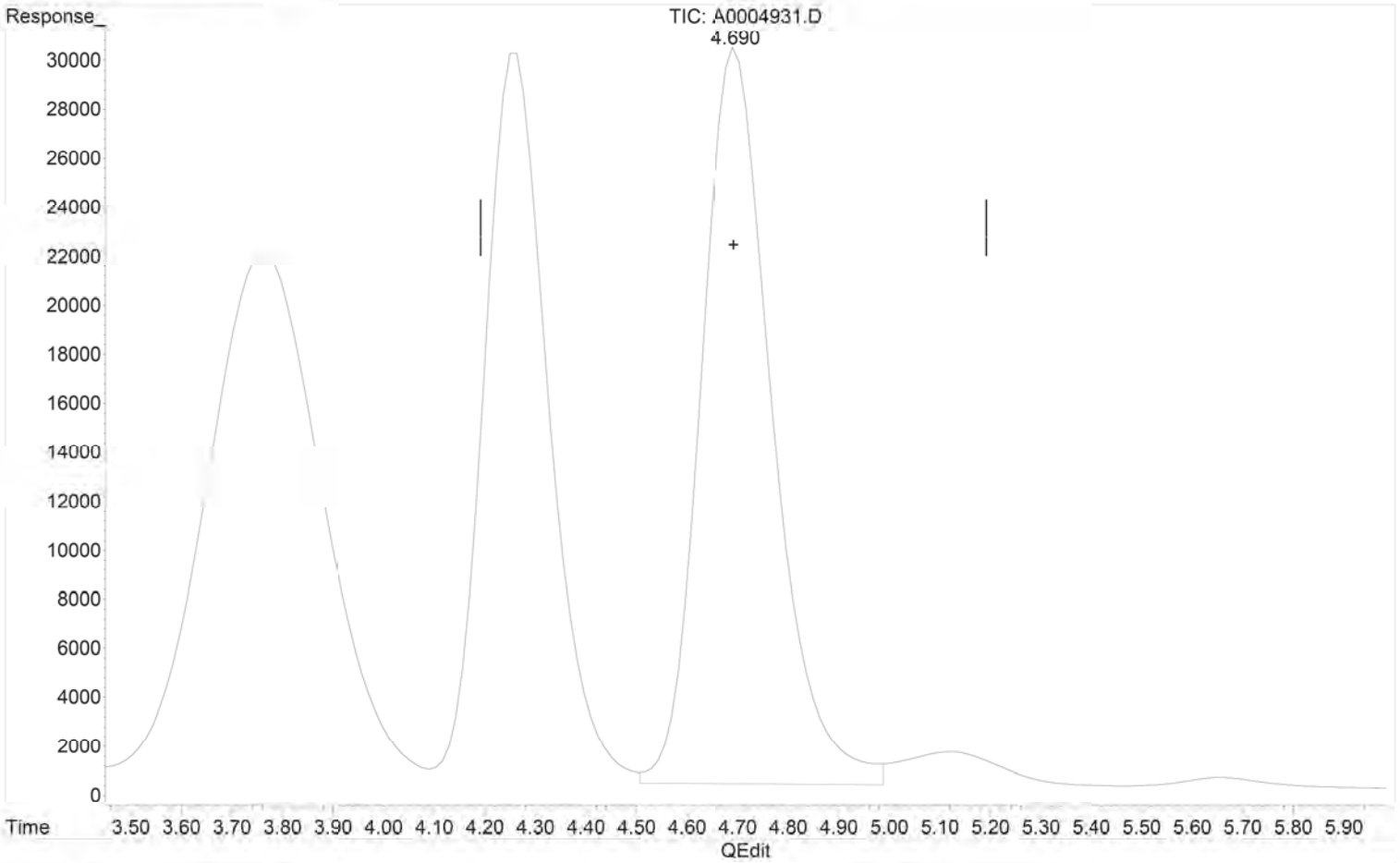
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004931.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 20:59:35
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:36 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.697min 52.189 ppm

response 2925121

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

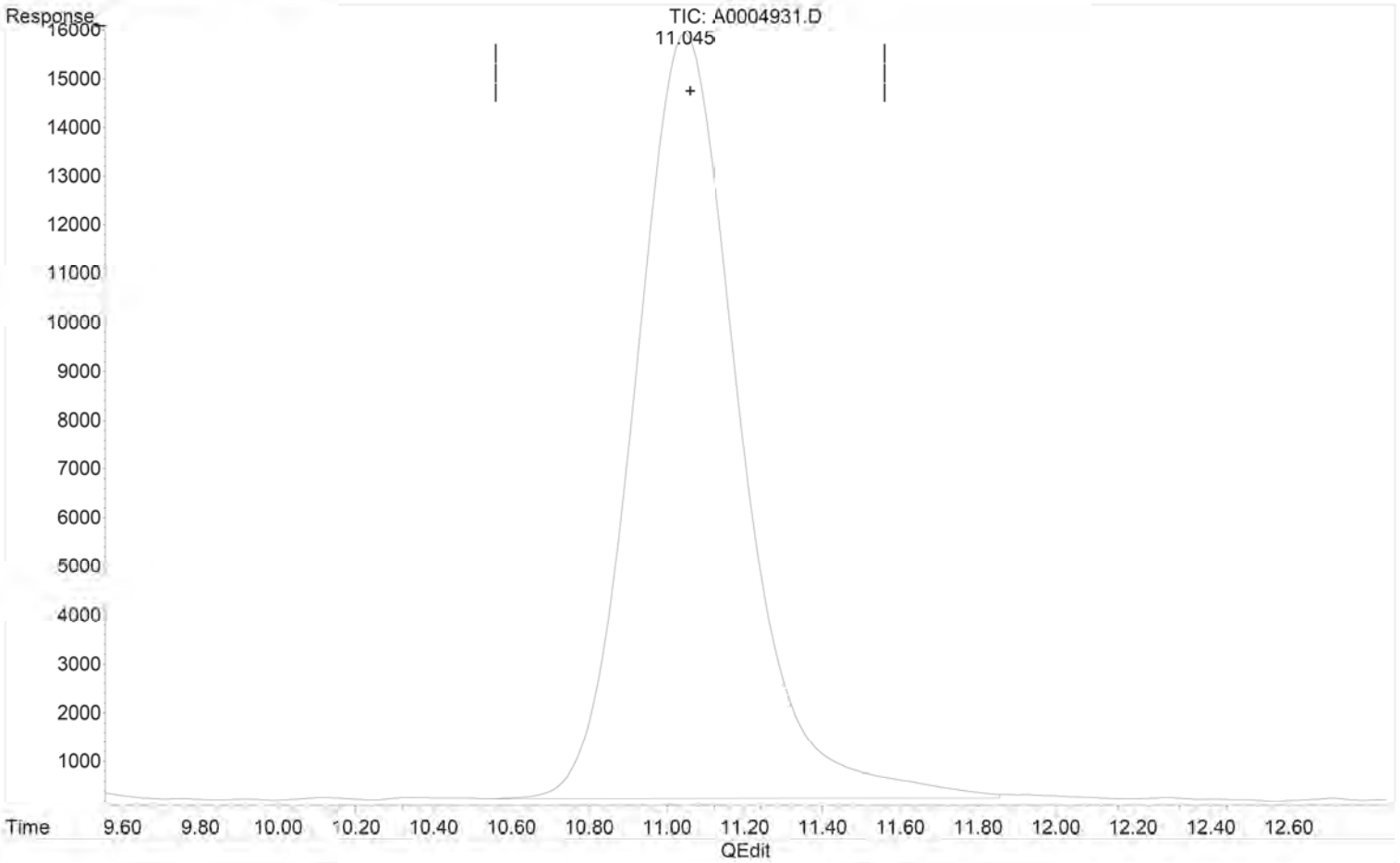
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004931.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 20:59:35
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:36 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

11.045min 53.876 ppm m

response 2928541

Manual Integration:

After

Poor integration.

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

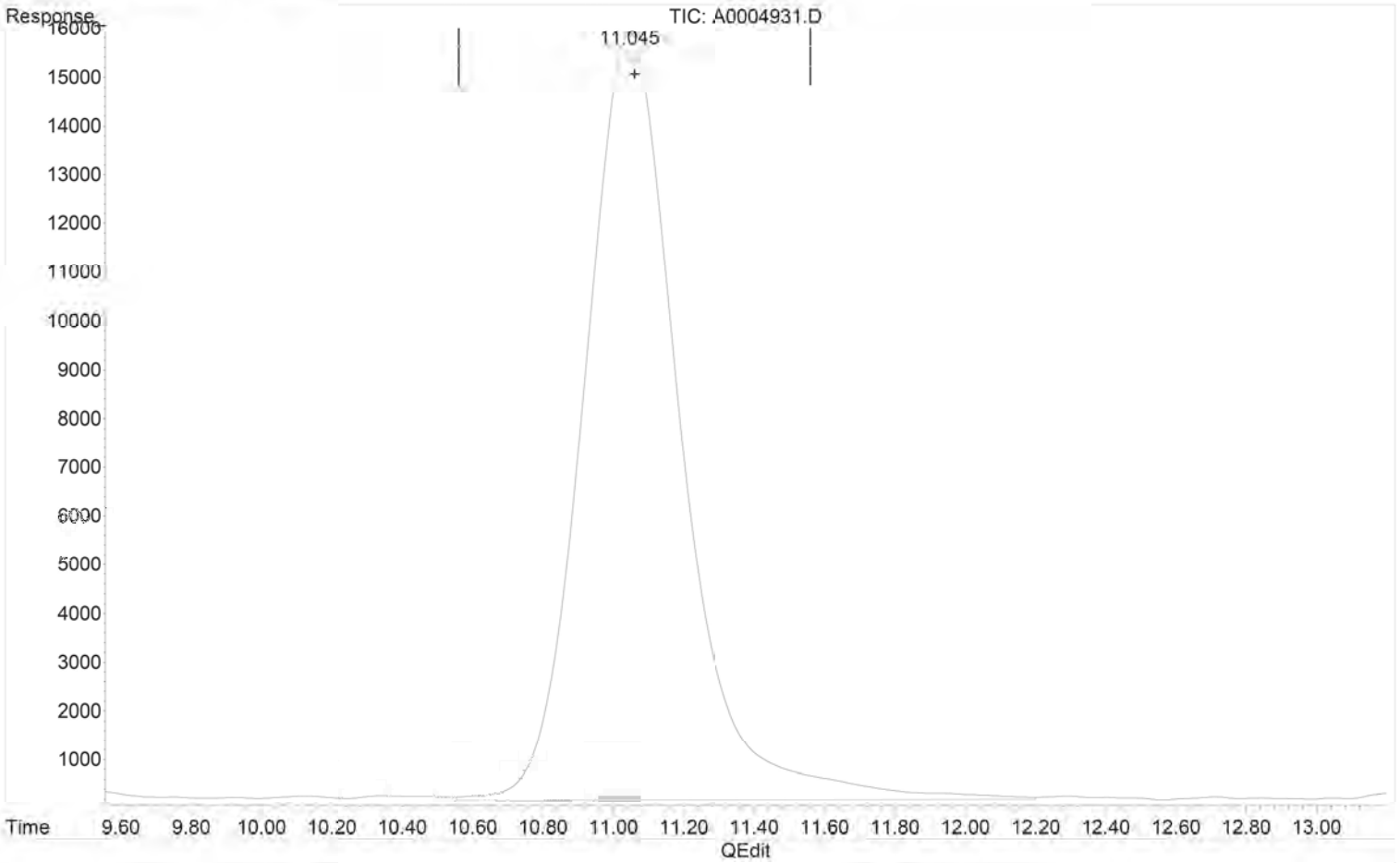
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004931.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 20:59:35
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:36 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

11.051min 55.202 ppm

response 3000639

Manual Integration:

Before

04/14/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 04/14/20
2nd BA 04/14/20

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004931.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 20:59:35
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:36 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.232	94.594 E3	-1.5	100	0.00
2 T	Pyruvic acid	591.568	648.994 E3	-9.7	110	0.00
3 T	Lactic Acid	56.417	50.751 E3	10.0	90	0.00
4 T	Acetic Acid	56.048	56.312 E3	-0.5	100	0.00
5 T	Propionic Acid	54.357	58.571 E3	-7.8	105	-0.01
6 T	Butyric Acid	52.562	54.303 E3	-3.3	102	-0.10

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004931.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 20:59:35
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:36 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.115	4729720	50.730	ppm	
2) T	Pyruvic acid	3.761	3244970	5.485	ppm	m
3) T	Lactic Acid	4.256	2537562	44.979	ppm	m
4) T	Acetic Acid	4.690	2815601	50.235	ppm	m
5) T	Propionic Acid	11.045	2928541	53.876	ppm	m
6) T	Butyric Acid	32.932	2715153	51.656	ppm	

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

RIGHT SOLUTIONS | RIGHT PARTNER

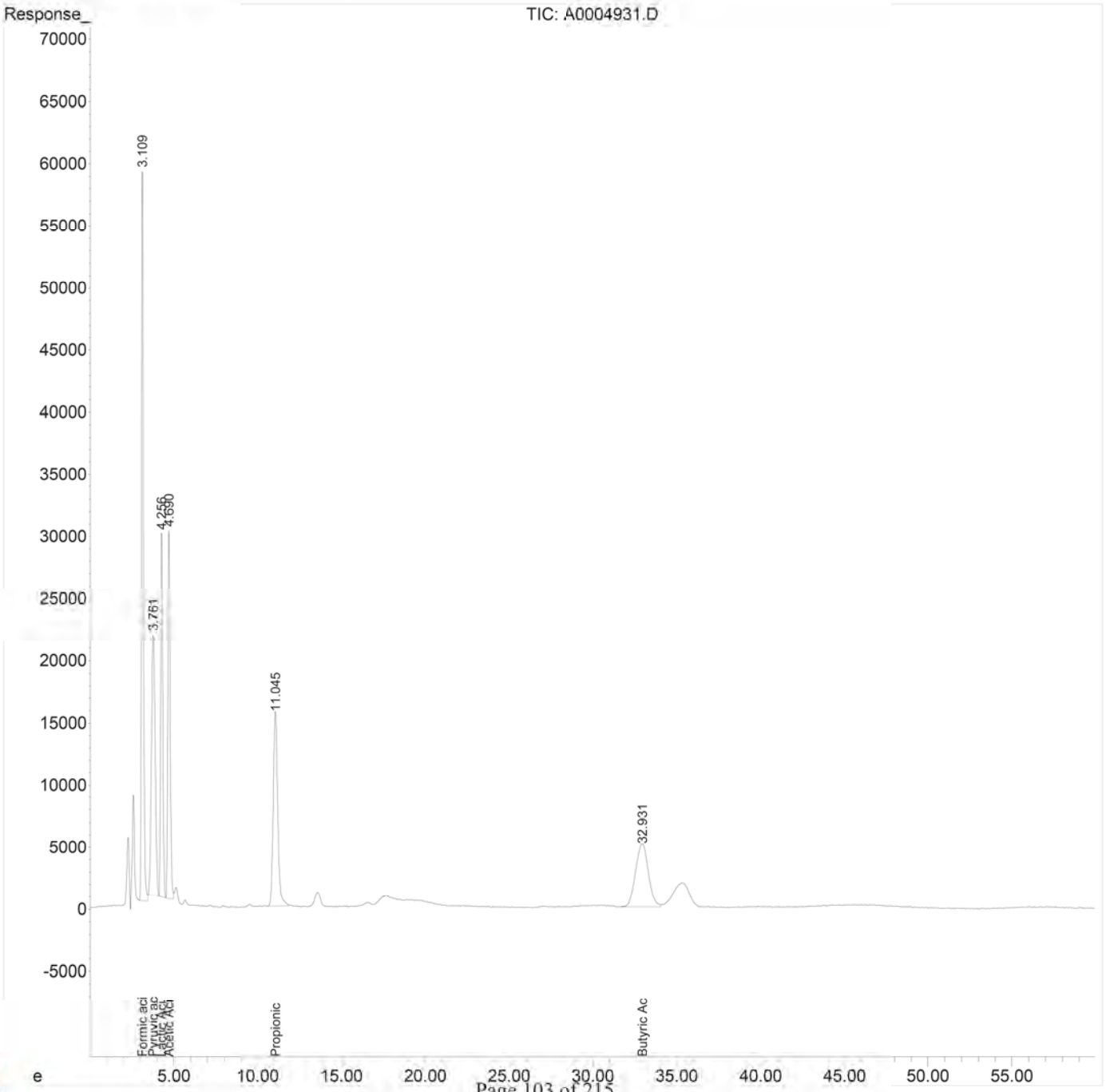
1st AF 04/14/20
2nd BA 04/14/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\040920\
Data File : A0004931.D
Signal(s) : dad1C.ch
Acq On : 09-Apr-2020, 20:59:35
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Apr 14 08:55:36 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Apr 09 12:35:40 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

Analysis: Met Acids Analyst: Archer Run Method: NEWMETA.M
Date: 03/12/2020 Instr. HPLC05 Quant Method: MA03/220.M
LIMS Run#:
Setup: Column: Synergi Hydro-RP 150x4.6 Col.Temp: 35°C Flow: 0.6mL/min
Mobile Phase: 0.02M KH2PO4 prep 0.1% PO4 ul Inj.: 50
Mobile Phase ID: 0-760-76 03/12/2020

Pos.	Sample	Diln.	Stds. ID	File#	OK?	Comments
1	Blk			A0004461	—	
1	Blk			62	—	
1	Blk			63	—	
1	last Blk			64	Y	
2	STD 1	2µL/1mL	205268	65	Y	
3	2	4µL/1mL		66	Y	
4	3	10µL/1mL		67	Y	
5	4	20µL/1mL		68	Y	
6	5	40µL/1mL		69	Y	
7	6	0.1mL/1mL		70	Y	
8	7	0.2mL/1mL		71	Y	
9	8	0.4mL/1mL	↓	72	Y	
10	ICV	100µL/1mL	203153	73	N	Interference w/ Butyric

Archer 03/27/2020

Primary: 205268 exp: 09/21/20 Secondary: 203153 exp: 09/21/20
pH Paper: 205502 Acid: 203550

Runlog HPLCr2
3/23/18
O-998 Page 20

RIGHT SOLUTIONS | RIGHT PARTNER

Analysis: Met Acids Analyst: ASelmer Run Method: NEWMETA.M
Date: 03/16/2020 Instr. HPLC05 Quant Method: MA031220.M
LIMS Run#: 673626
Setup: Column: Synergi Hydro RP 150 x 4.6 Col.Temp: 35°C Flow: 0.6mL/min
Mobile Phase: 0.02M KH2PO4 pH 2.6 in DI Water ul Inj.: 50
Mobile Phase ID: O-7668-76 03/12/2020

Pos.	Sample	Diln.	Stds. ID	File#	OK?	Comments
1	DLK			A0004774	—	
1	DLK			75		
2	CCV	100ppm/1mL	205268	76	Y	
3	ICV	↓	203153	77	Y	
4	CCV	100ppm/1mL	205268	78	Y	Retest ↑
5	MD			79	Y	
6	LCS	100ppm/1mL	203153	80	Y	
7	DLCS	↓	↓	81	Y	
8	K2001991-001			82	N	Acetic >LR, dilute 1/2
9	↓ -001 MS		203153	83	N	↓
4	CCV	100ppm/1mL	205268	84	Y	
10	K2001991-001 Dmp		203153	85	N	Acetic >LR
11	K2001990-001	2		86	Y	
12	R2001765-012			87	Y	
13	↓ -022			88	Y	
14	↓ -023			89	Y	
4	CCV	100ppm/1mL	205268	90	Y	
15	LOQ/MDL	10ppm/1mL	203153	91	Y	
16	LODV	5ppm/1mL	↓	92	Y	
17	R2002223-001			93	Y	
18	↓ -003			94	Y	
19	↓ -005			95	Y	
4	CCV	100ppm/1mL	205268	96	Y	
20	K2001991-001	2		97		
4	CCV	100ppm/1mL	205268	98	Y	

05/17/2020

Primary: 205268 exp: 03/21/20 Secondary: 203153 exp: 03/28/20
pH Paper: 205502 Acid: 203940

Runlog HPLCr2
3/23/18

RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.949	18444040	201.560	ppm	
2) T	Pyruvic acid	3.625	11605902	19.912	ppm	m
3) T	Lactic Acid	4.103	11063811	199.720	ppm	m
4) T	Acetic Acid	4.584	11047591	197.987	ppm	m
5) T	Propionic Acid	11.450	10994386	200.127	ppm	
6) T	Butyric Acid	36.001f	10326182	196.253	ppm	m

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

RIGHT SOLUTIONS | RIGHT PARTNER

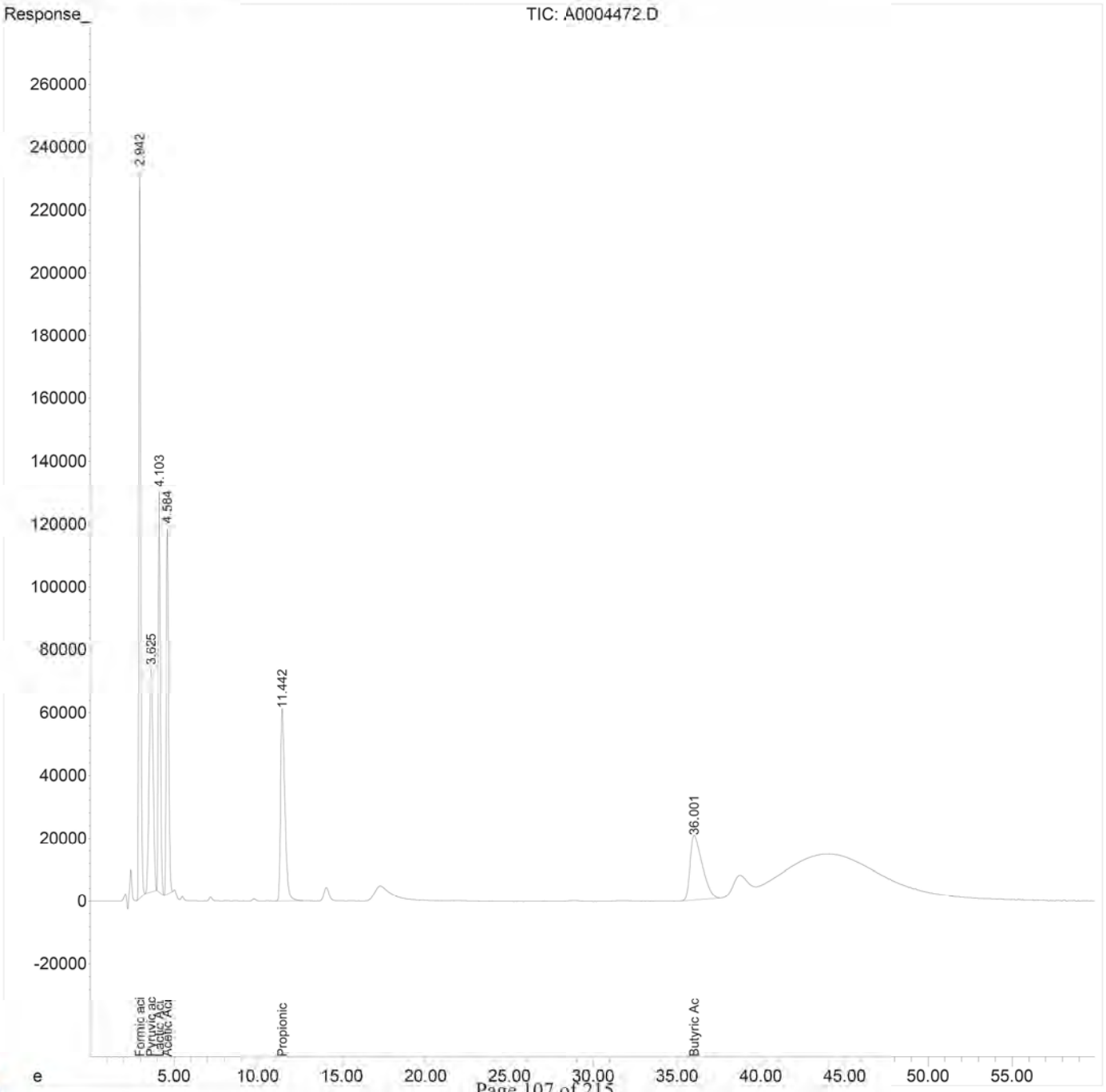
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004464.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 11:36:51
Operator : A.Felser
Sample : INST BLK
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:30:23 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:29:26 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) t	Formic acid	0.000	0	N.D.	ppm
2) T	Pyruvic acid	0.000	0	N.D.	ppm
3) T	Lactic Acid	0.000	0	N.D.	ppm
4) T	Acetic Acid	0.000	0	N.D.	ppm
5) T	Propionic Acid	0.000	0	N.D.	ppm
6) T	Butyric Acid	0.000	0	N.D.	ppm

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

RIGHT SOLUTIONS | RIGHT PARTNER

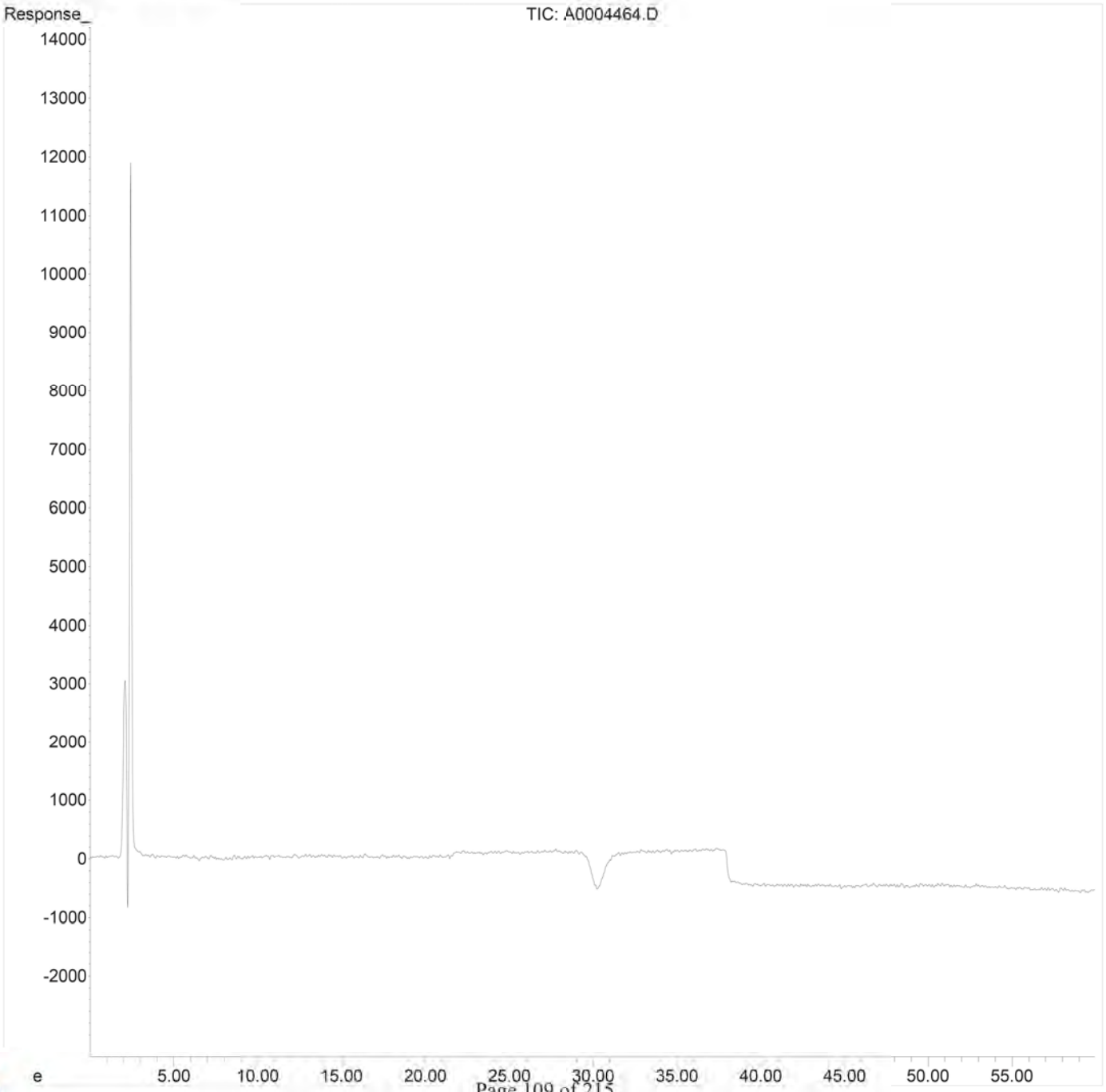
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004464.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 11:36:51
Operator : A.Felser
Sample : INST BLK
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:30:23 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:29:26 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

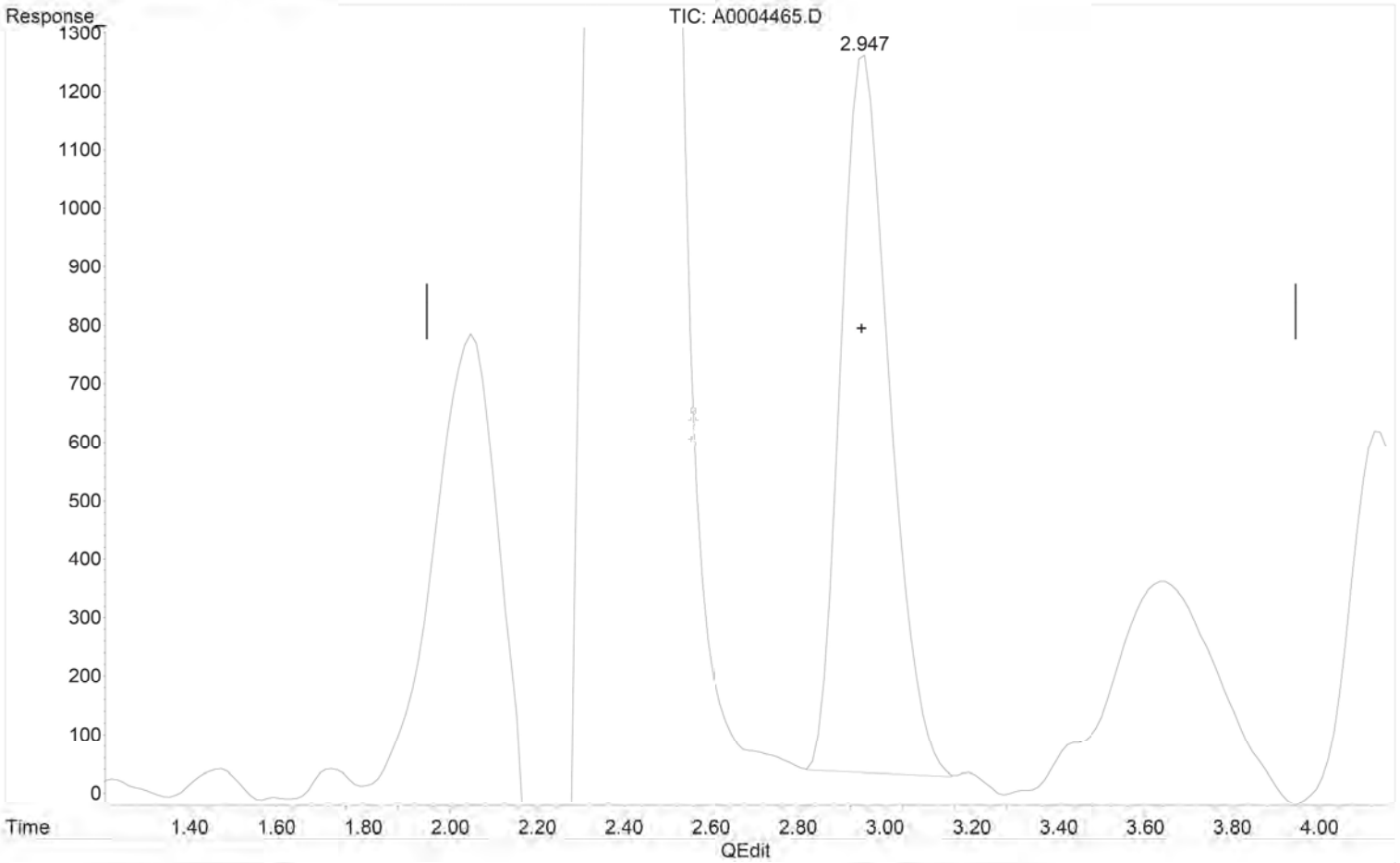
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.947min 1.051 ppm m

response 96141

Manual Integration:

After

Peak not found.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

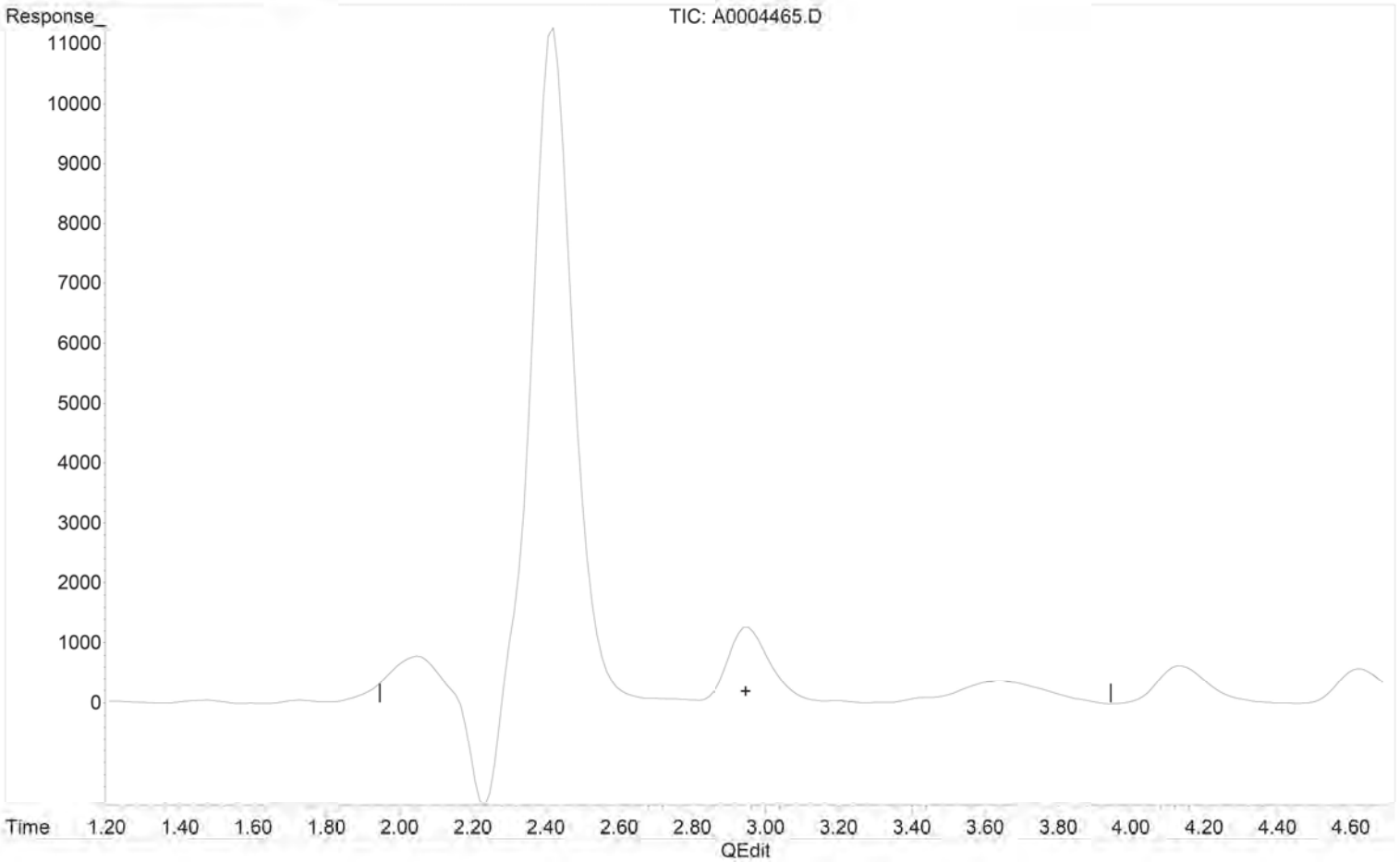
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.946min 0.000 ppm

response 0

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

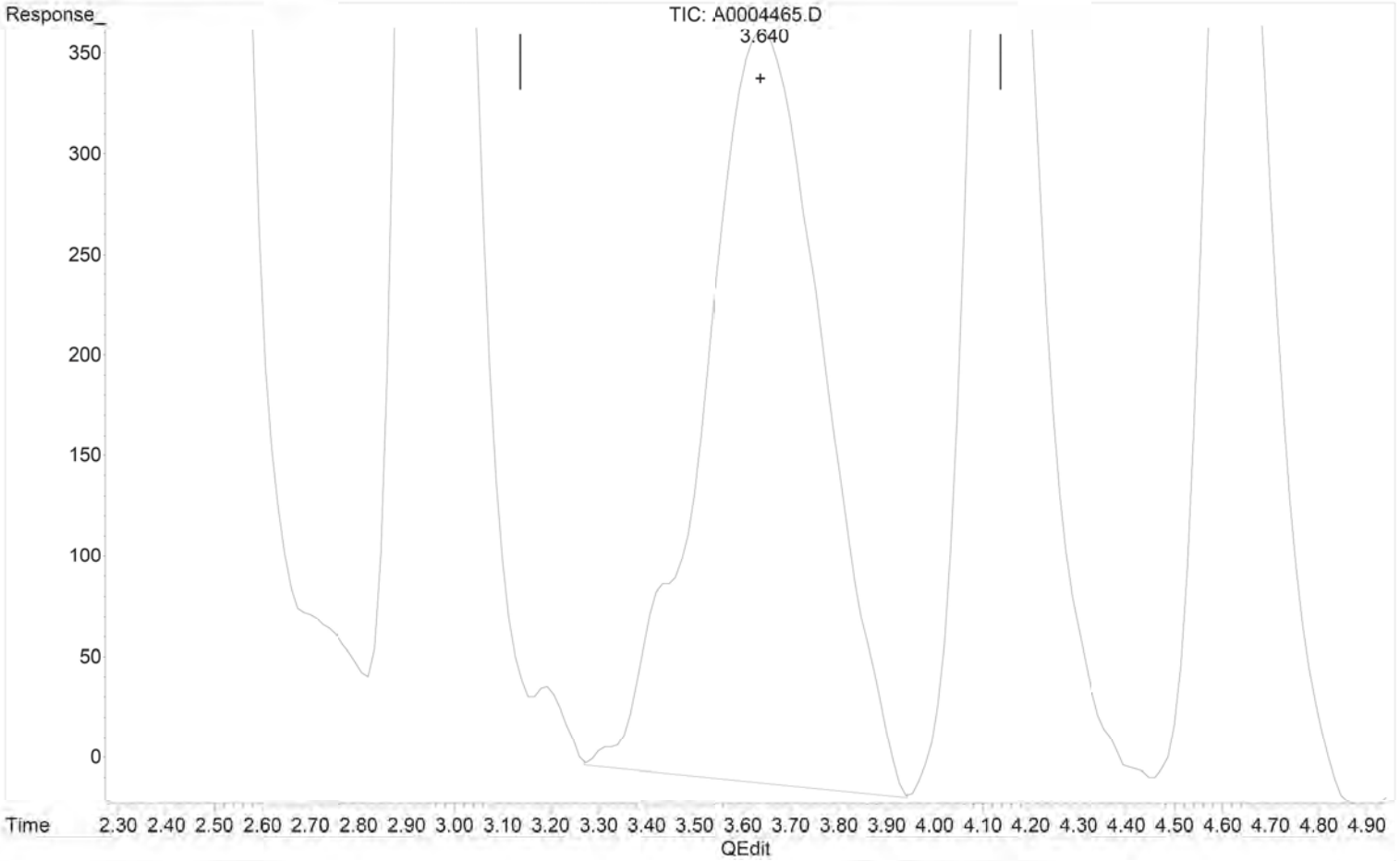
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.640min 0.112 ppm m
response 65073

Manual Integration:
After
Peak not found.
03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

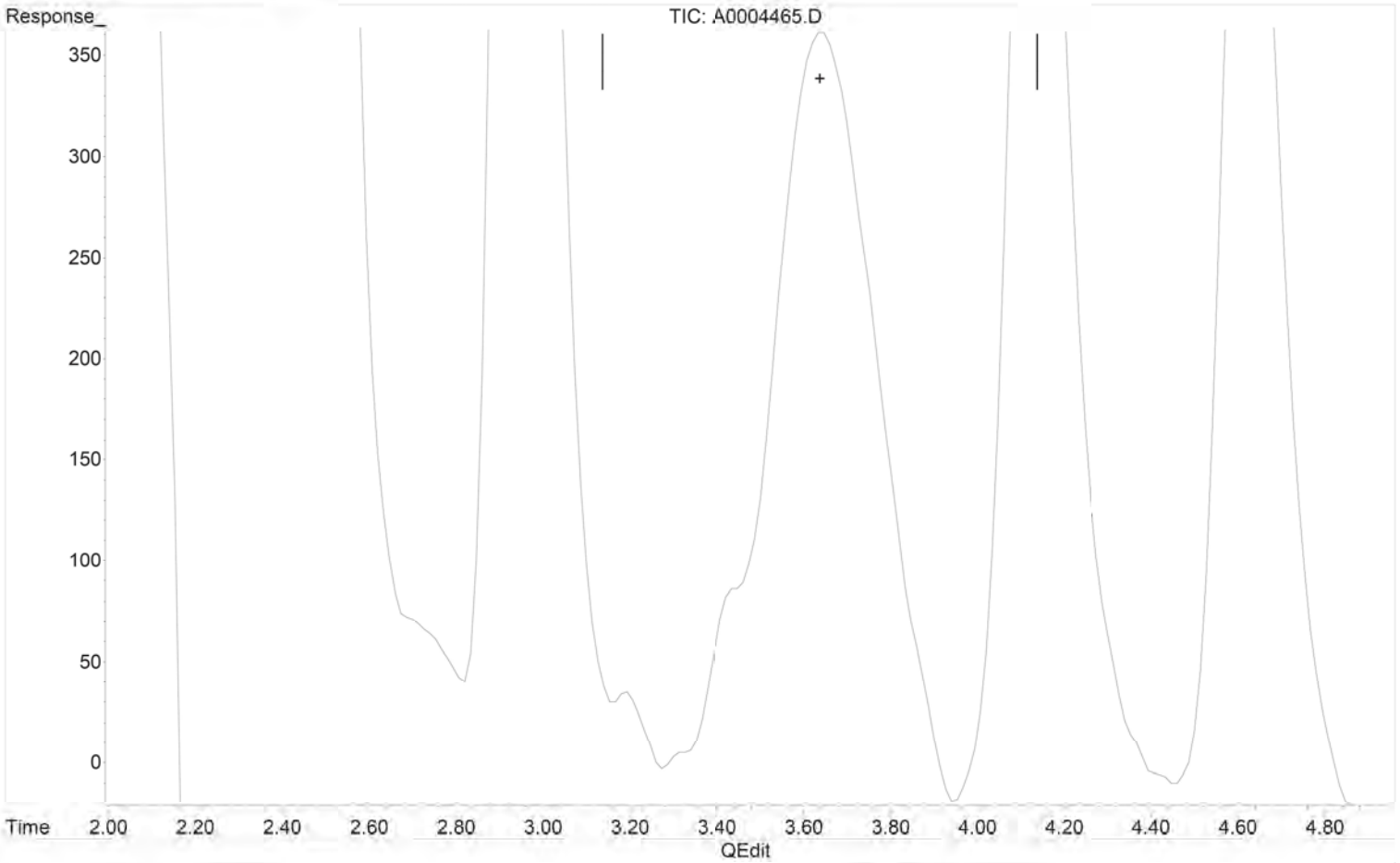
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.645min -0.100 ppm

response 58358

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

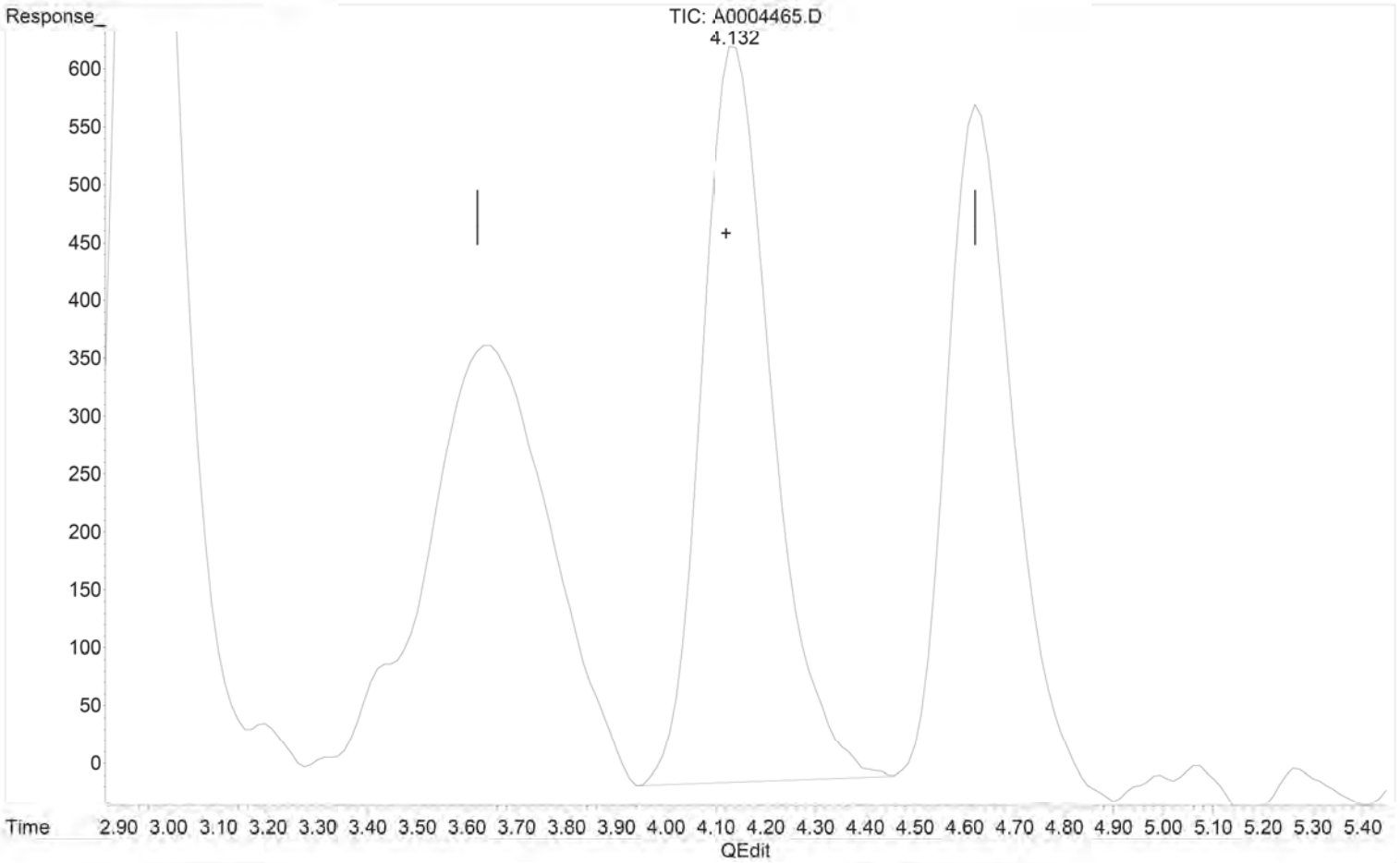
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.132min 1.131 ppm m

response 62664

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

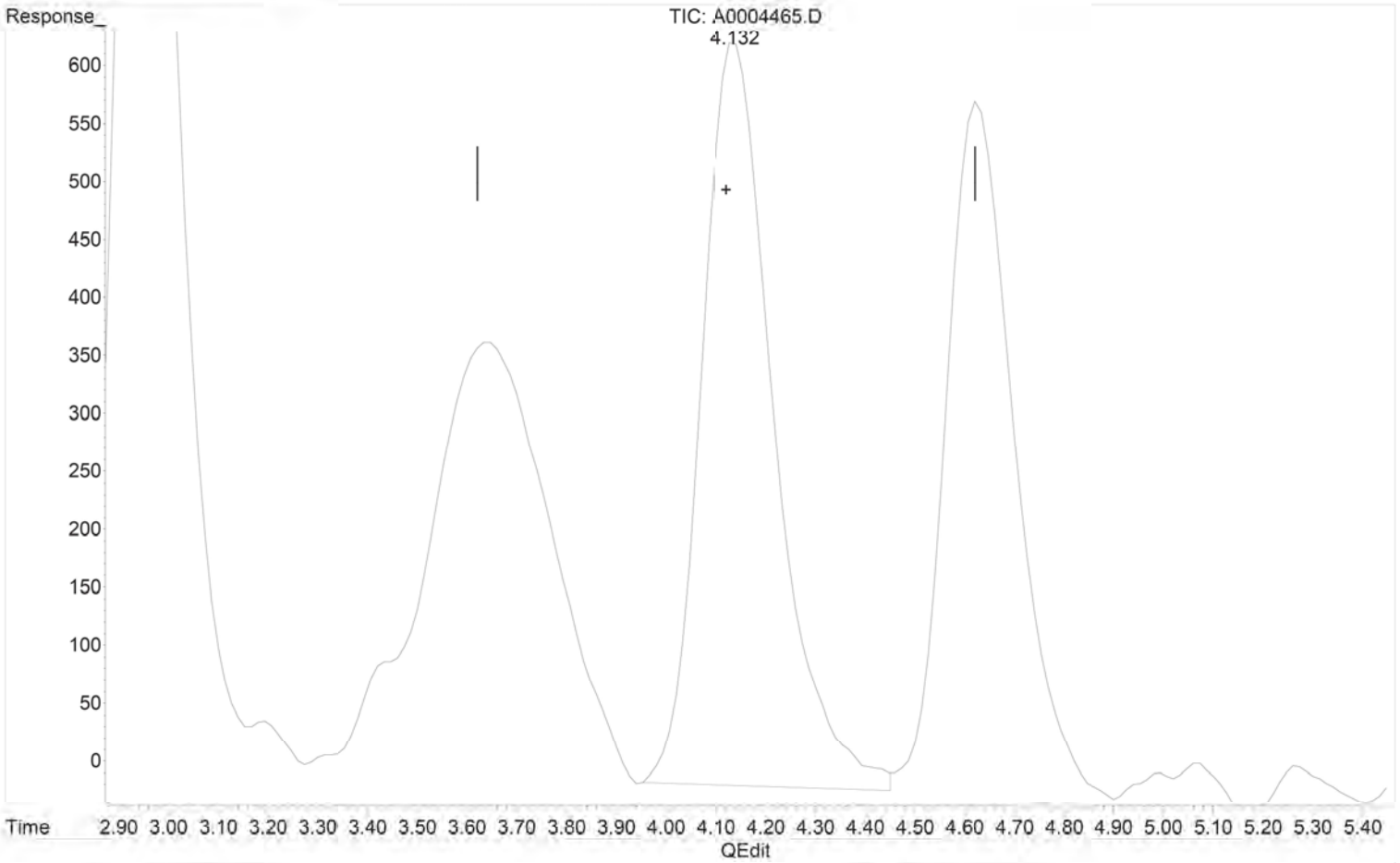
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.140min 1.165 ppm

response 64524

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

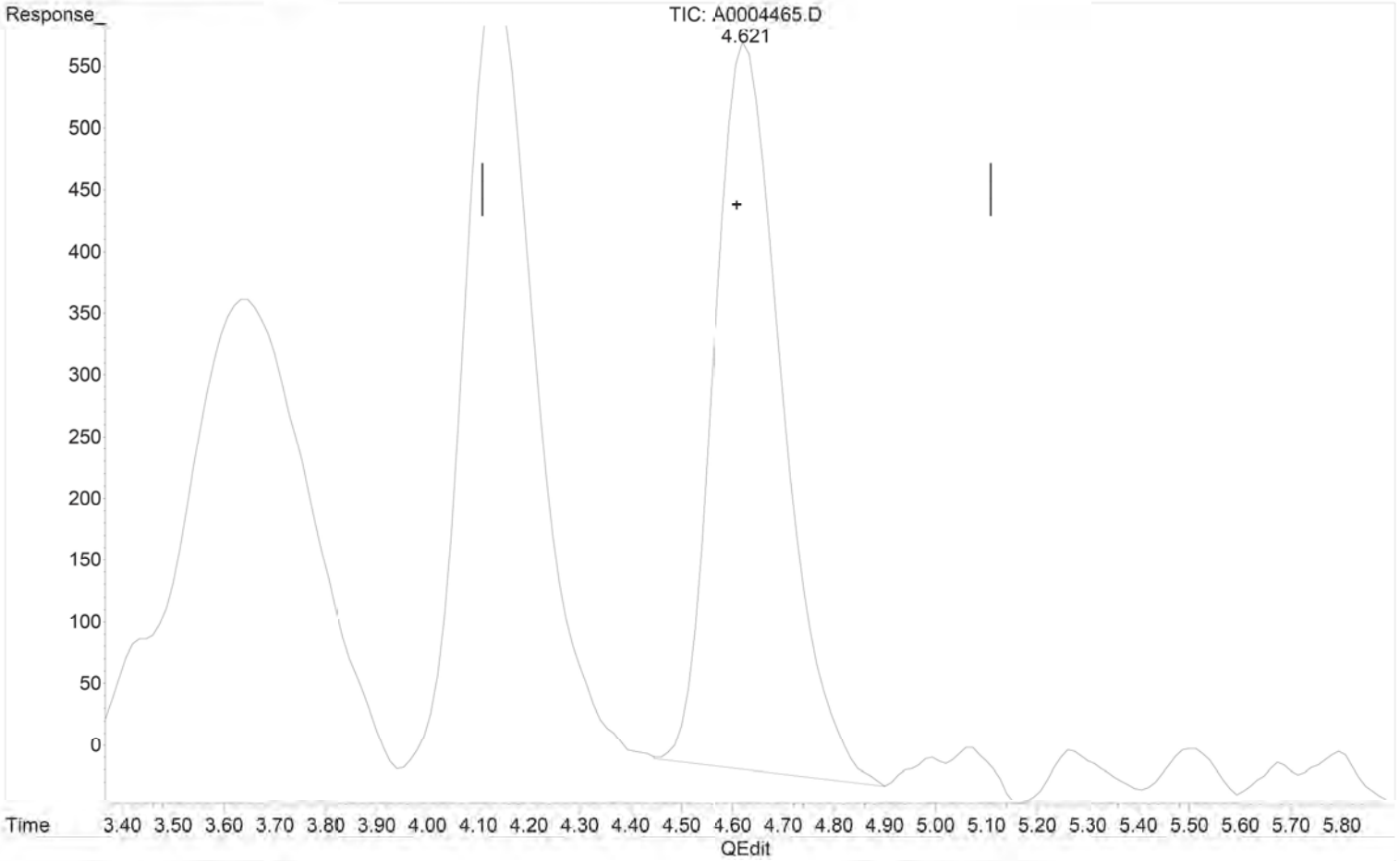
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.621min 0.989 ppm m

response 55208

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

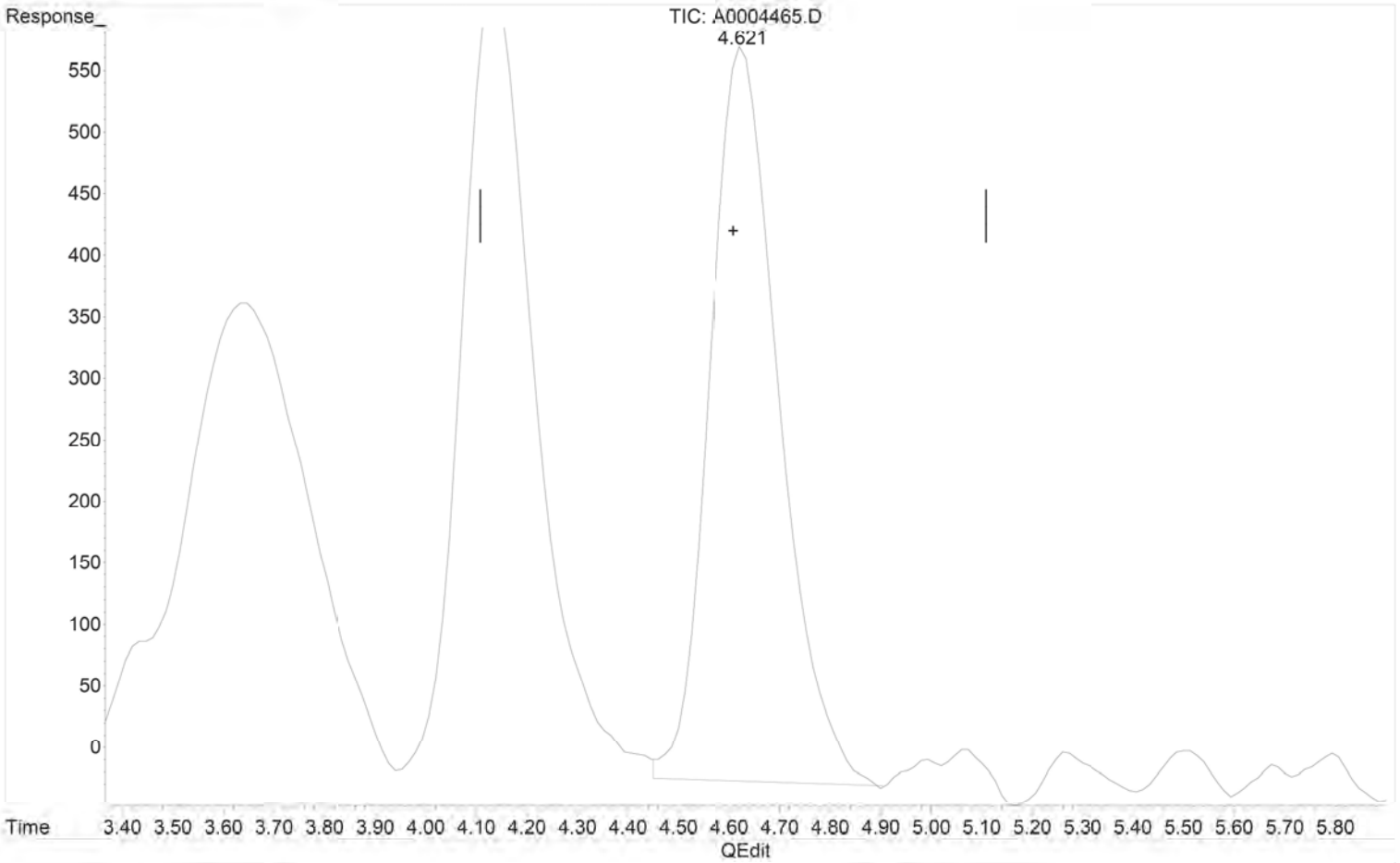
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.629min 1.019 ppm

response 56862

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

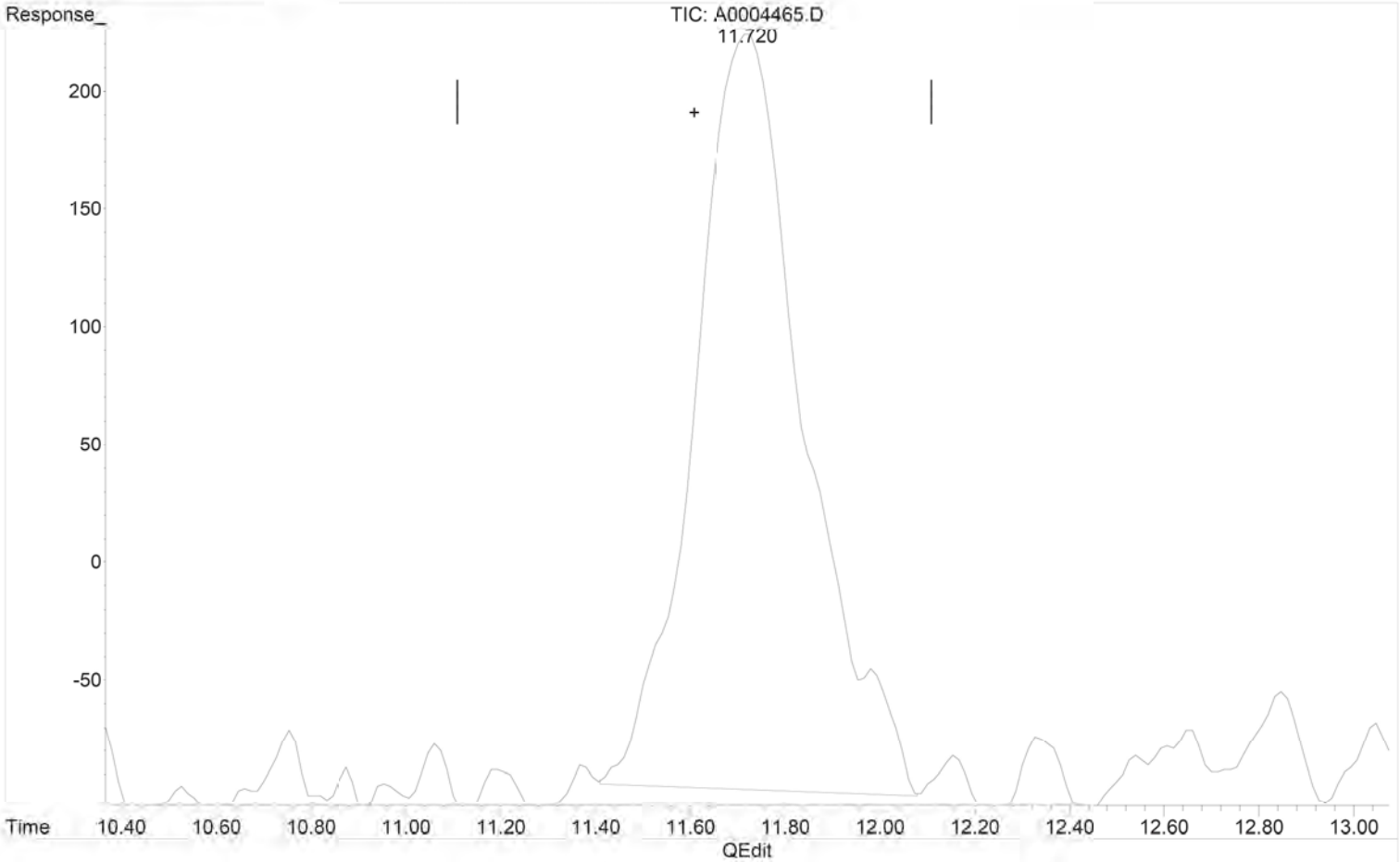
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.720min 0.938 ppm m
response 51534

Manual Integration:
After
Poor integration.
03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

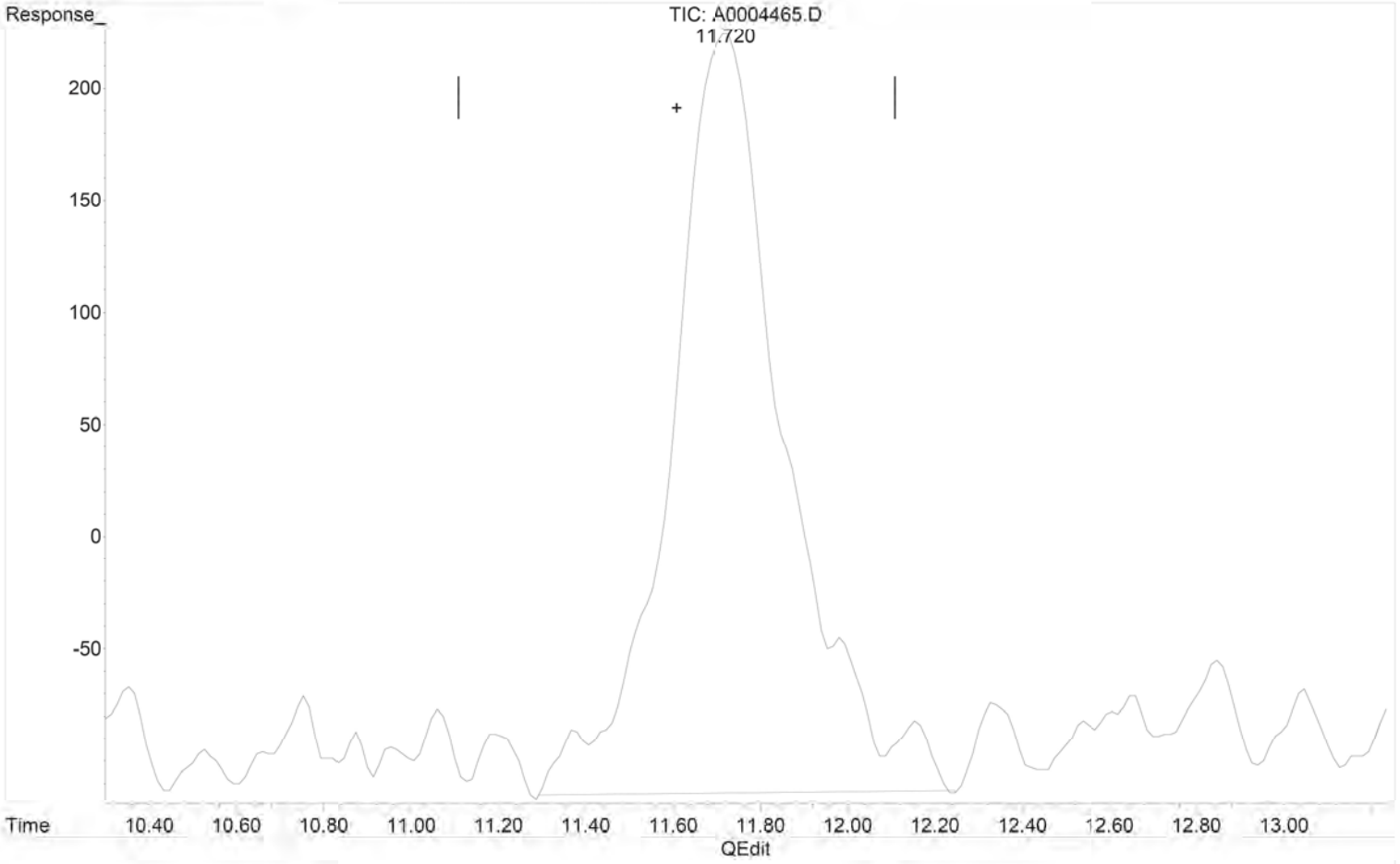
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

11.721min 1.124 ppm

response 61737

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

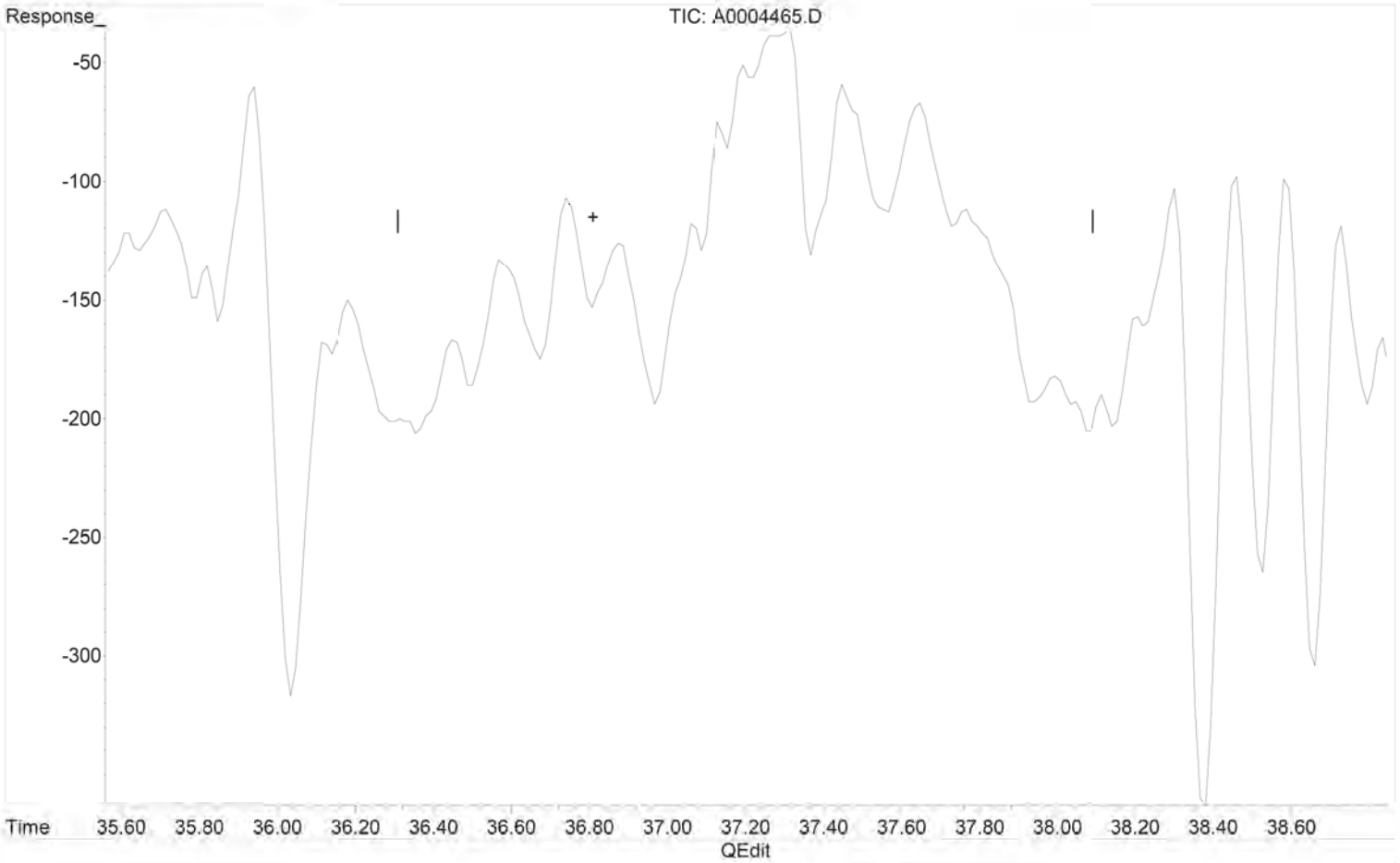
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.309min 1.012 ppm m

response 53231

Manual Integration!

After

Peak not found.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

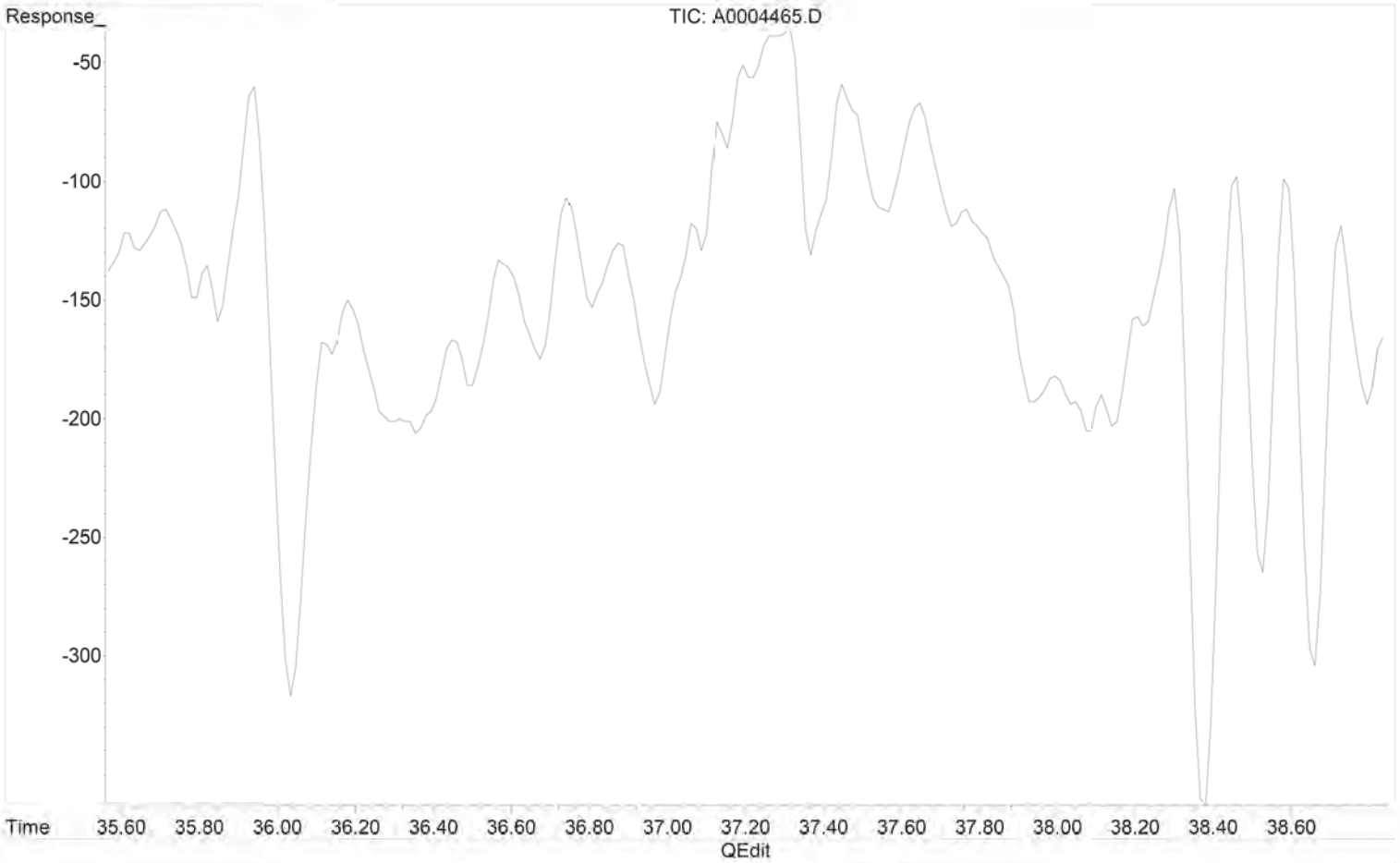
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

0.000min 0.000 ppm d

response 0

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.947	96141	1.051	ppm	m
2) T	Pyruvic acid	3.640	65073	0.112	ppm	m
3) T	Lactic Acid	4.132	62664	1.131	ppm	m
4) T	Acetic Acid	4.621	55208	0.989	ppm	m
5) T	Propionic Acid	11.720	51534	0.938	ppm	m
6) T	Butyric Acid	37.309f	53231	1.012	ppm	m

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

RIGHT SOLUTIONS | RIGHT PARTNER

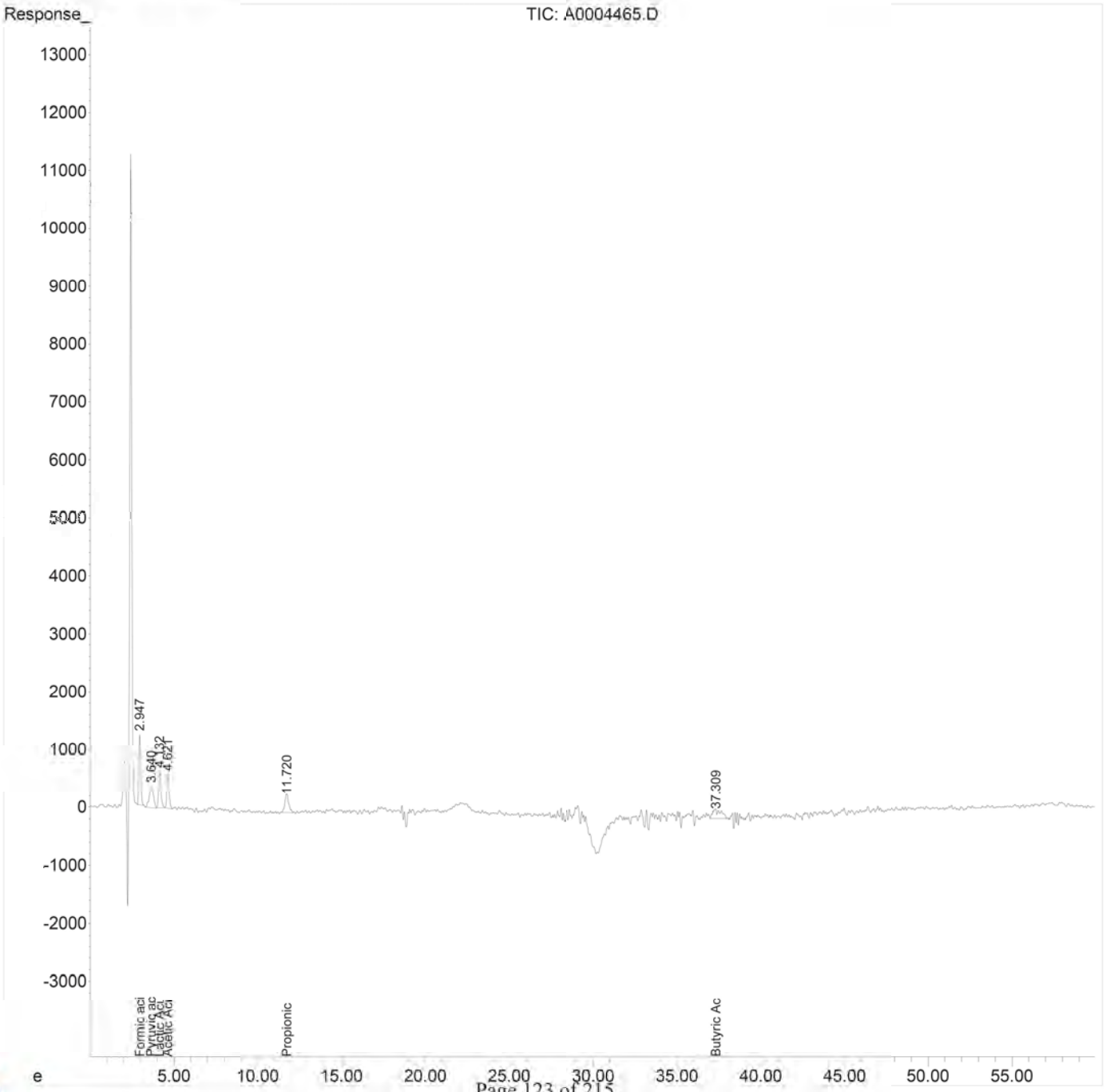
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

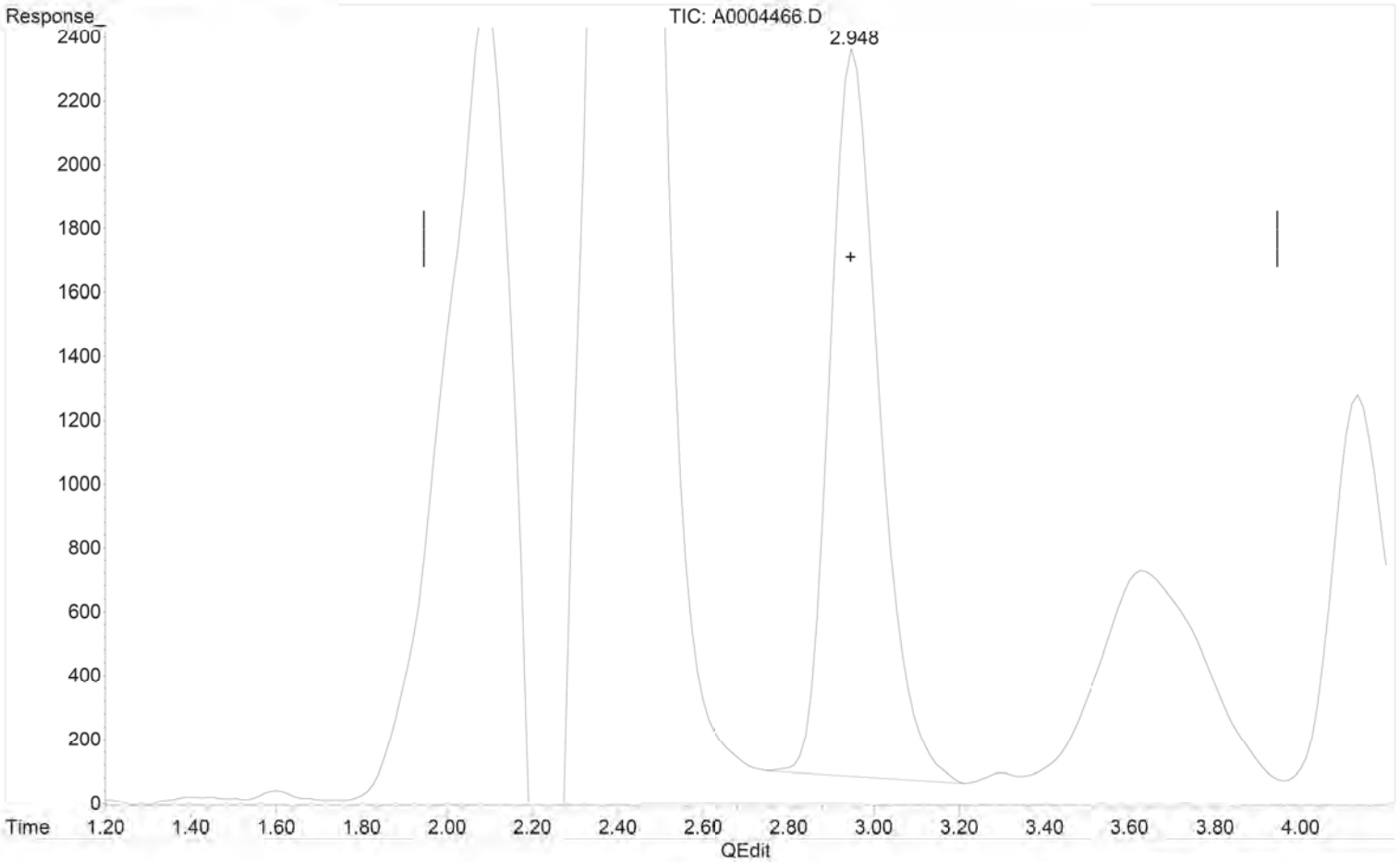
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.948min 2.019 ppm m

response 184745

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

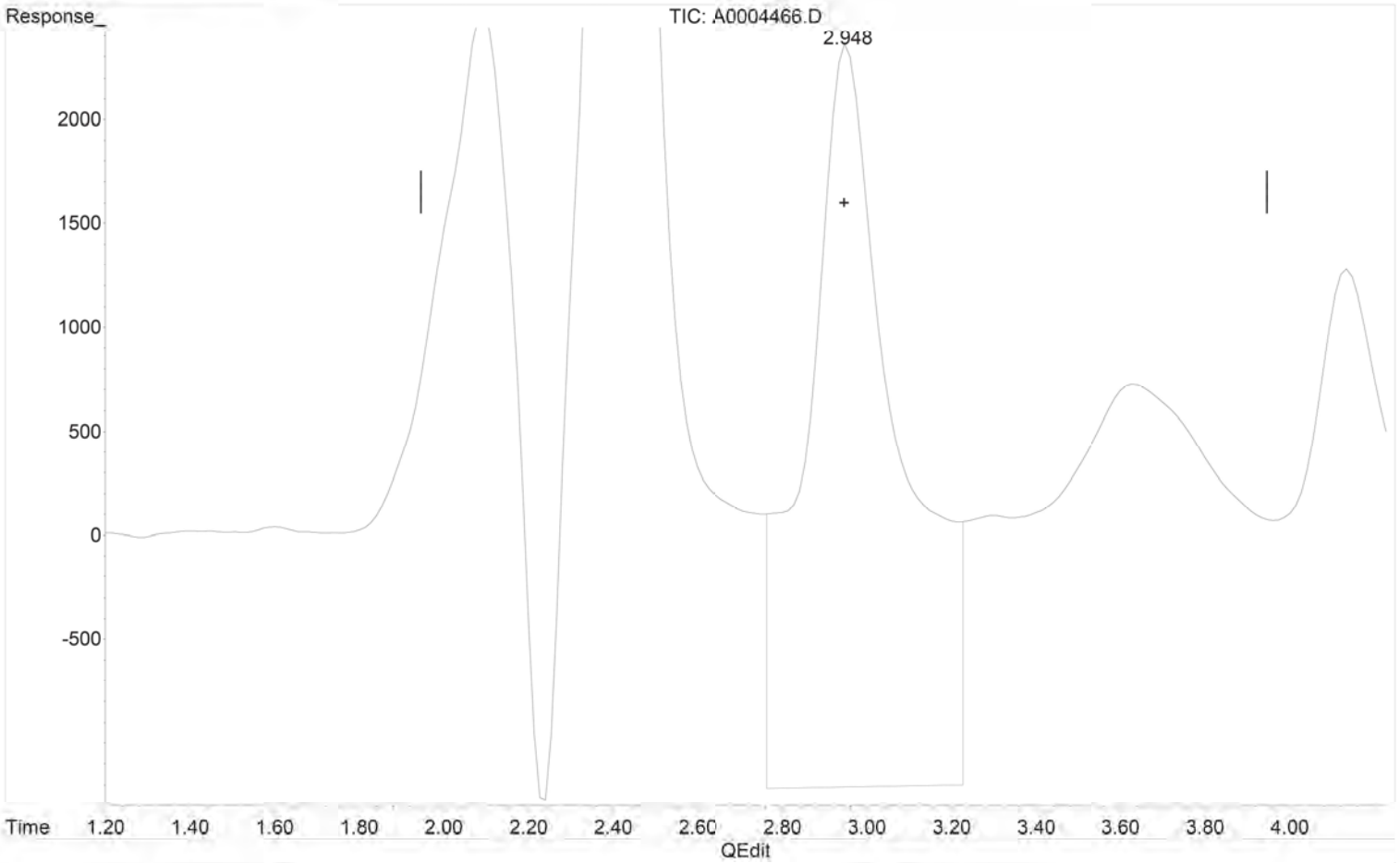
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.955min 5.943 ppm

response 543858

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

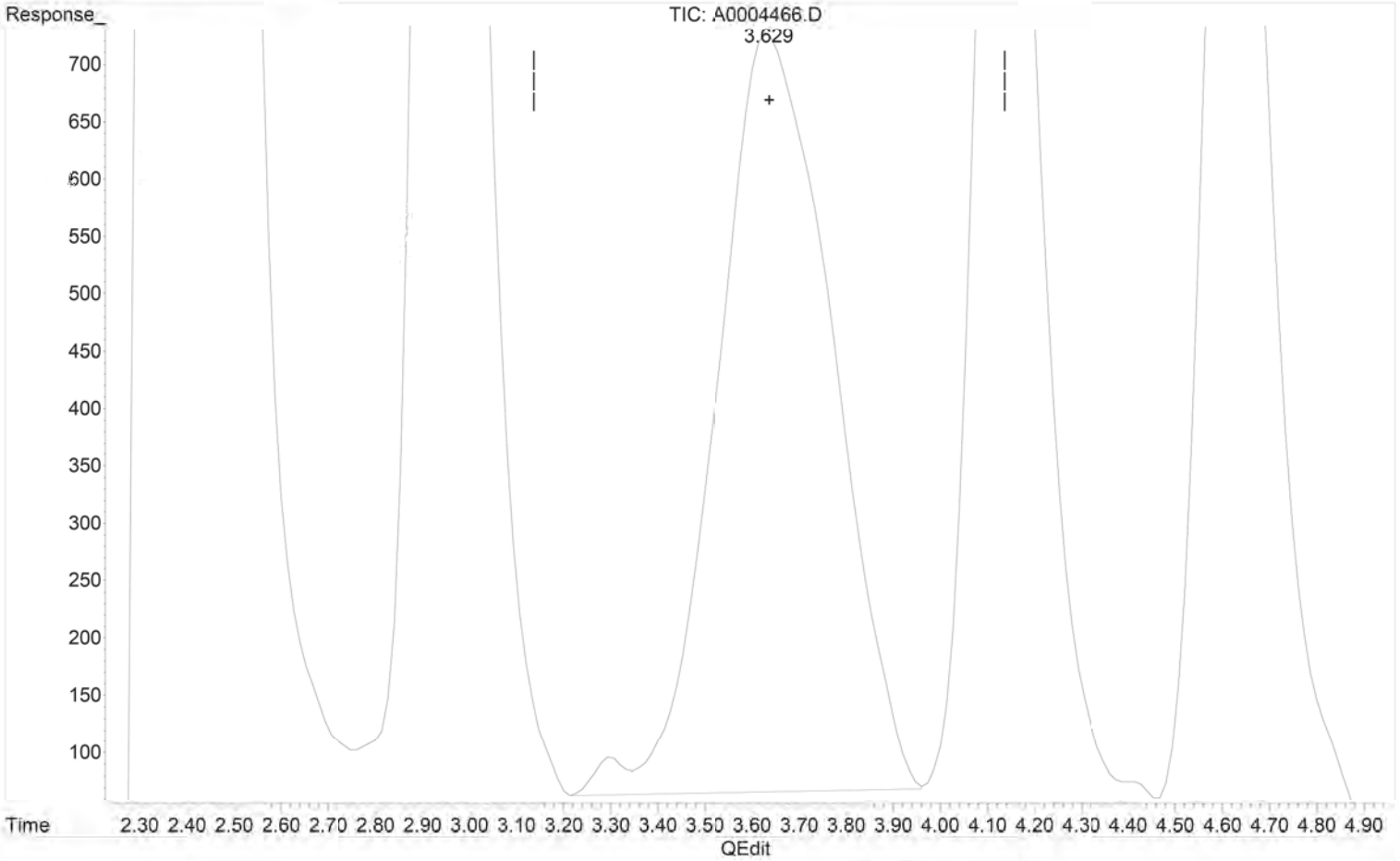
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.629min 0.194 ppm m

response 113308

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

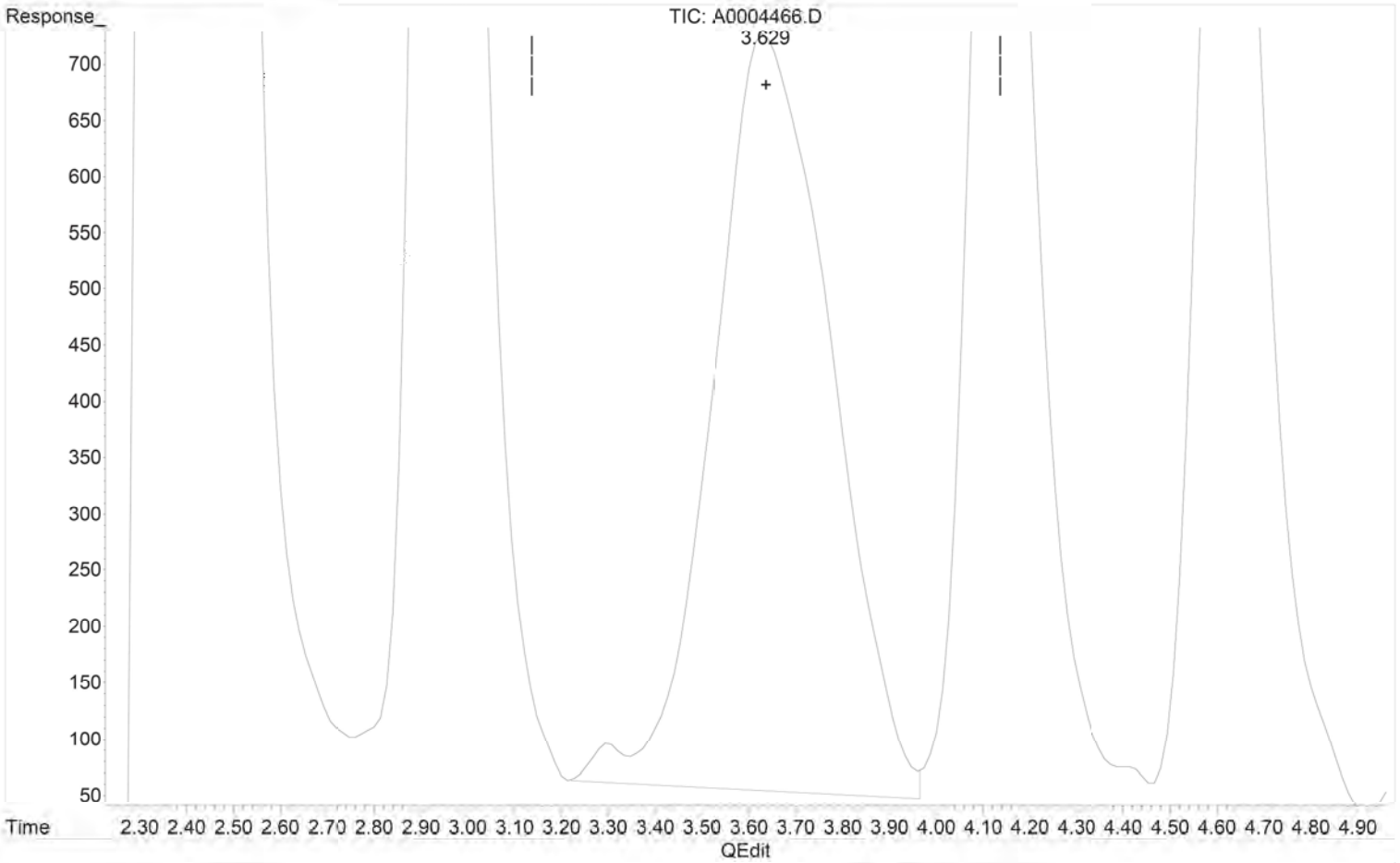
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.639min 0.203 ppm

response 118180

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

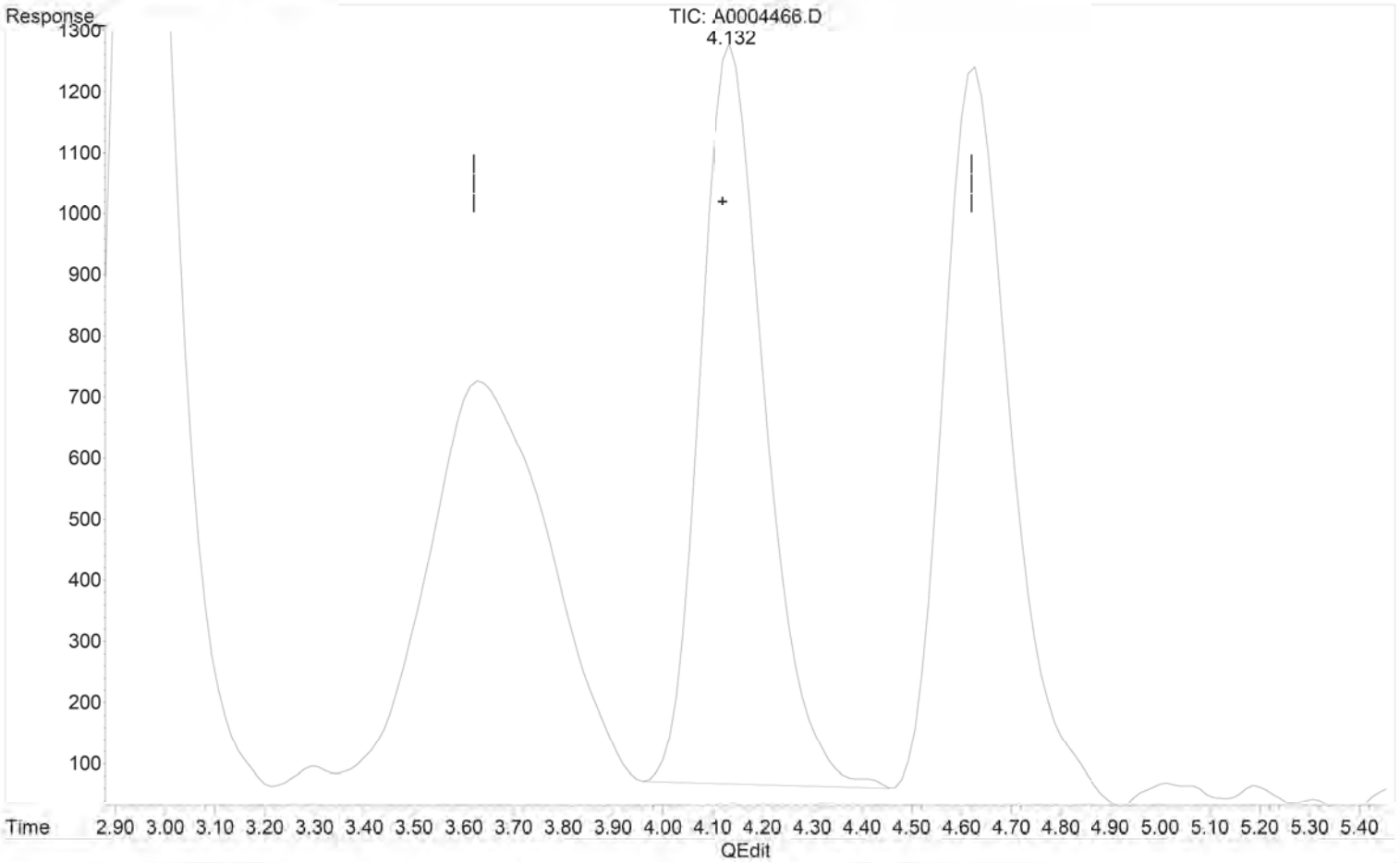
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.132min 1.974 ppm m

response 109344

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

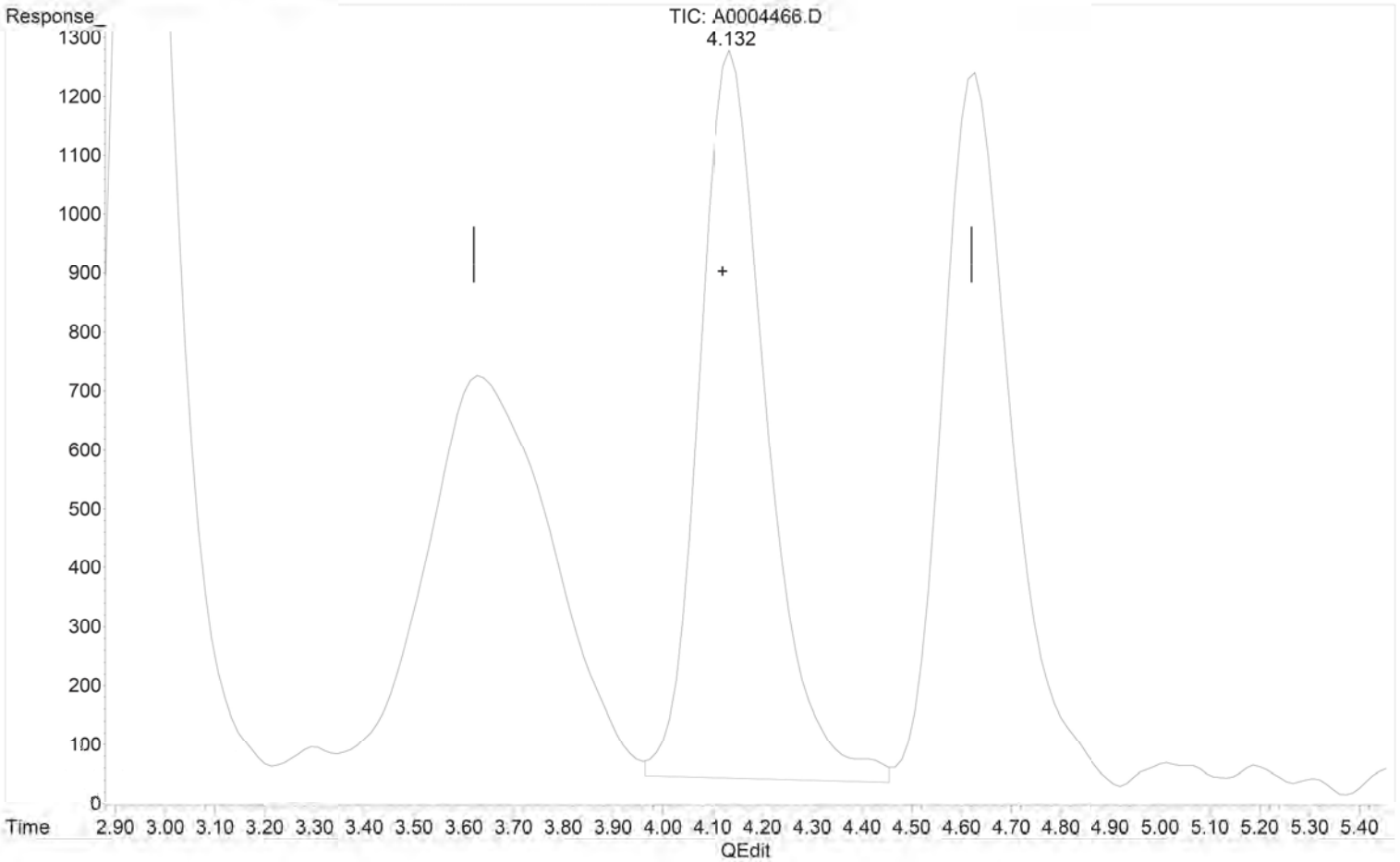
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.139min 2.102 ppm

response 116418

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

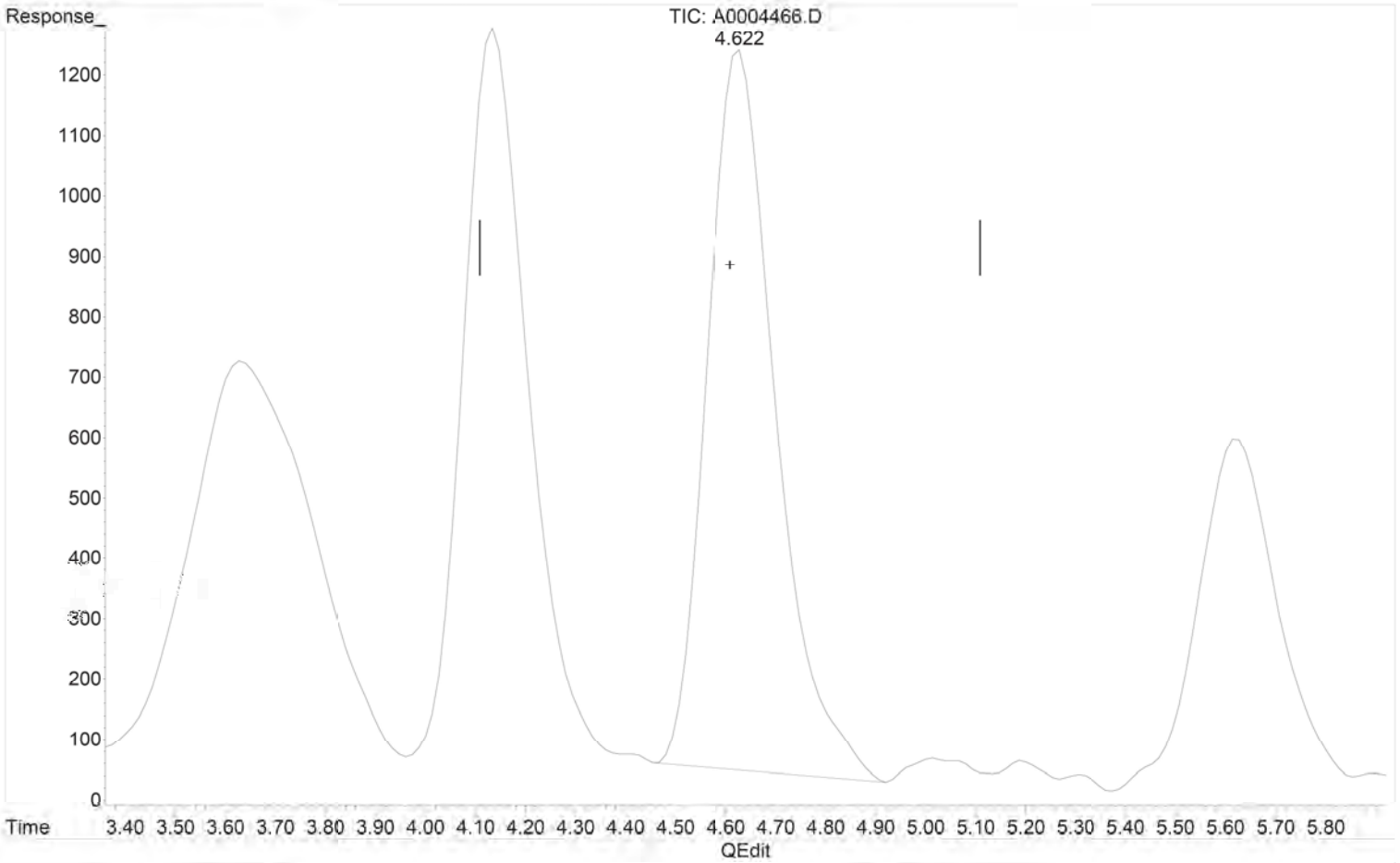
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.622min 2.028 ppm m
response 113173

Manual Integration:
After
Poor integration.
03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

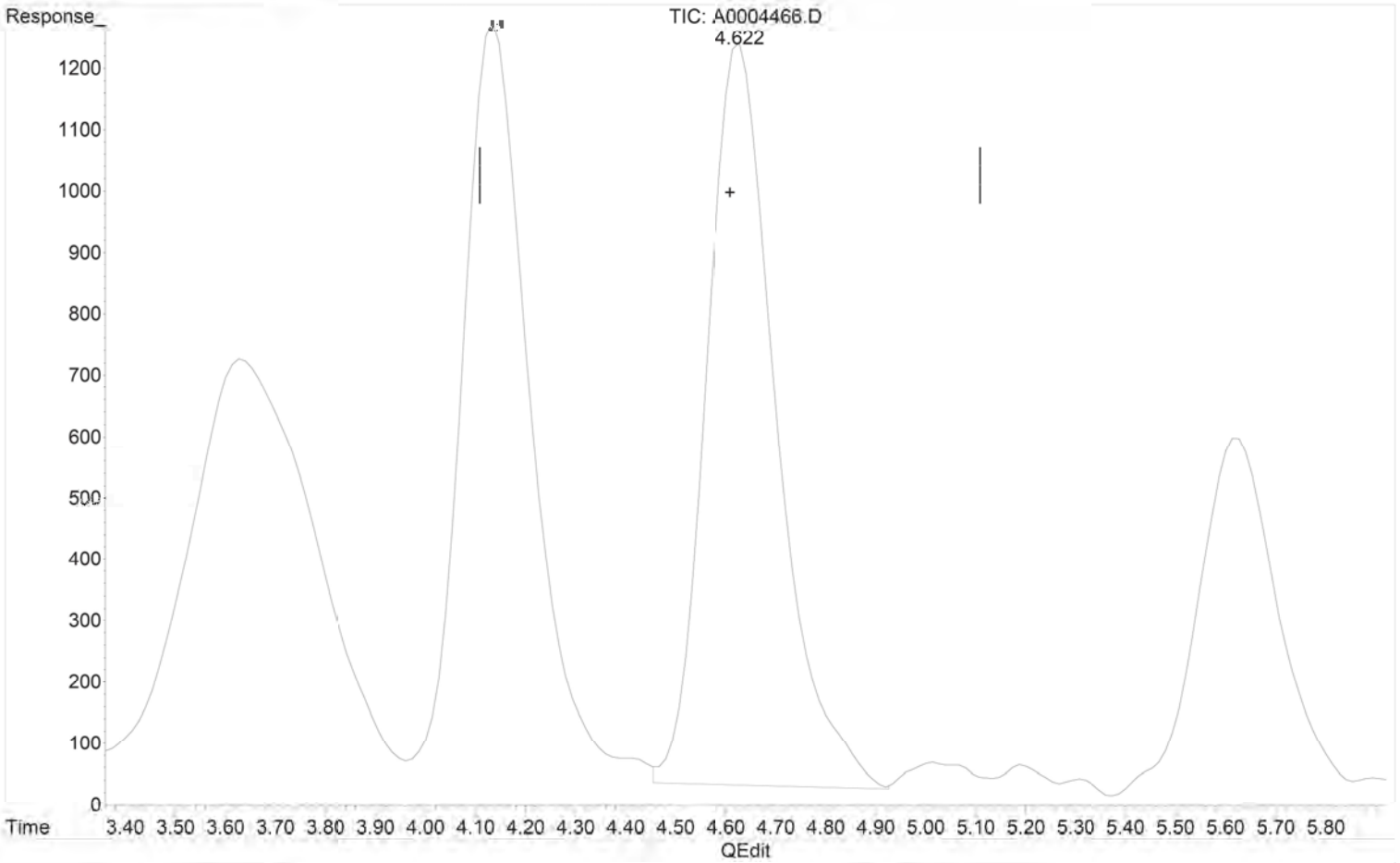
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.629min 2.100 ppm

response 117200

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

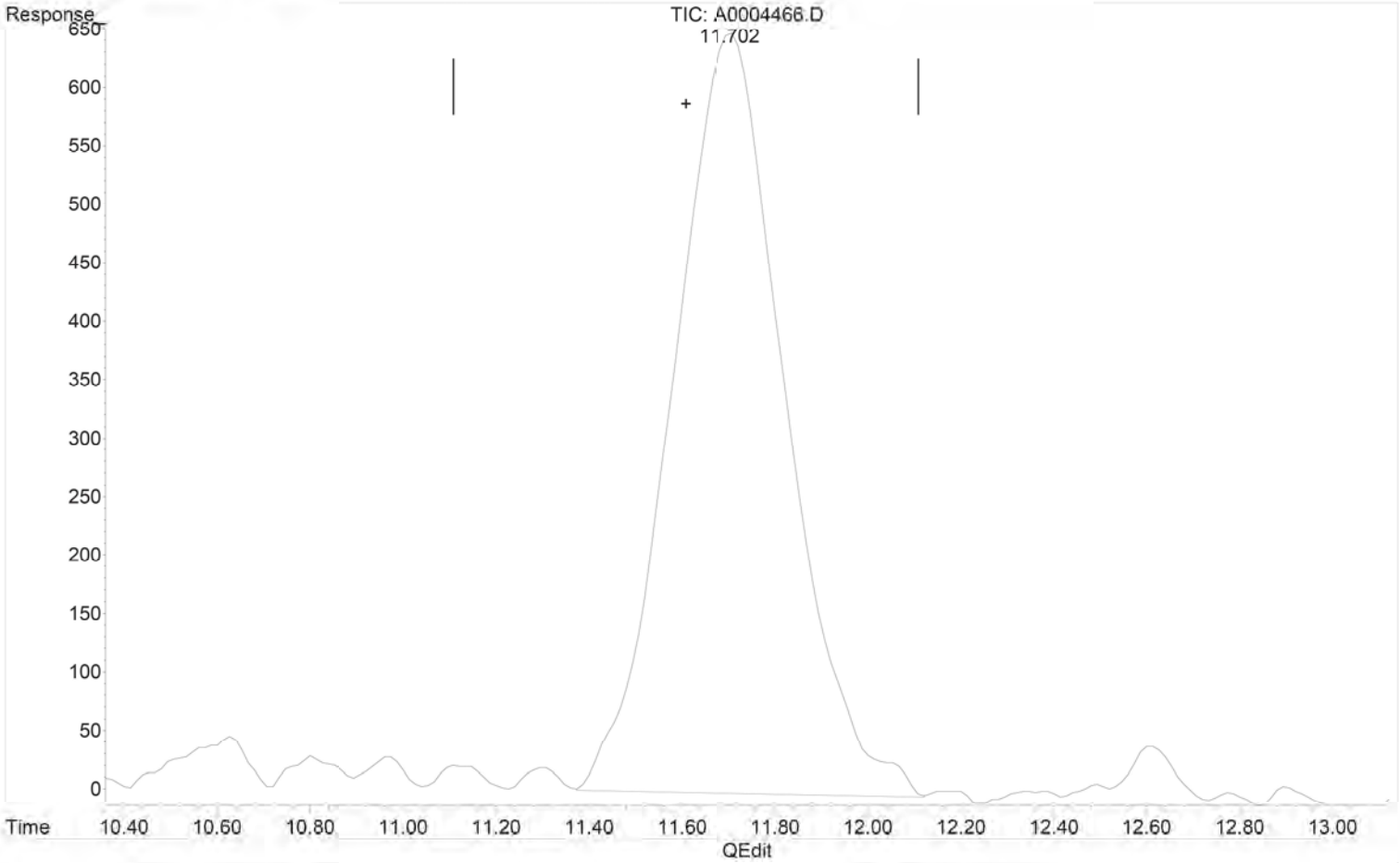
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

11.702min 1.979 ppm m

response 108705

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

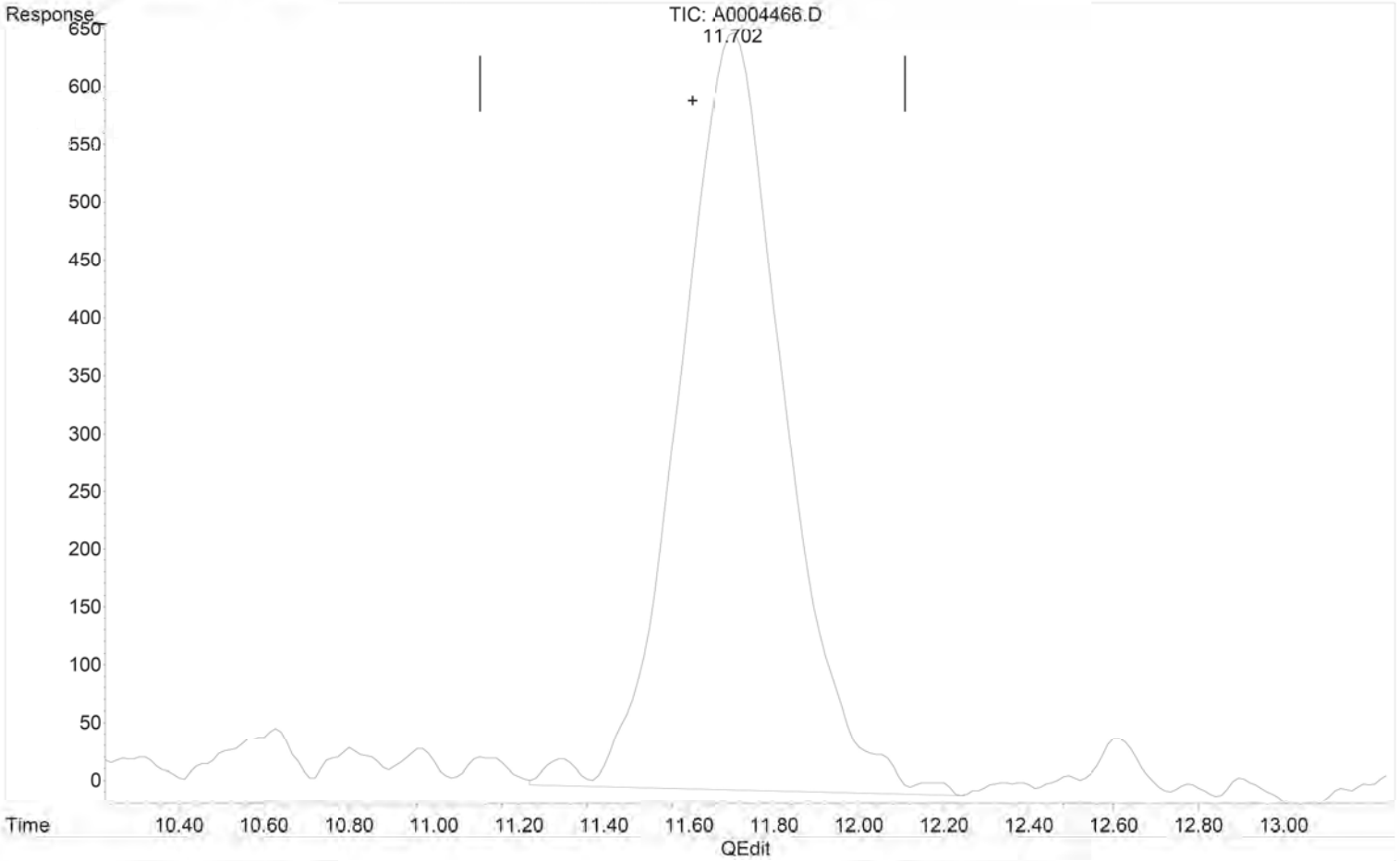
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

11.707min 2.047 ppm

response 112454

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

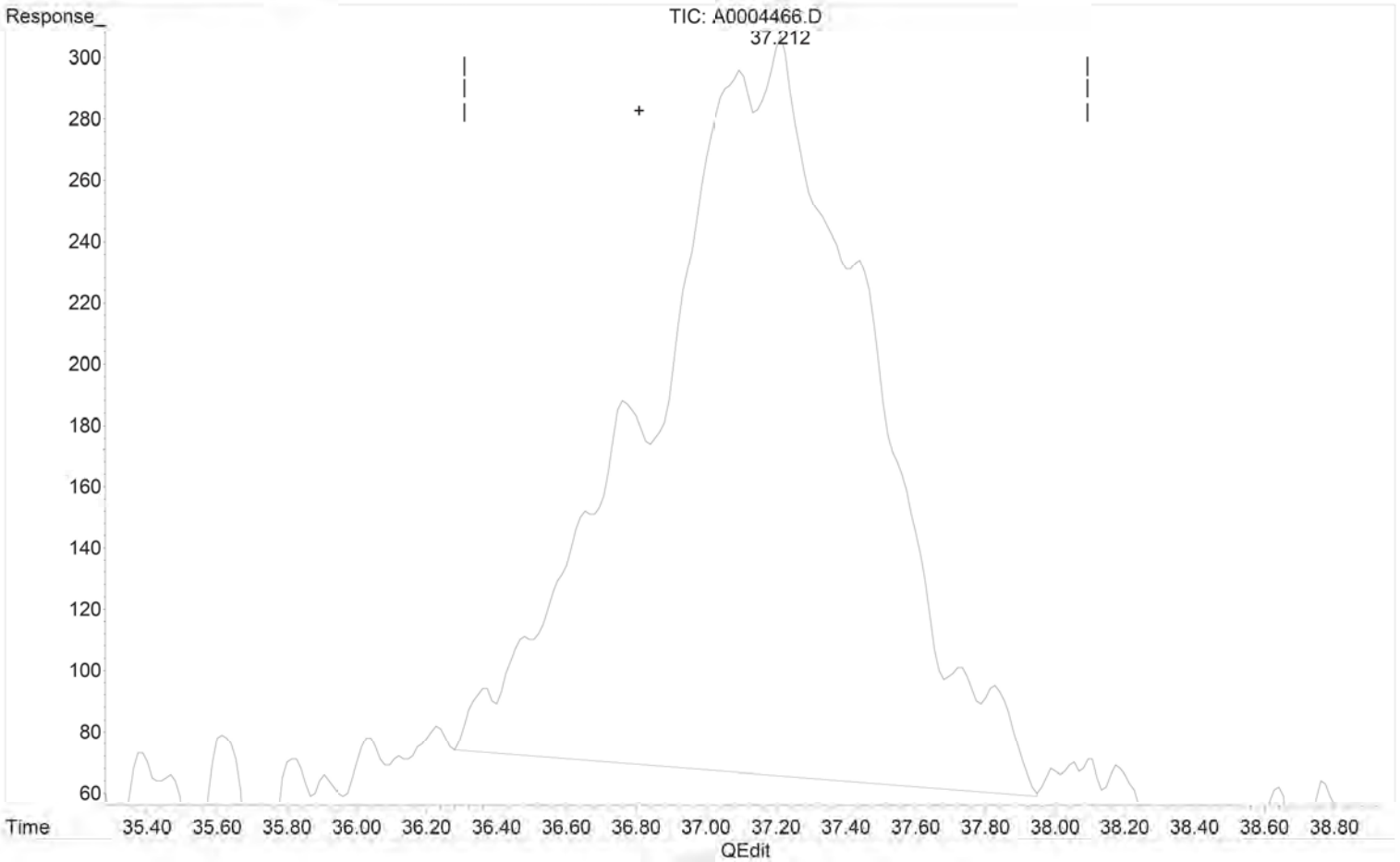
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.212min 2.029 ppm m

response 106761

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

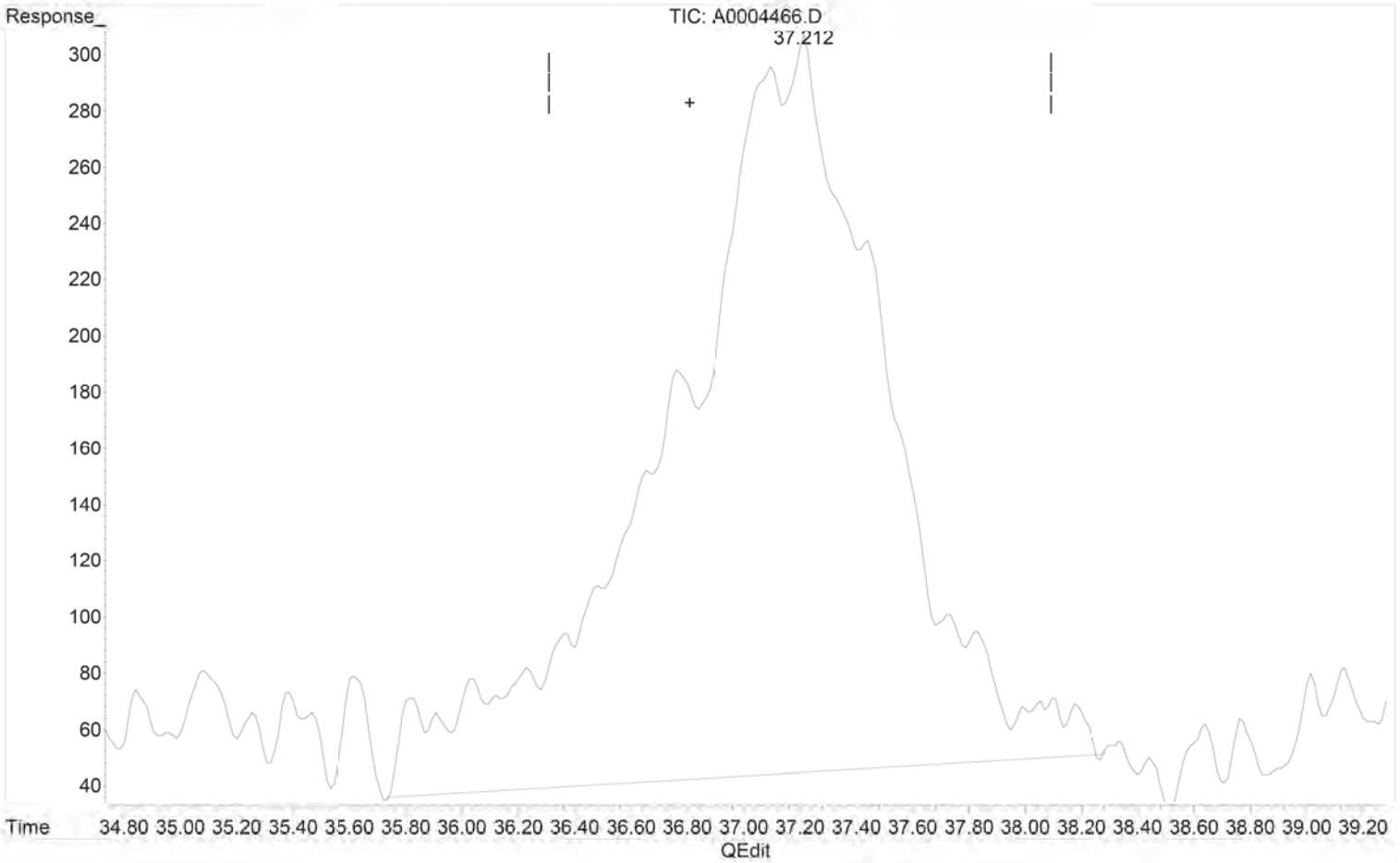
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.213min 2.698 ppm

response 141960

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.948	184745	2.019	ppm	m
2) T	Pyruvic acid	3.629	113308	0.194	ppm	m
3) T	Lactic Acid	4.132	109344	1.974	ppm	m
4) T	Acetic Acid	4.622	113173	2.028	ppm	m
5) T	Propionic Acid	11.702	108705	1.979	ppm	m
6) T	Butyric Acid	37.212	106761	2.029	ppm	m

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

RIGHT SOLUTIONS | RIGHT PARTNER

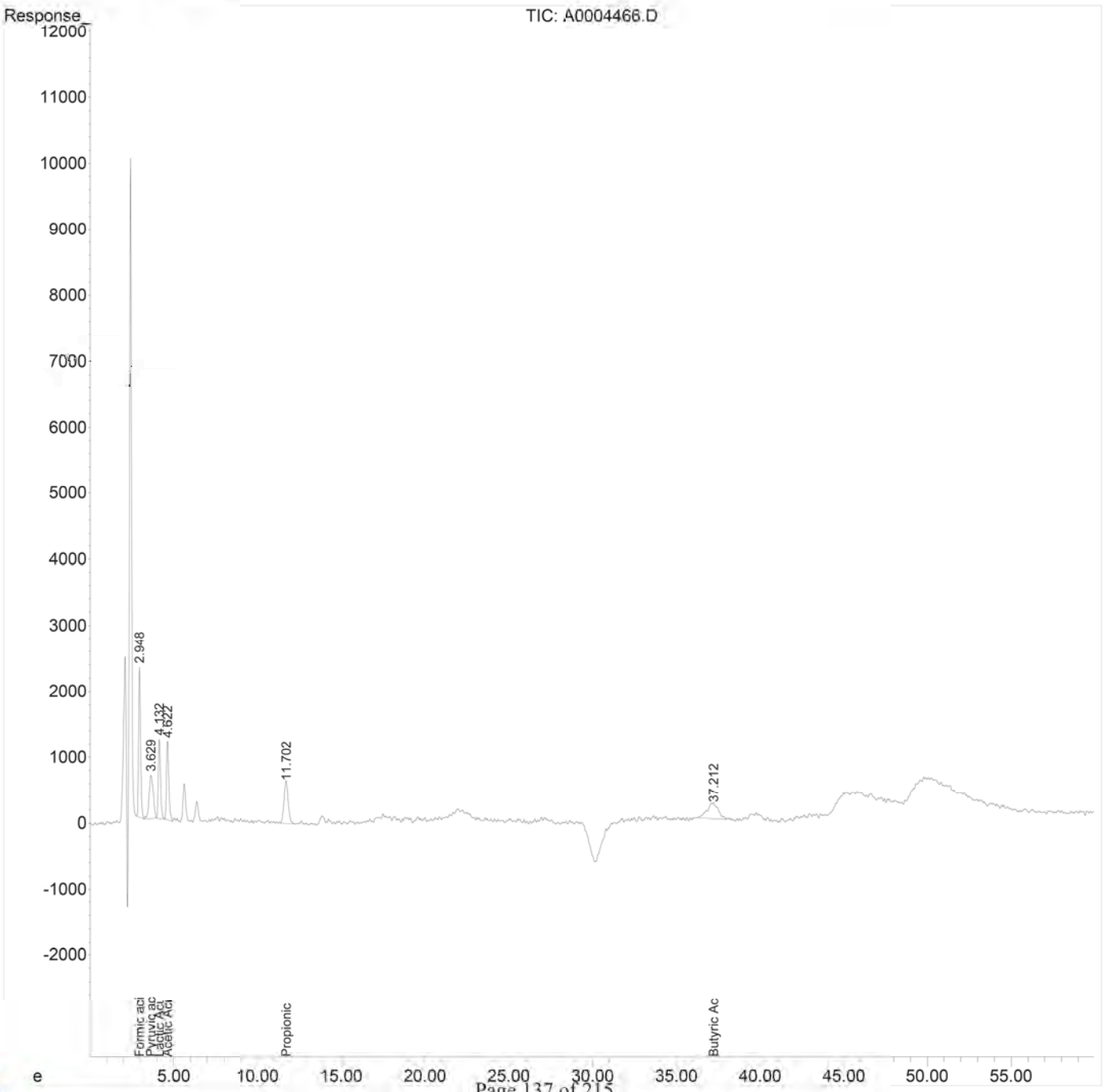
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

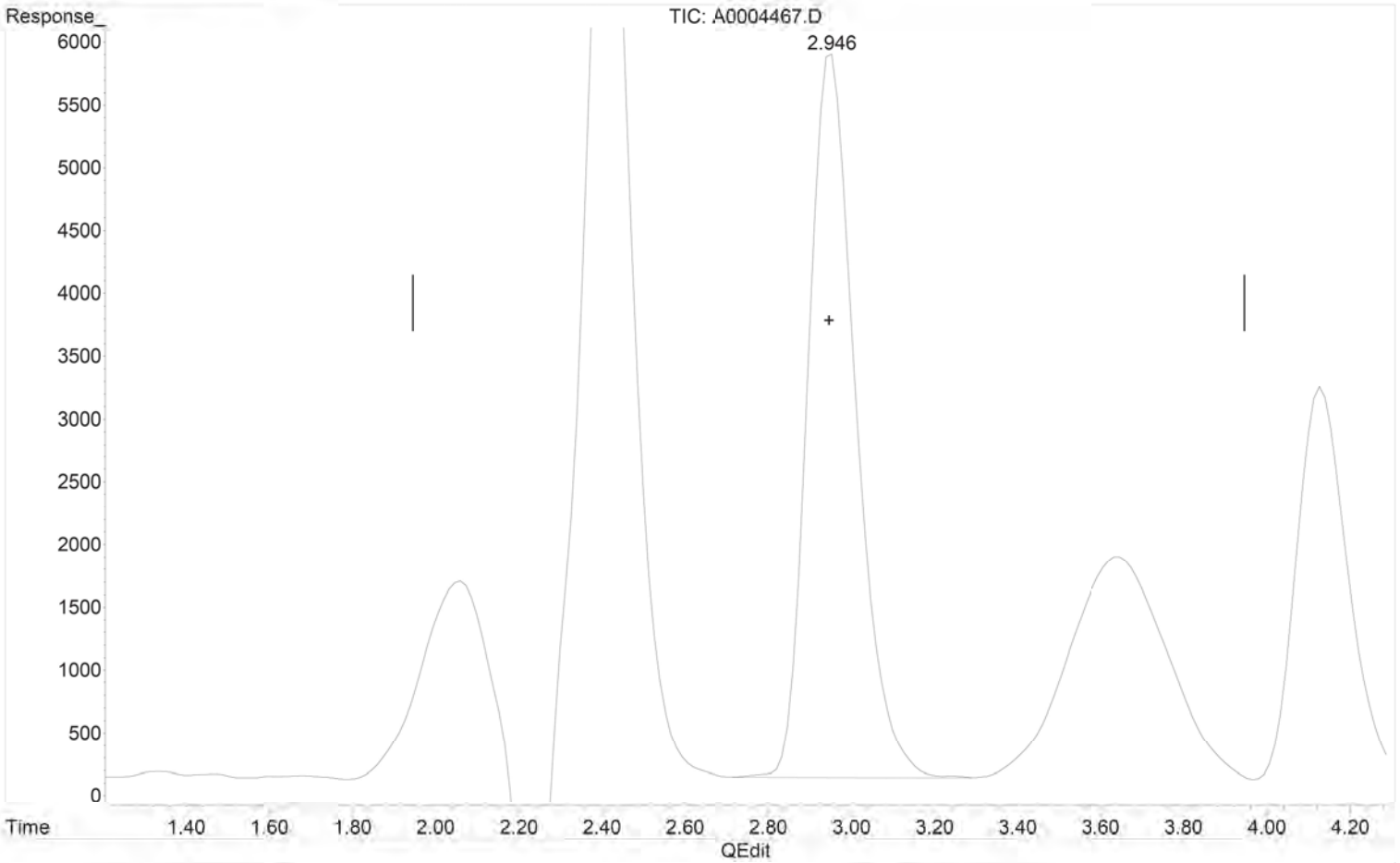
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.946min 5.032 ppm m

response 460497

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

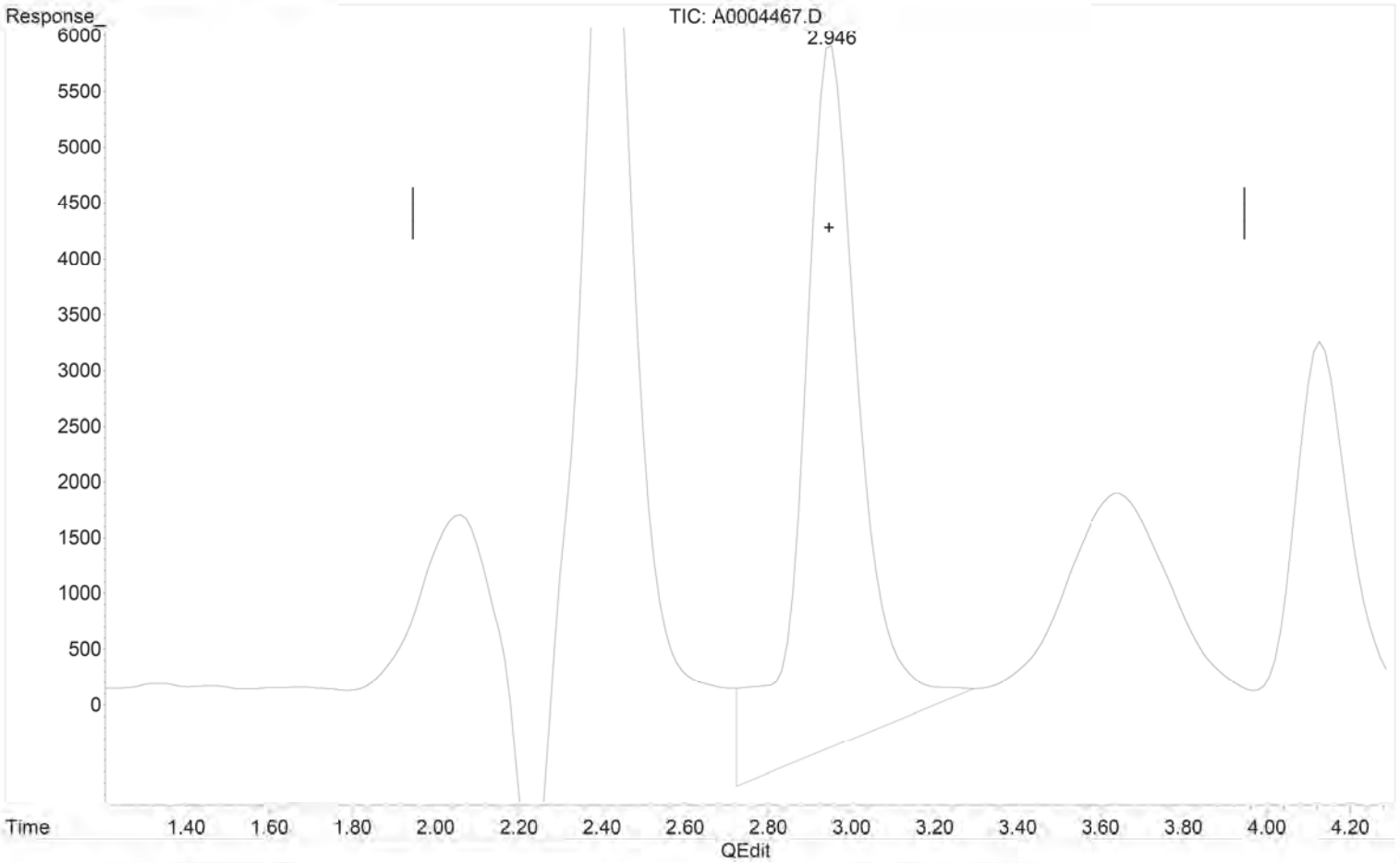
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.953min 6.666 ppm

response 609950

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

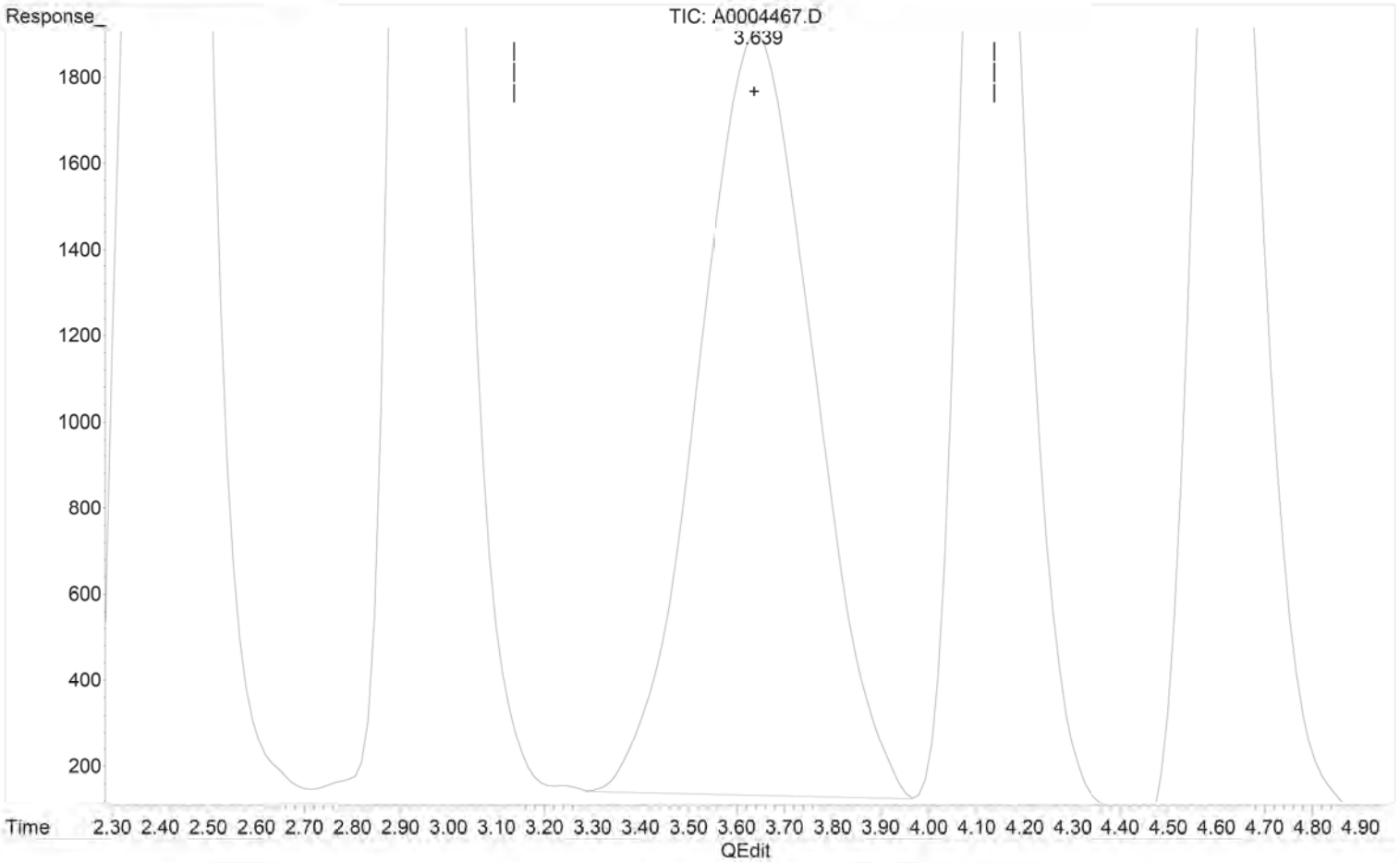
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.639min 0.503 ppm m
response 293242

Manual Integration:
After
Poor integration.
03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

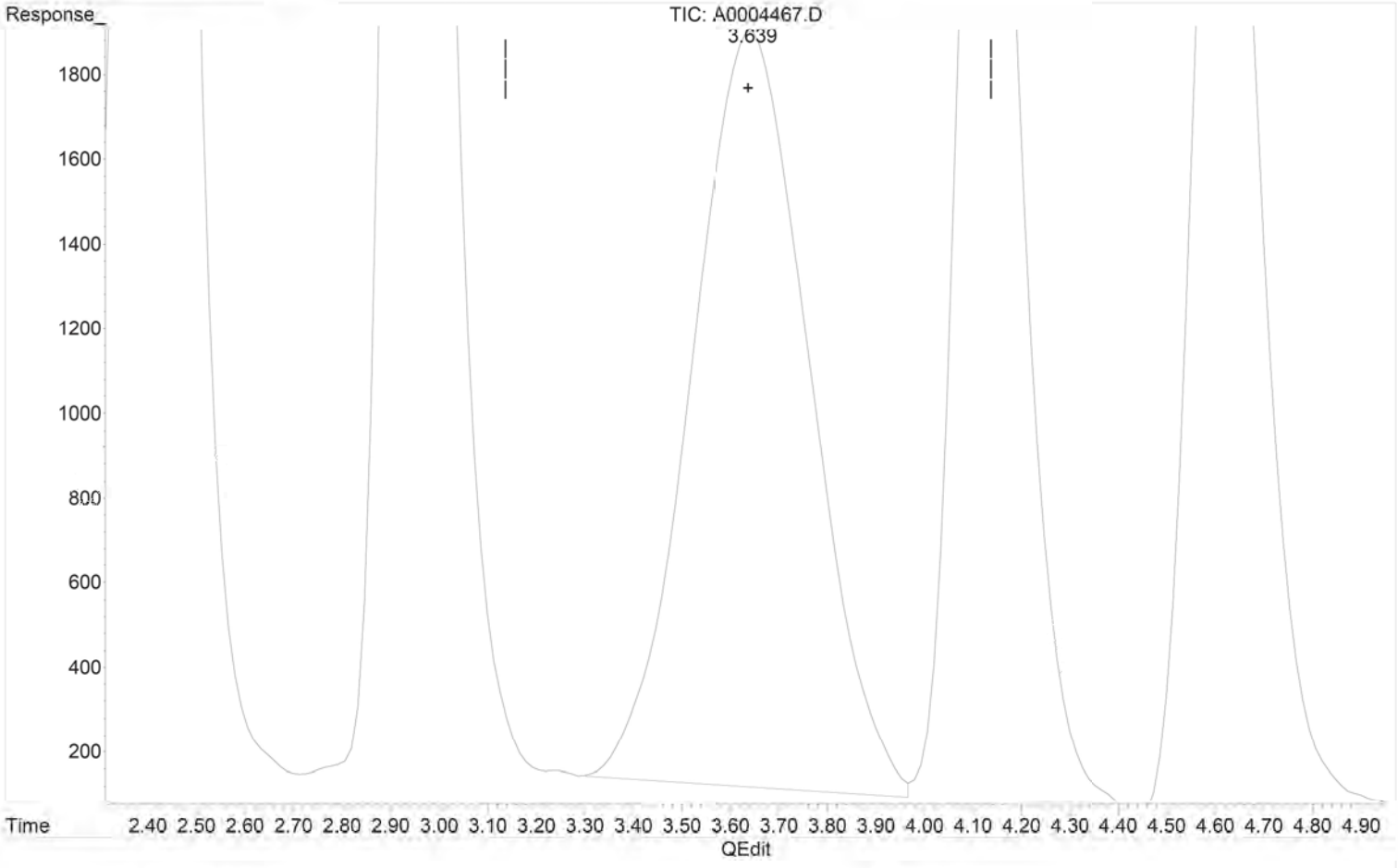
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.645min 0.513 ppm

response 299276

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

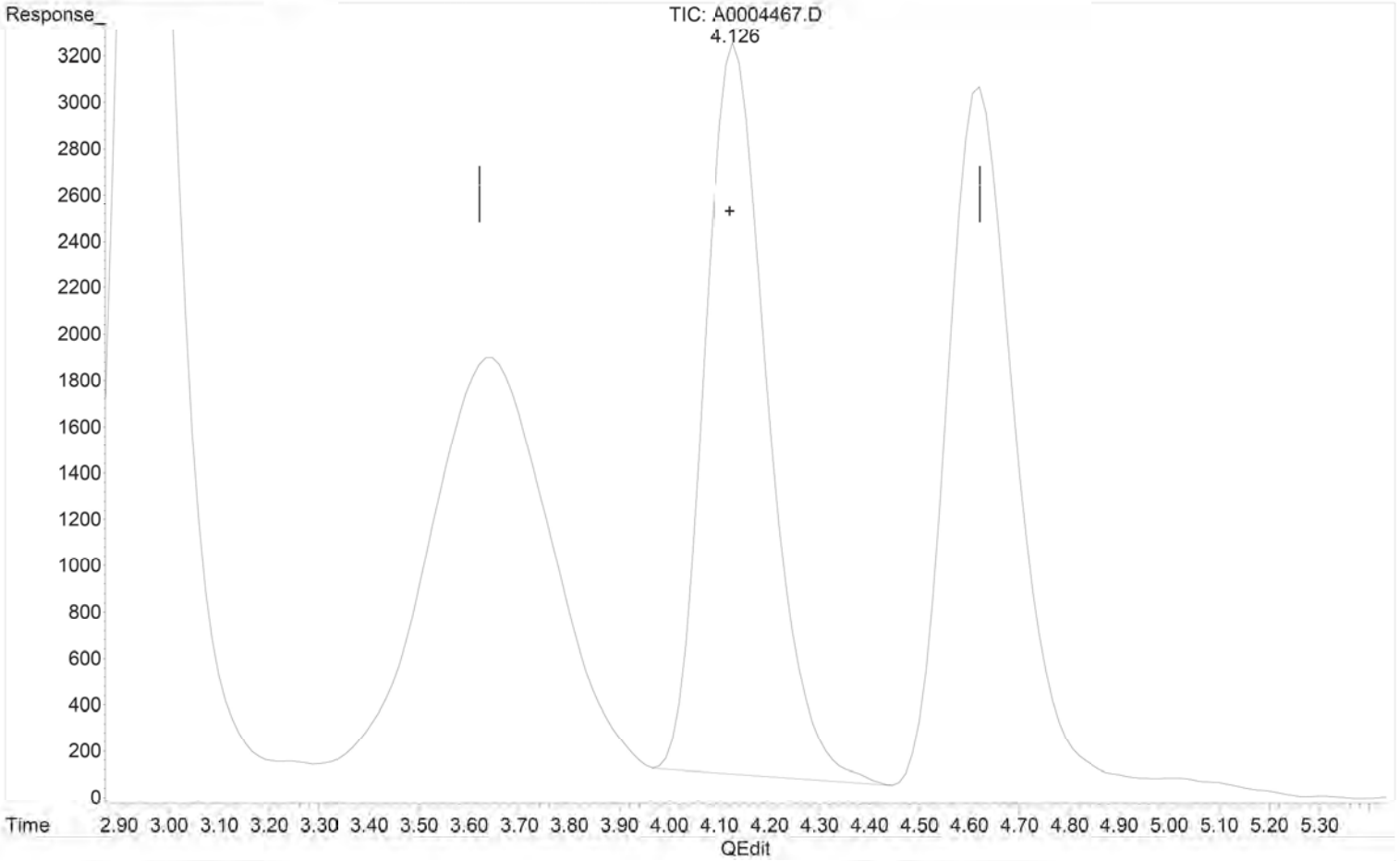
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.126min 4.978 ppm m

response 275770

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

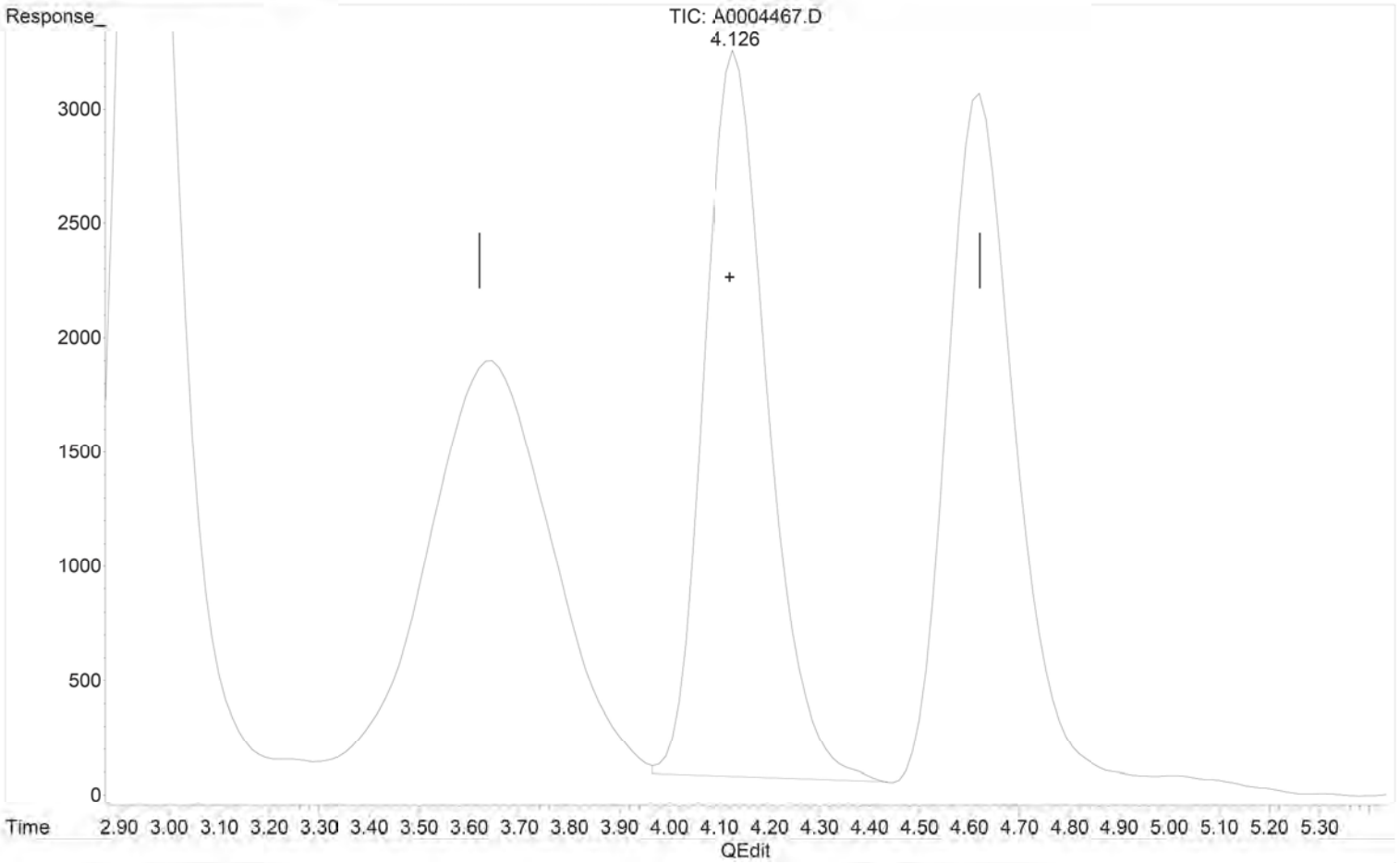
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.132min 5.051 ppm

response 279806

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

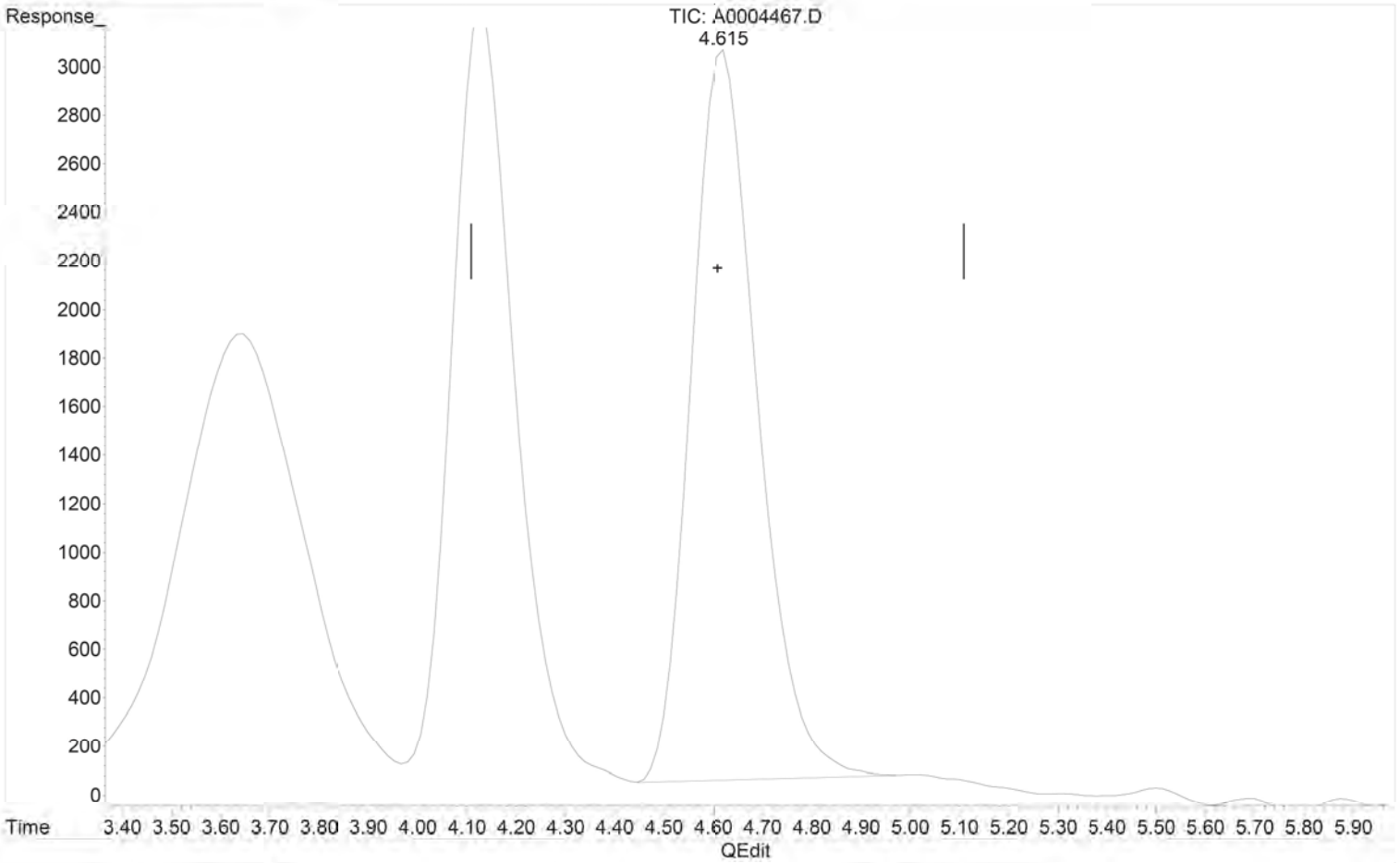
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.615min 5.028 ppm m
response 280536

Manual Integration:
After
Poor integration.
03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

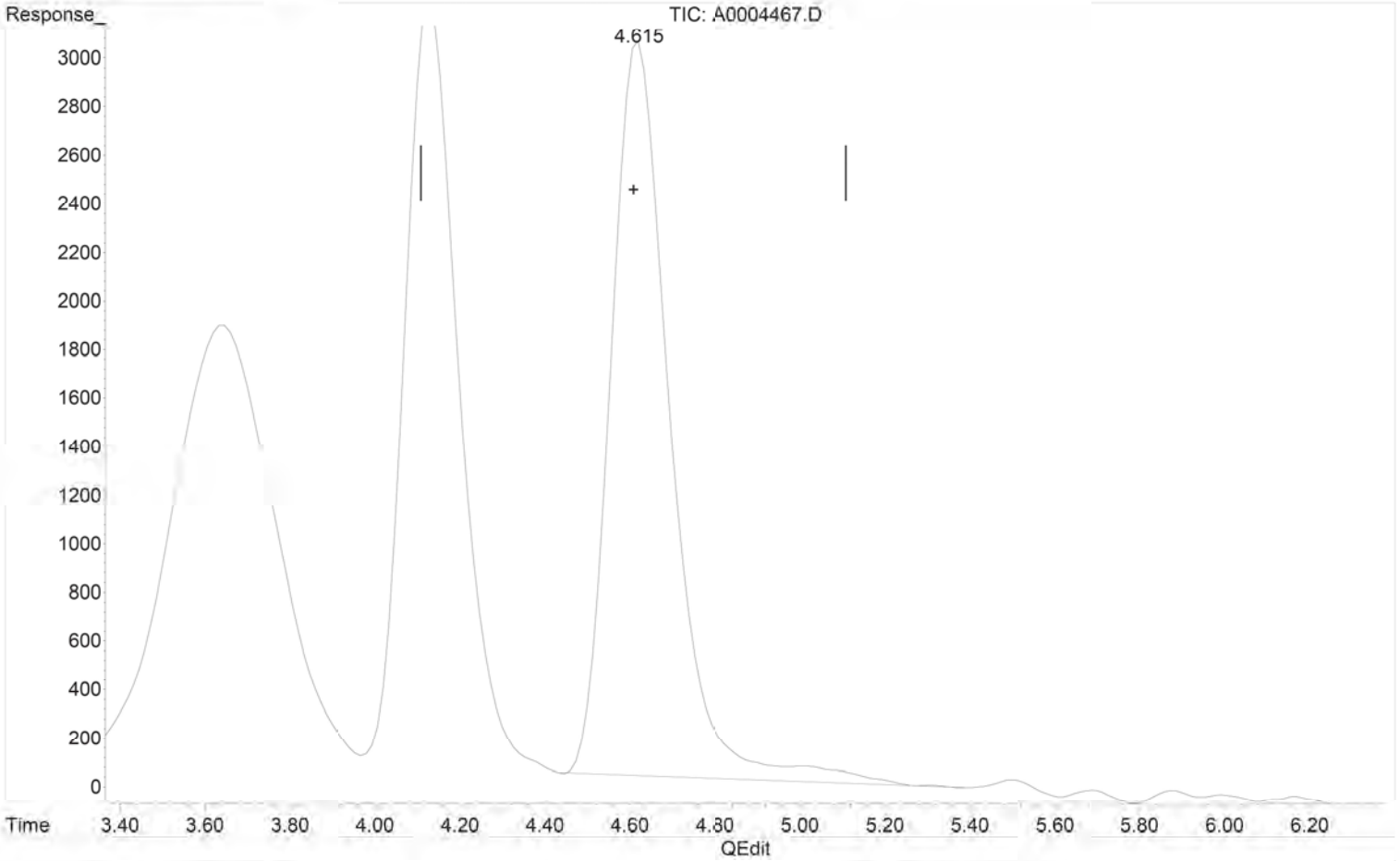
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.622min 5.292 ppm

response 295308

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

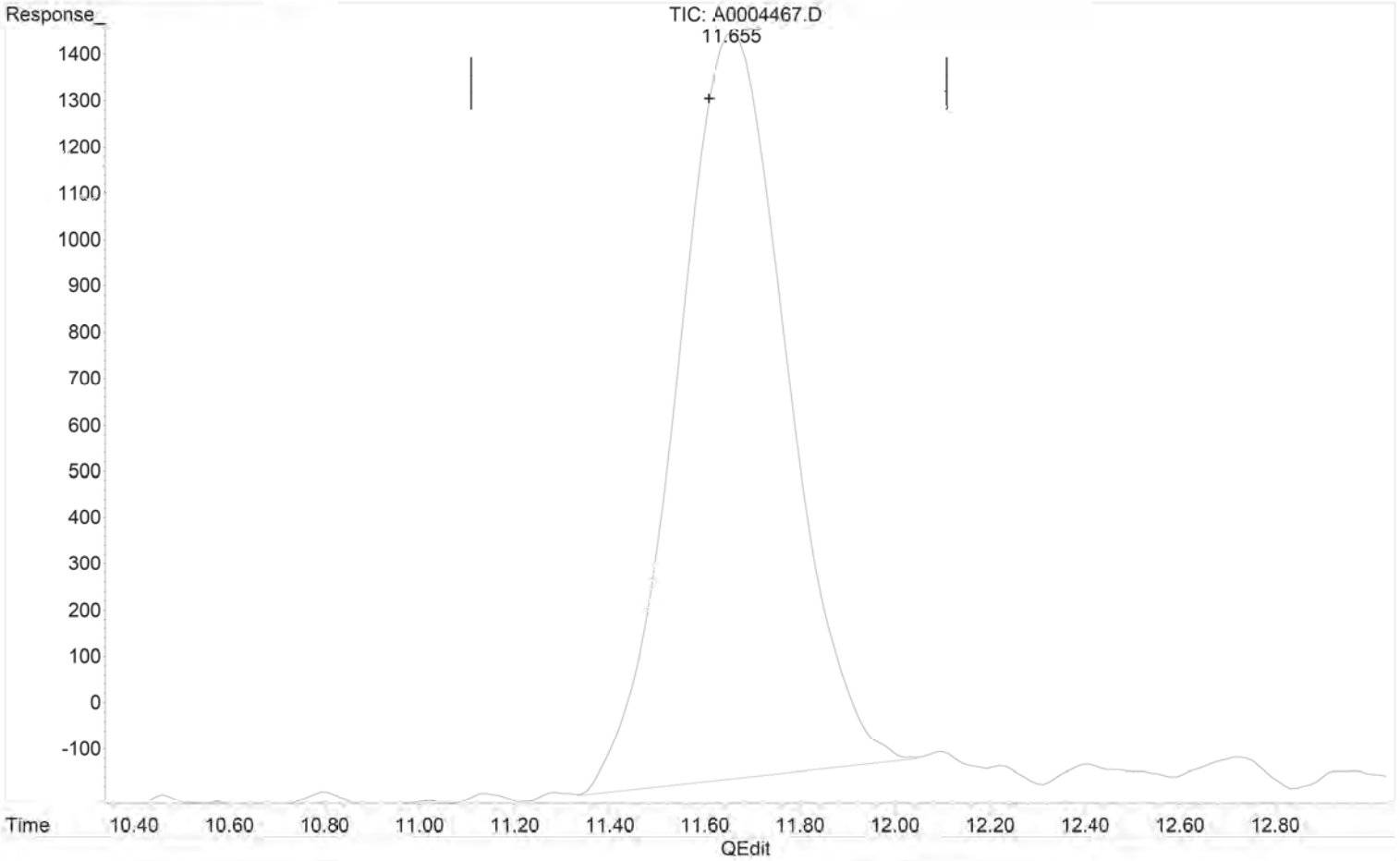
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.655min 4.717 ppm m
response 259122

Manual Integration:
After
Poor integration.
03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

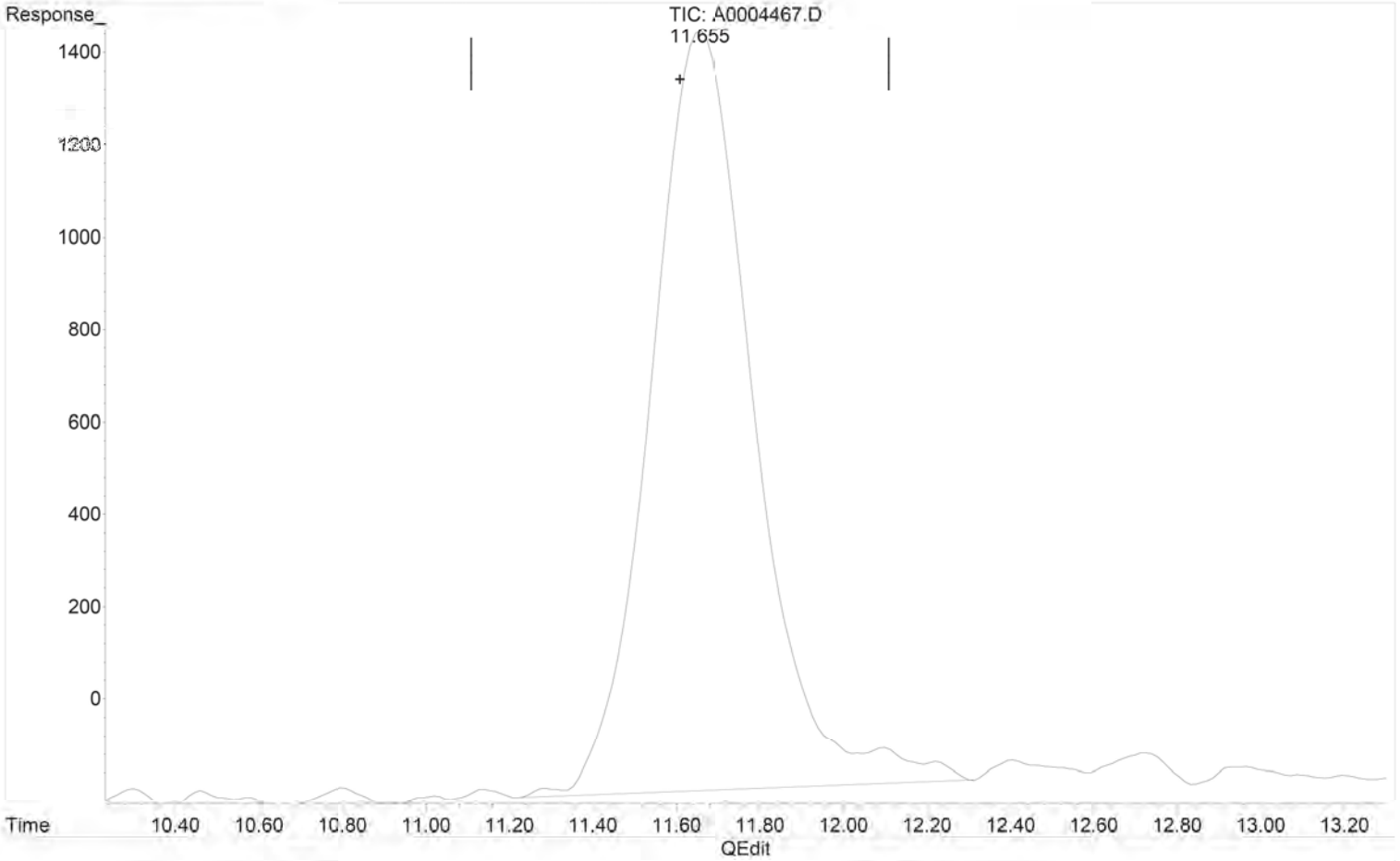
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

11.661min 5.138 ppm

response 282253

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

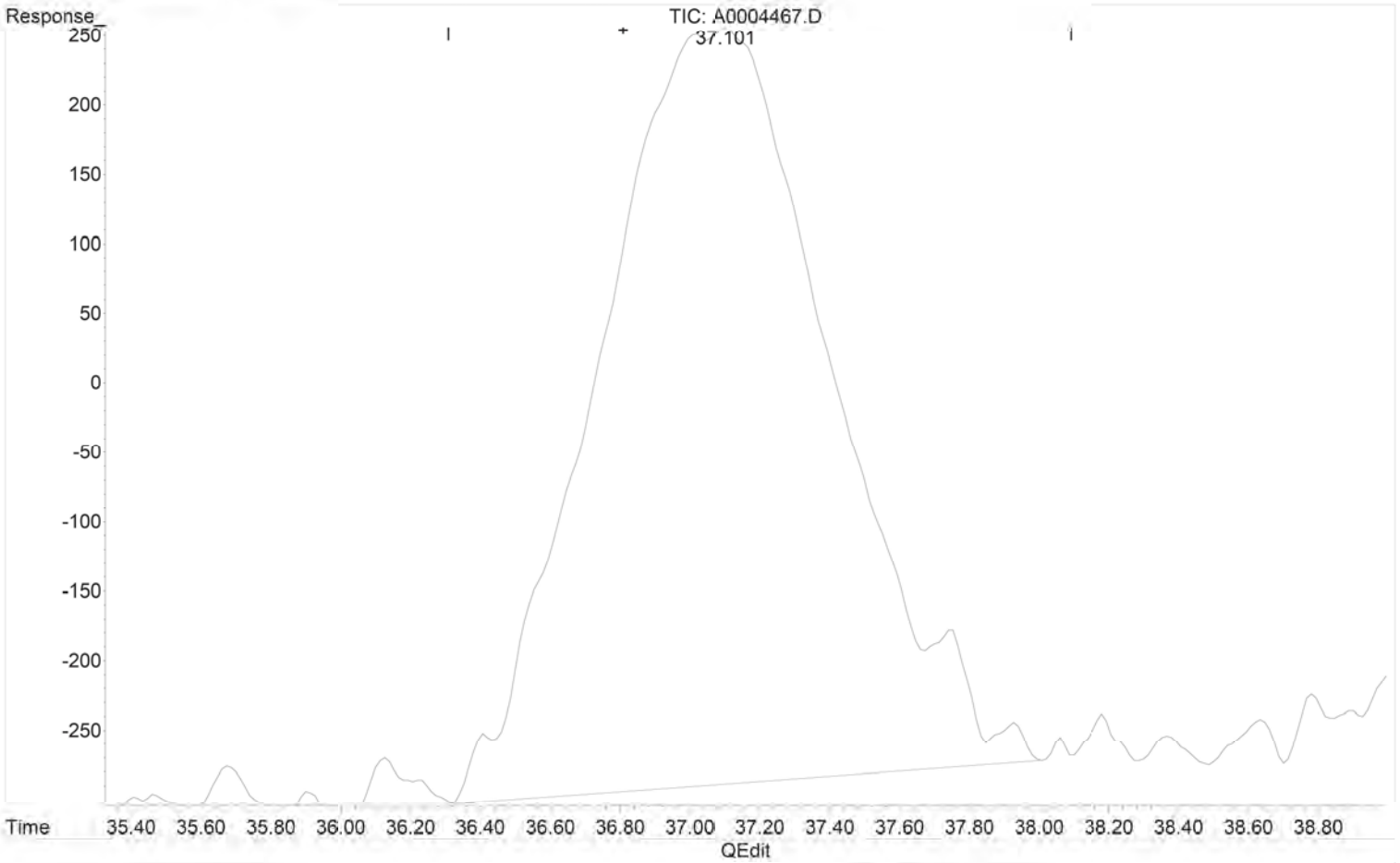
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.101min 4.834 ppm m

response 254345

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

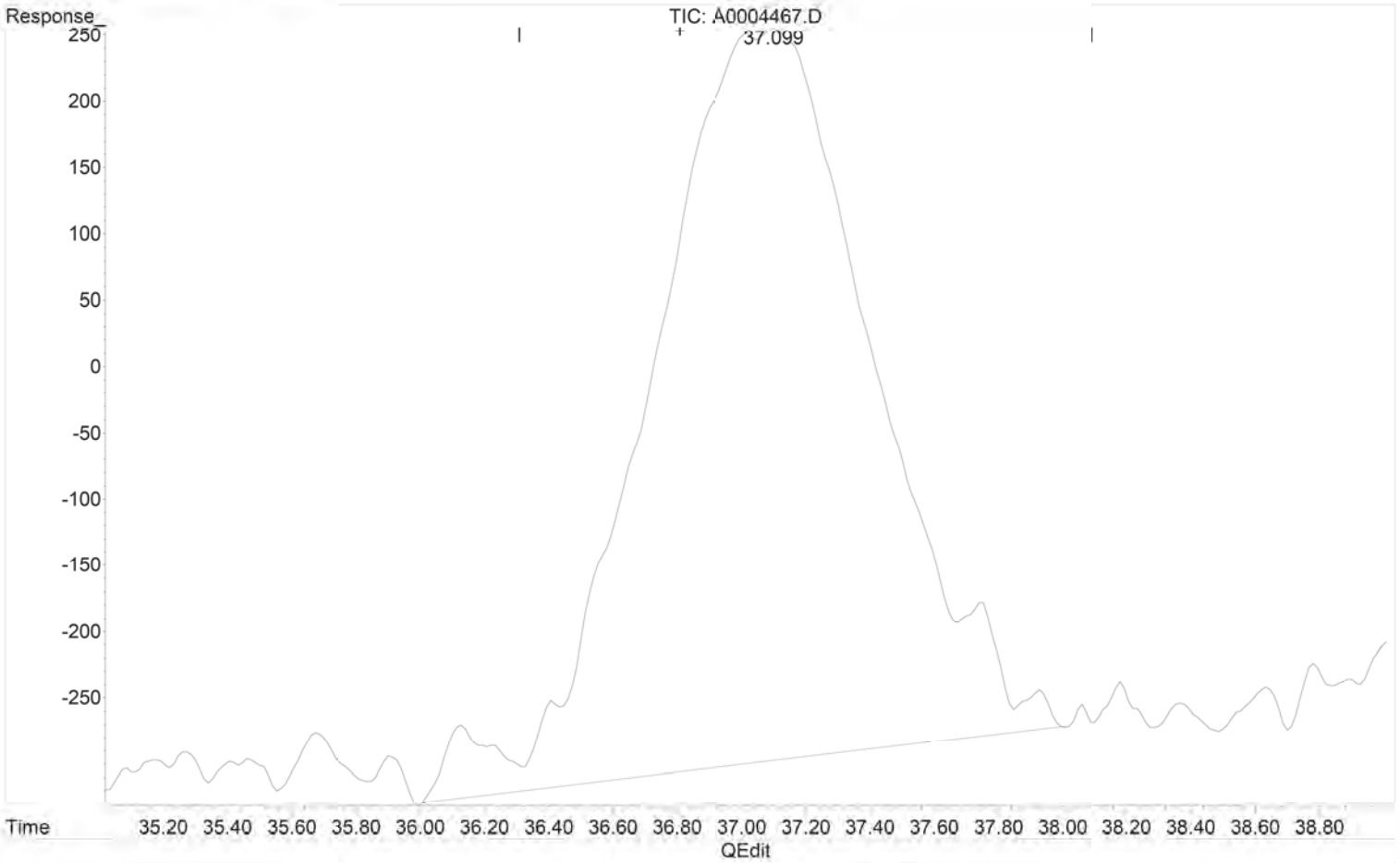
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.103min 5.106 ppm

response 268658

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : ~~30-Dec-2000, 02:48:14~~ 12-Mar-2020, 14:42
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.946	460497	5.032	ppm	m
2) T	Pyruvic acid	3.639	293242	0.503	ppm	m
3) T	Lactic Acid	4.126	275770	4.978	ppm	m
4) T	Acetic Acid	4.615	280536	5.028	ppm	m
5) T	Propionic Acid	11.655	259122	4.717	ppm	m
6) T	Butyric Acid	37.101	254345	4.834	ppm	m

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

RIGHT SOLUTIONS | RIGHT PARTNER

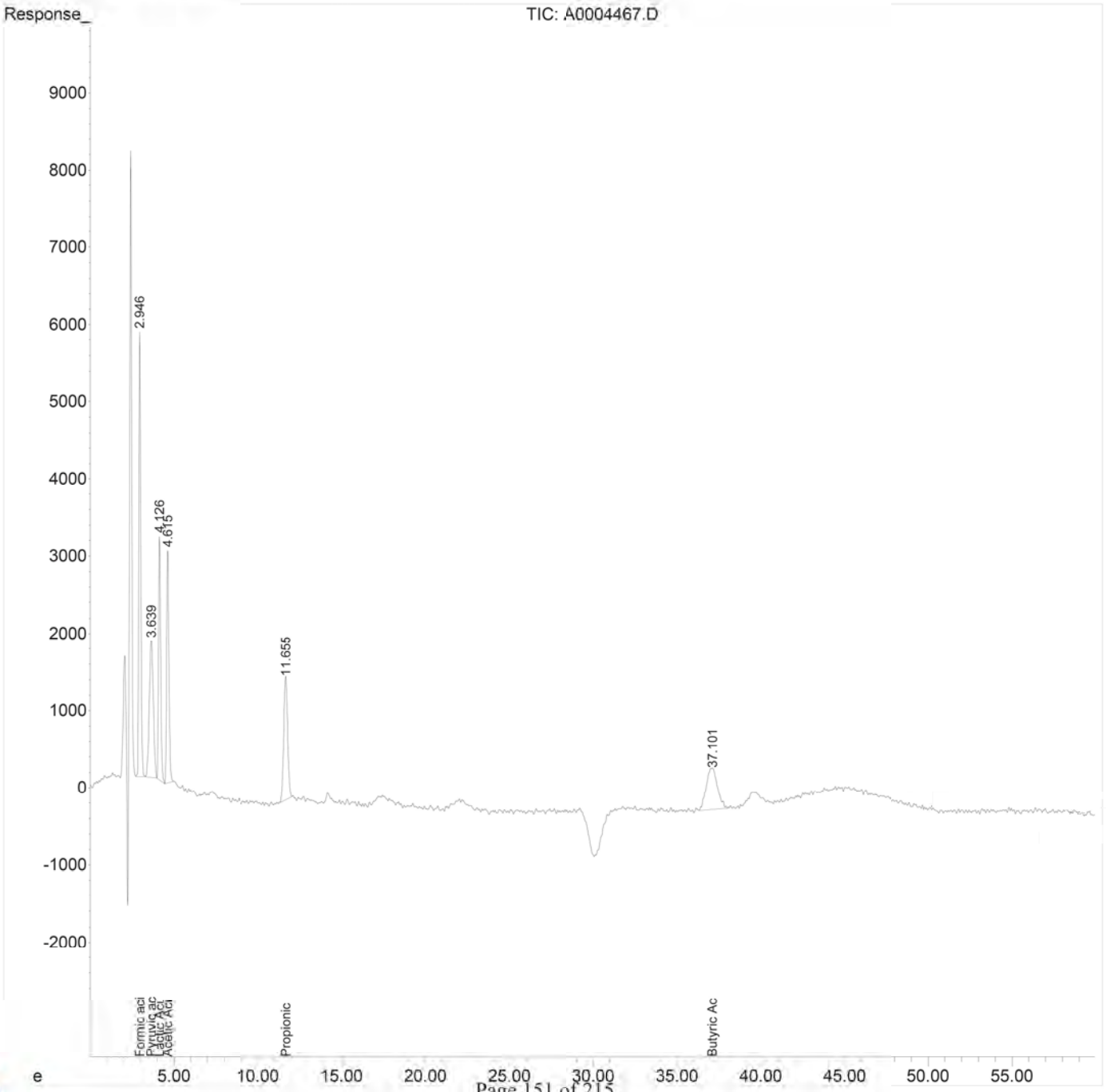
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

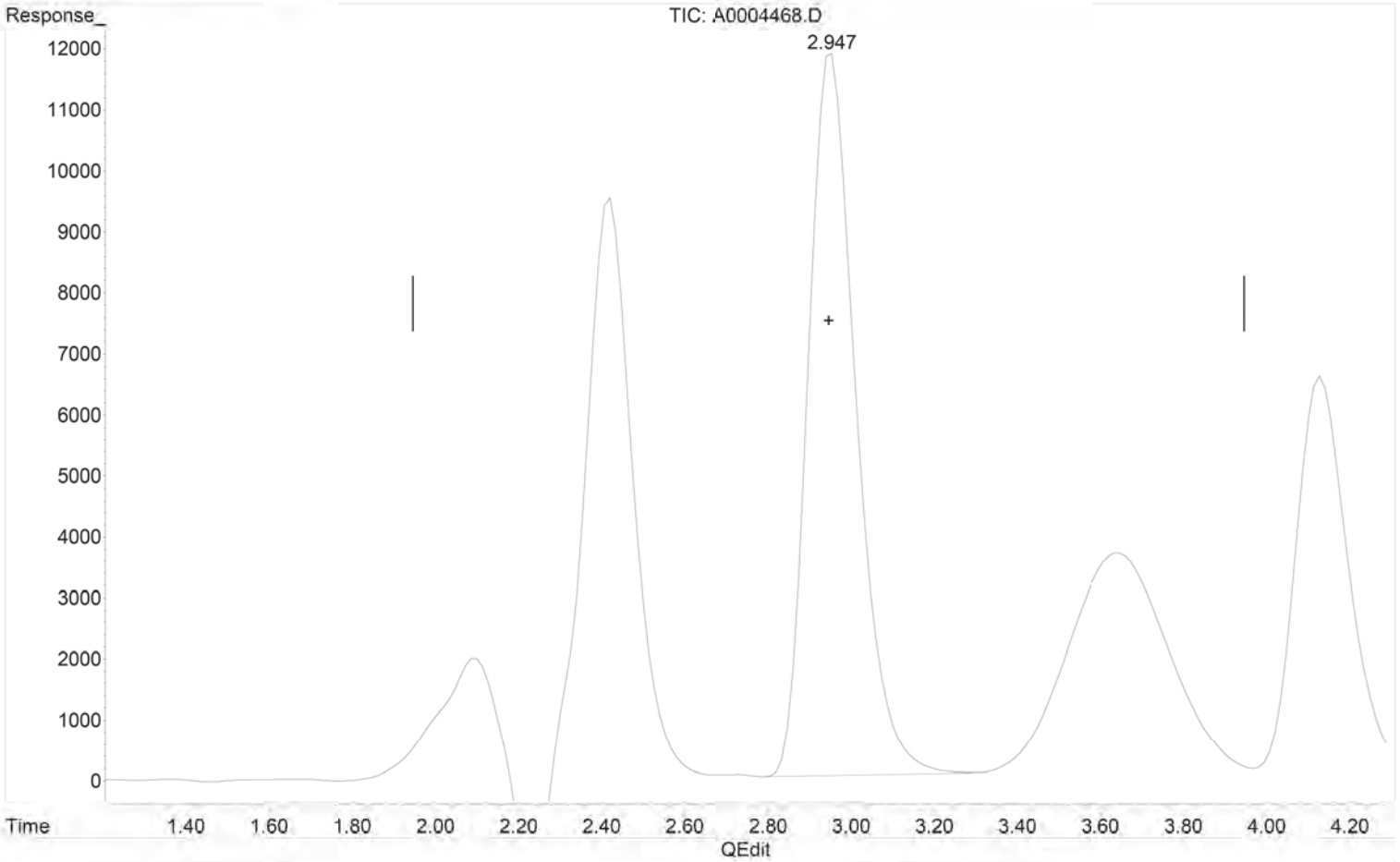
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.947min 10.368 ppm m

response 948710

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

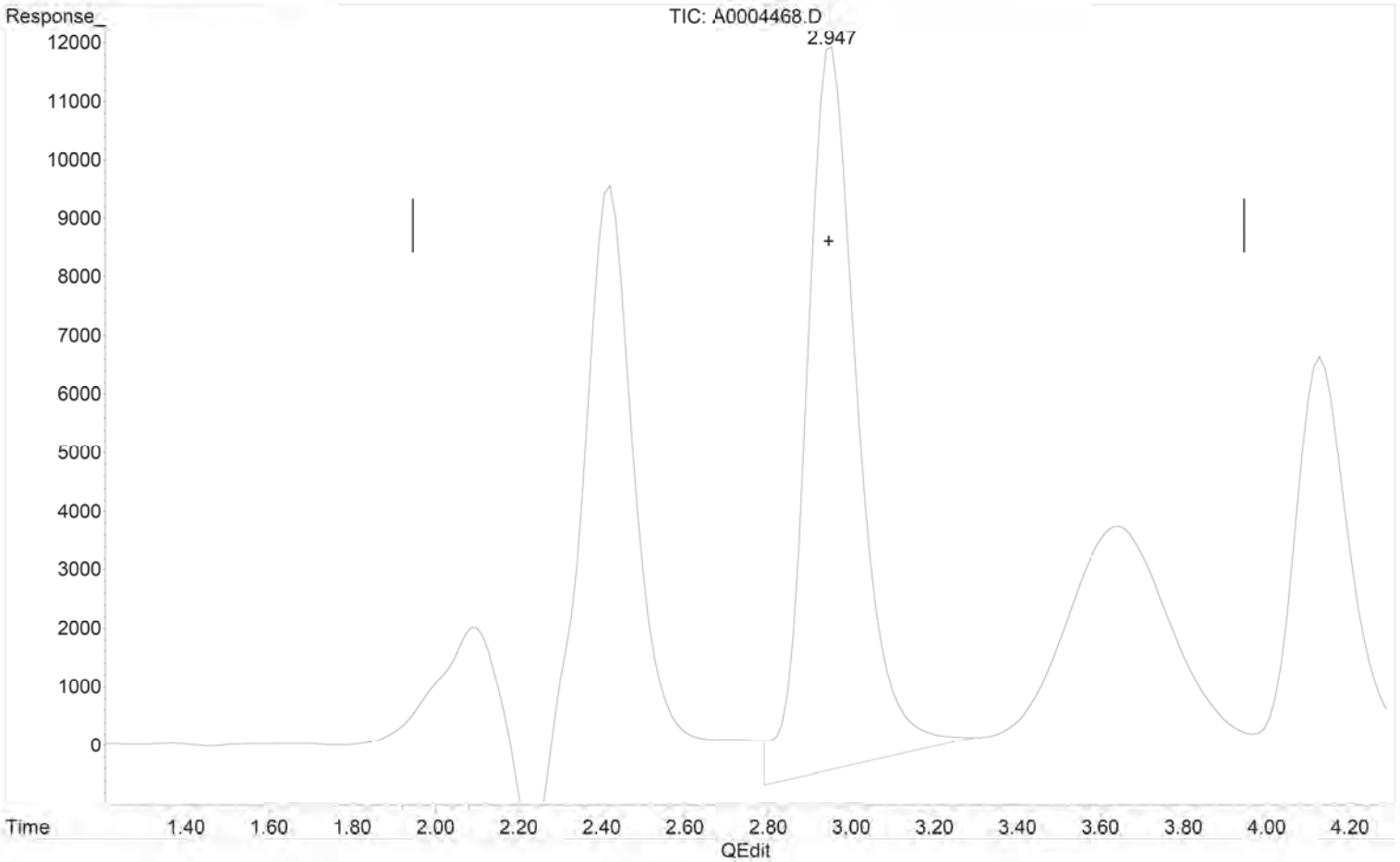
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.954min 11.593 ppm

response 1060848

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

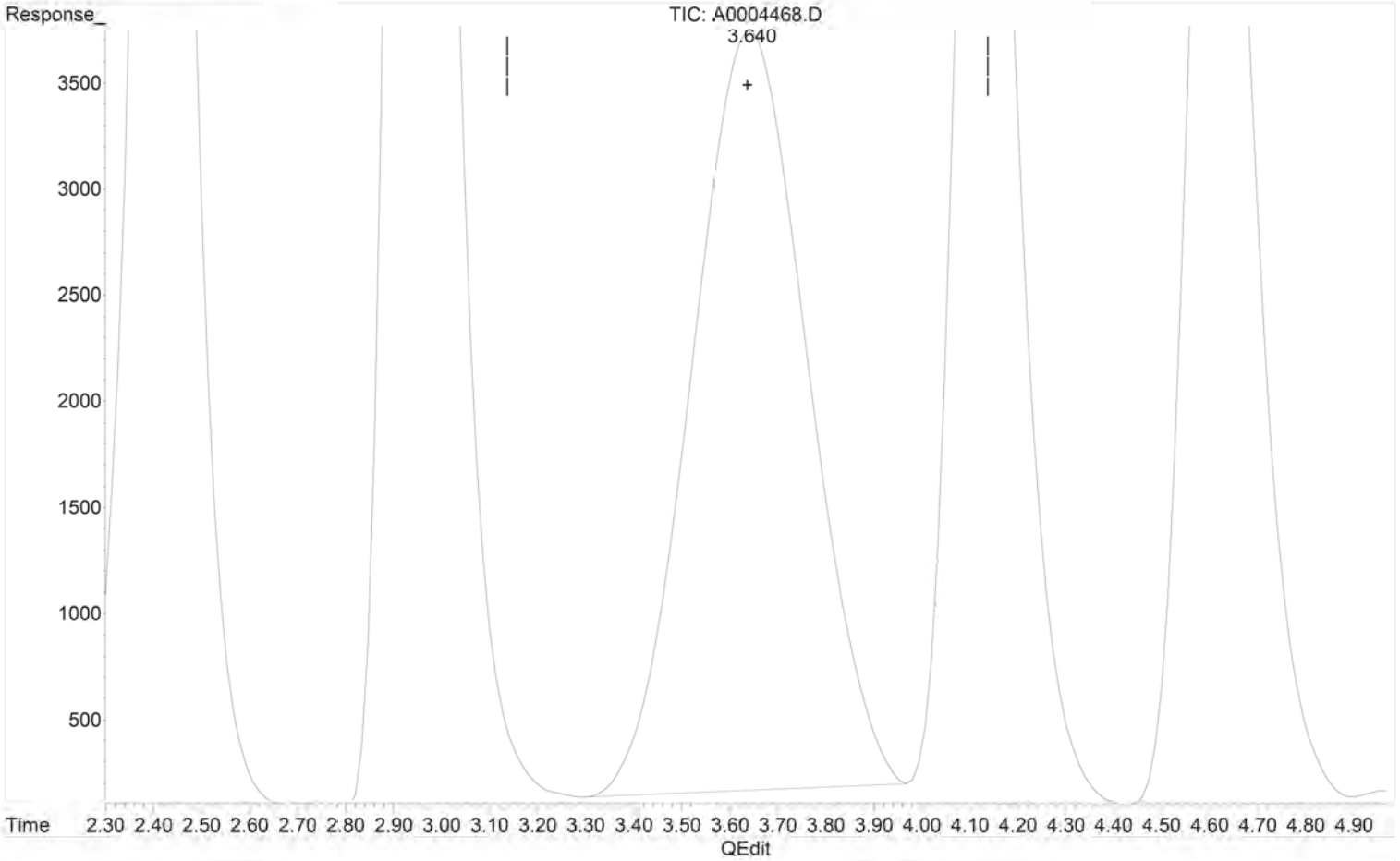
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.640min 1.020 ppm m
response 594304

Manual Integration:
After
Poor integration.
03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

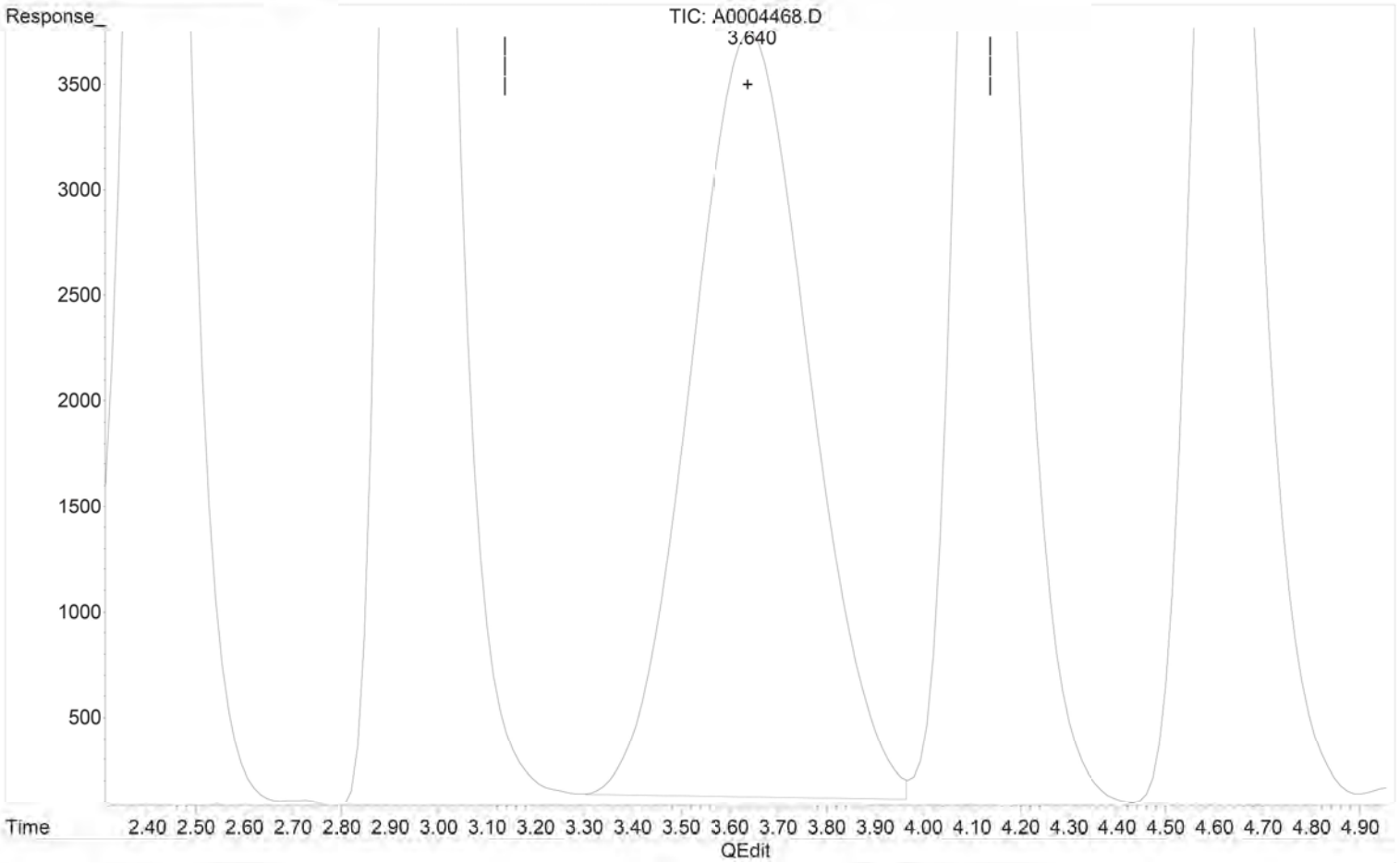
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.646min 1.048 ppm

response 611122

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

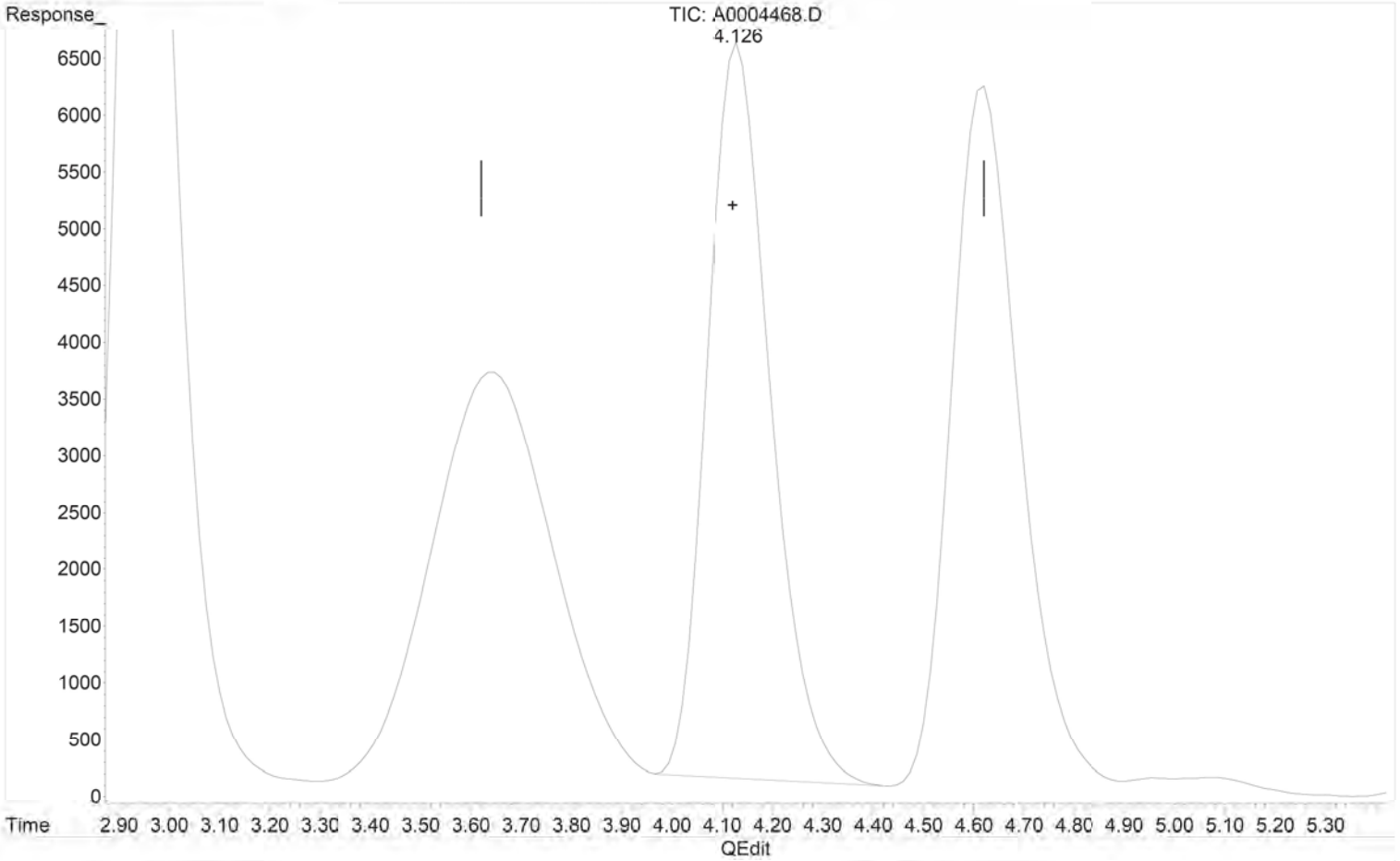
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.126min 10.183 ppm m

response 564128

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

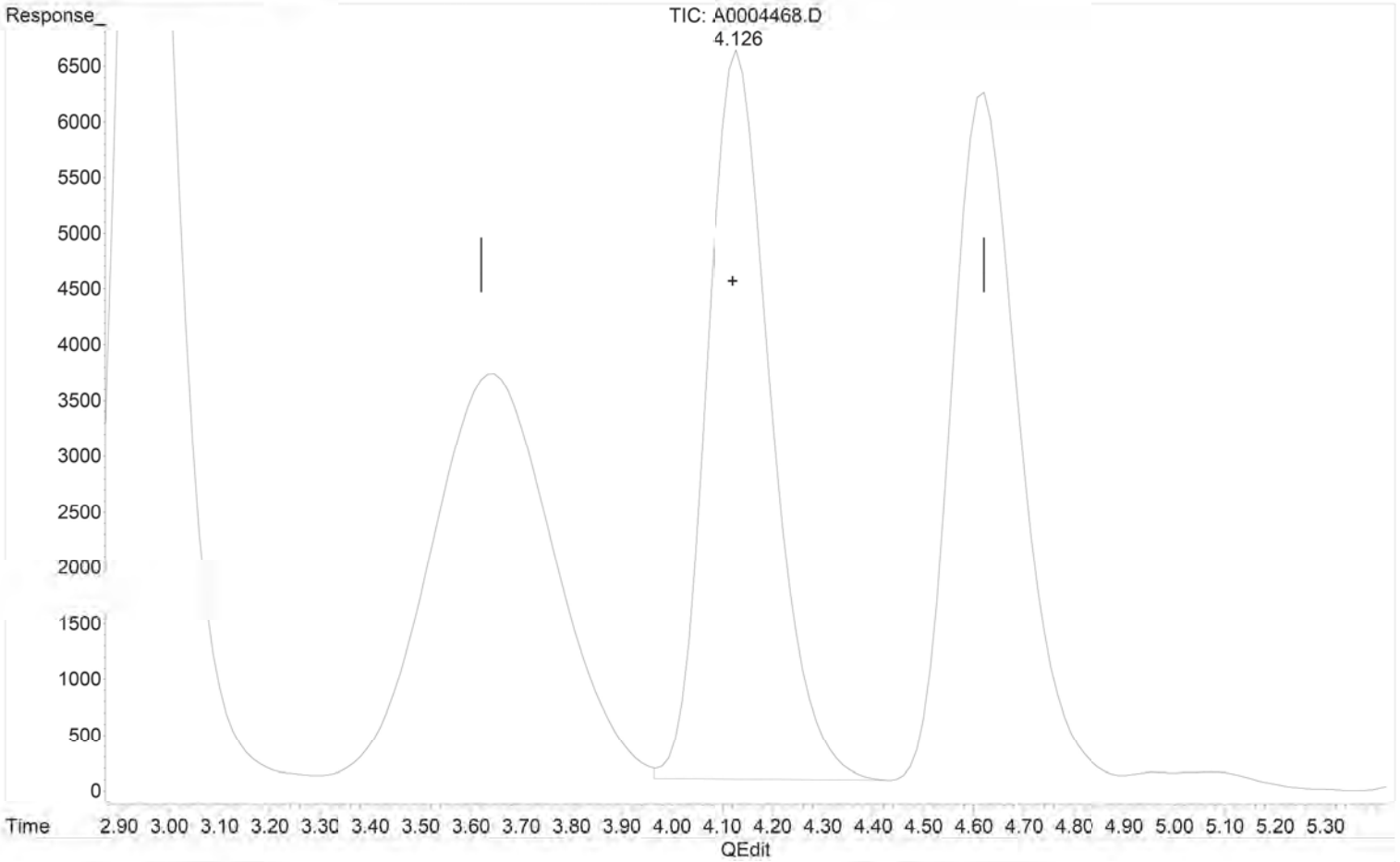
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.132min 10.406 ppm

response 576451

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

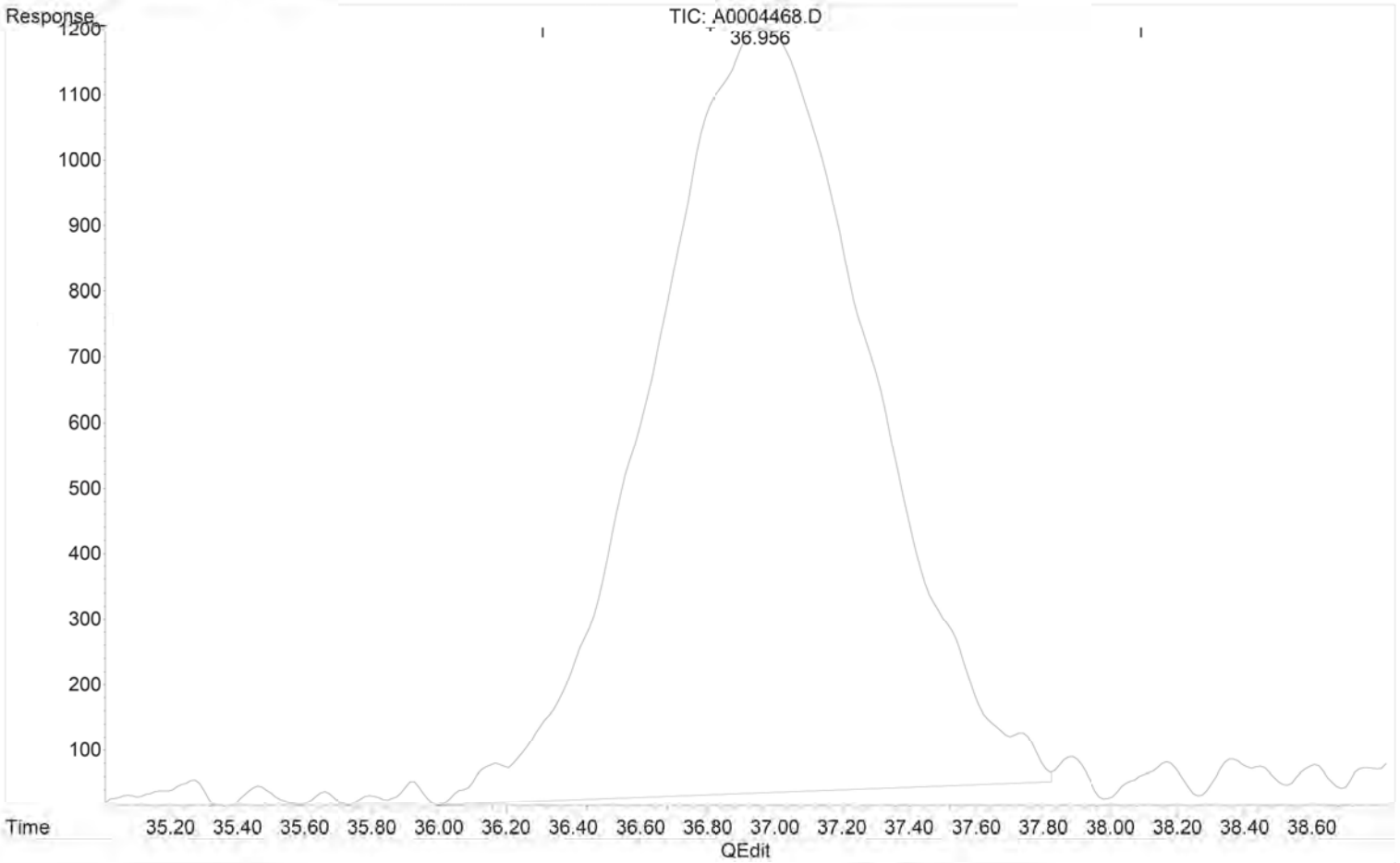
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.956min 10.111 ppm m

response 532016

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

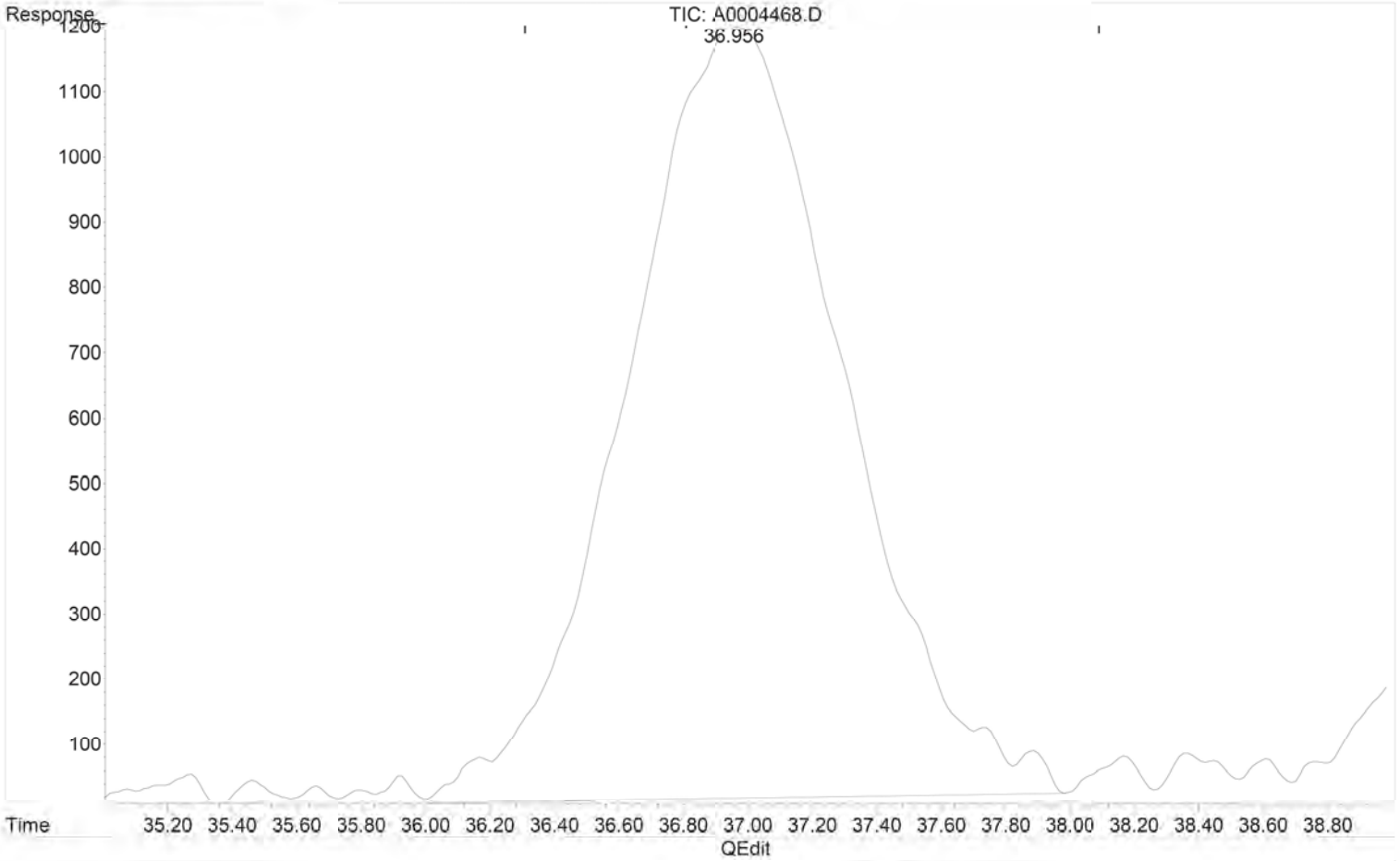
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.967min 10.515 ppm

response 553241

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.947	948710	10.368	ppm	m
2) T	Pyruvic acid	3.640	594304	1.020	ppm	m
3) T	Lactic Acid	4.126	564128	10.183	ppm	m
4) T	Acetic Acid	4.622	573121	10.271	ppm	
5) T	Propionic Acid	11.654	559828	10.190	ppm	
6) T	Butyric Acid	36.956	532016	10.111	ppm	m

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

RIGHT SOLUTIONS | RIGHT PARTNER

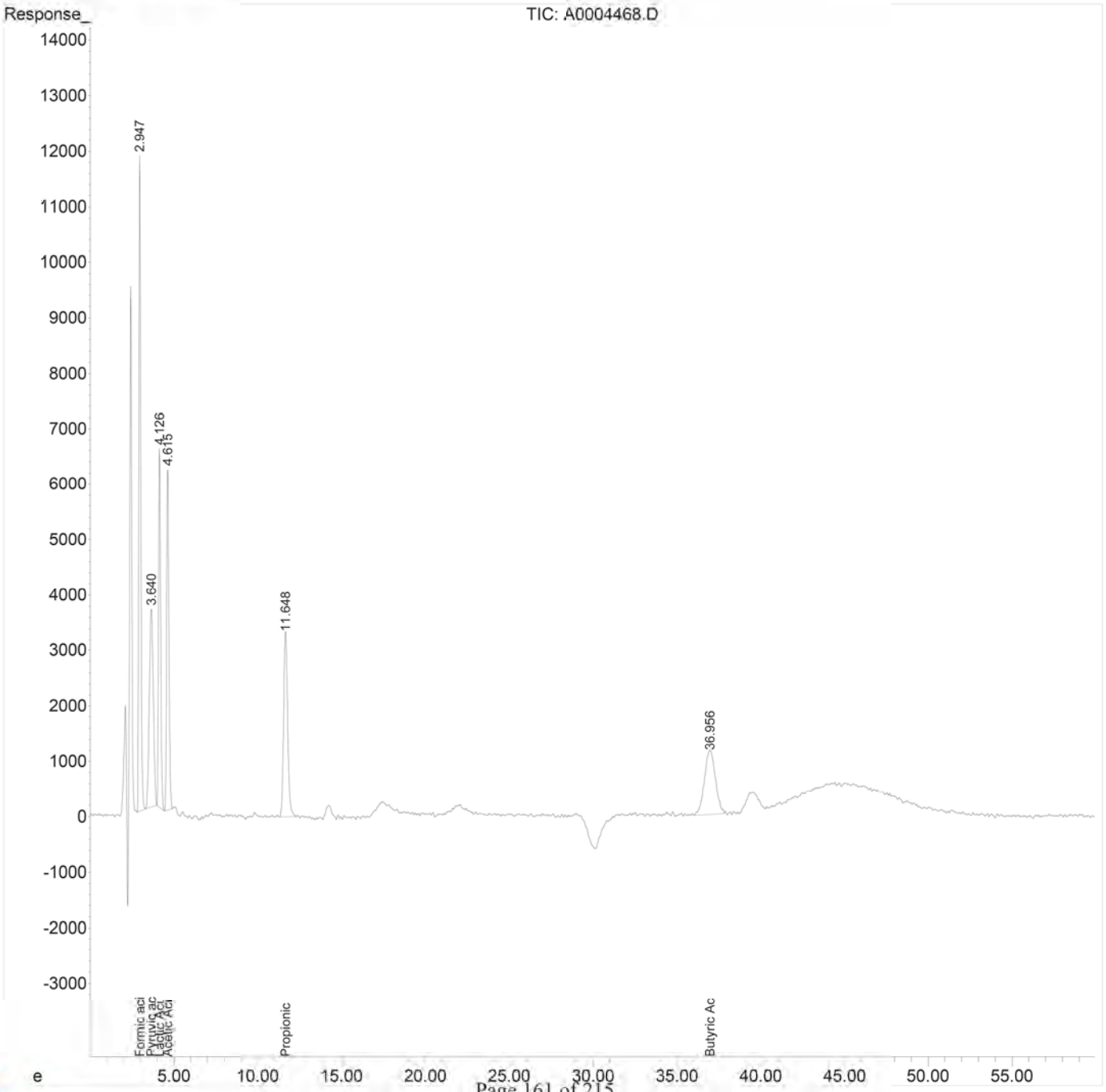
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

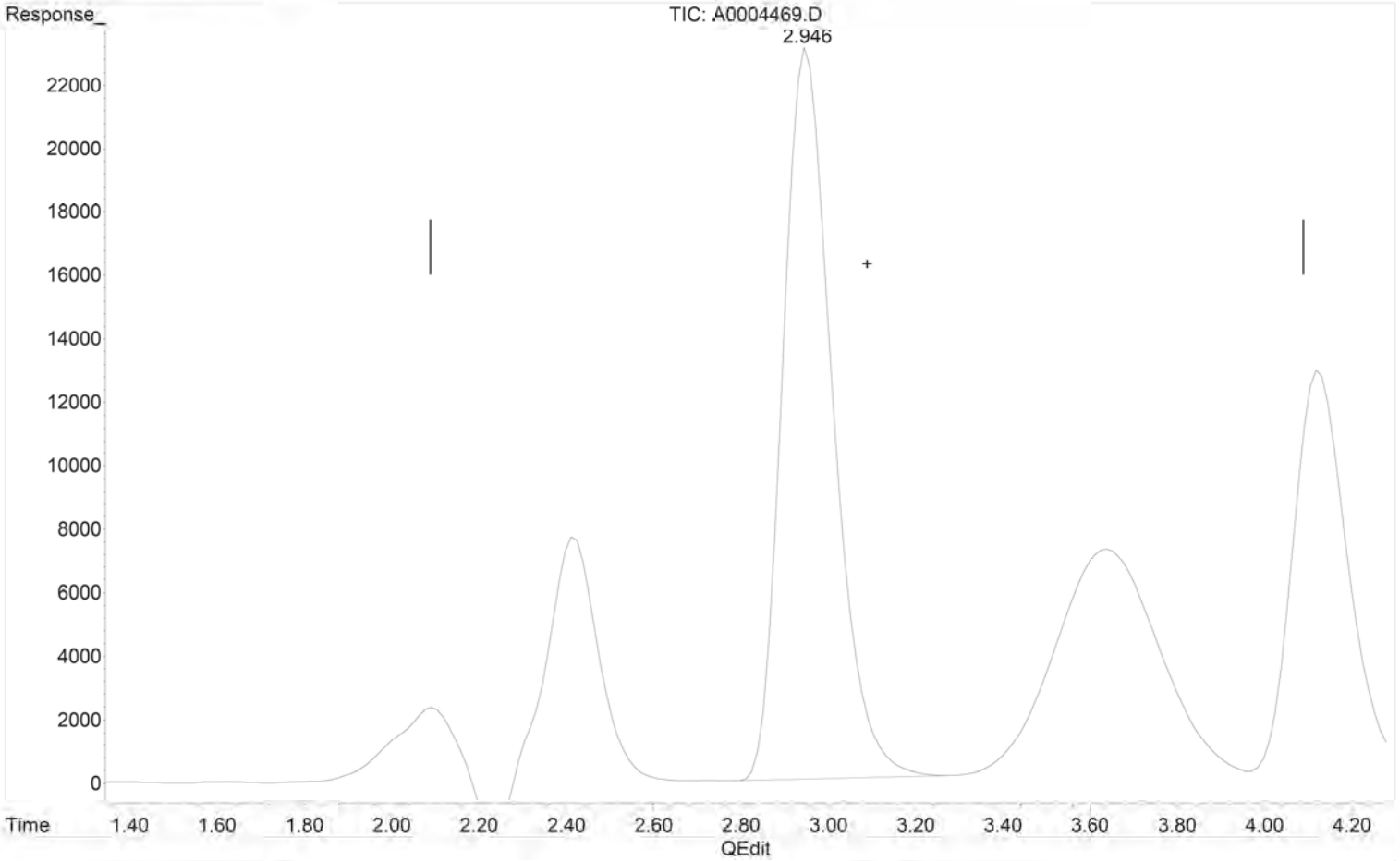
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.946min 19.154 ppm m

response 1830133

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

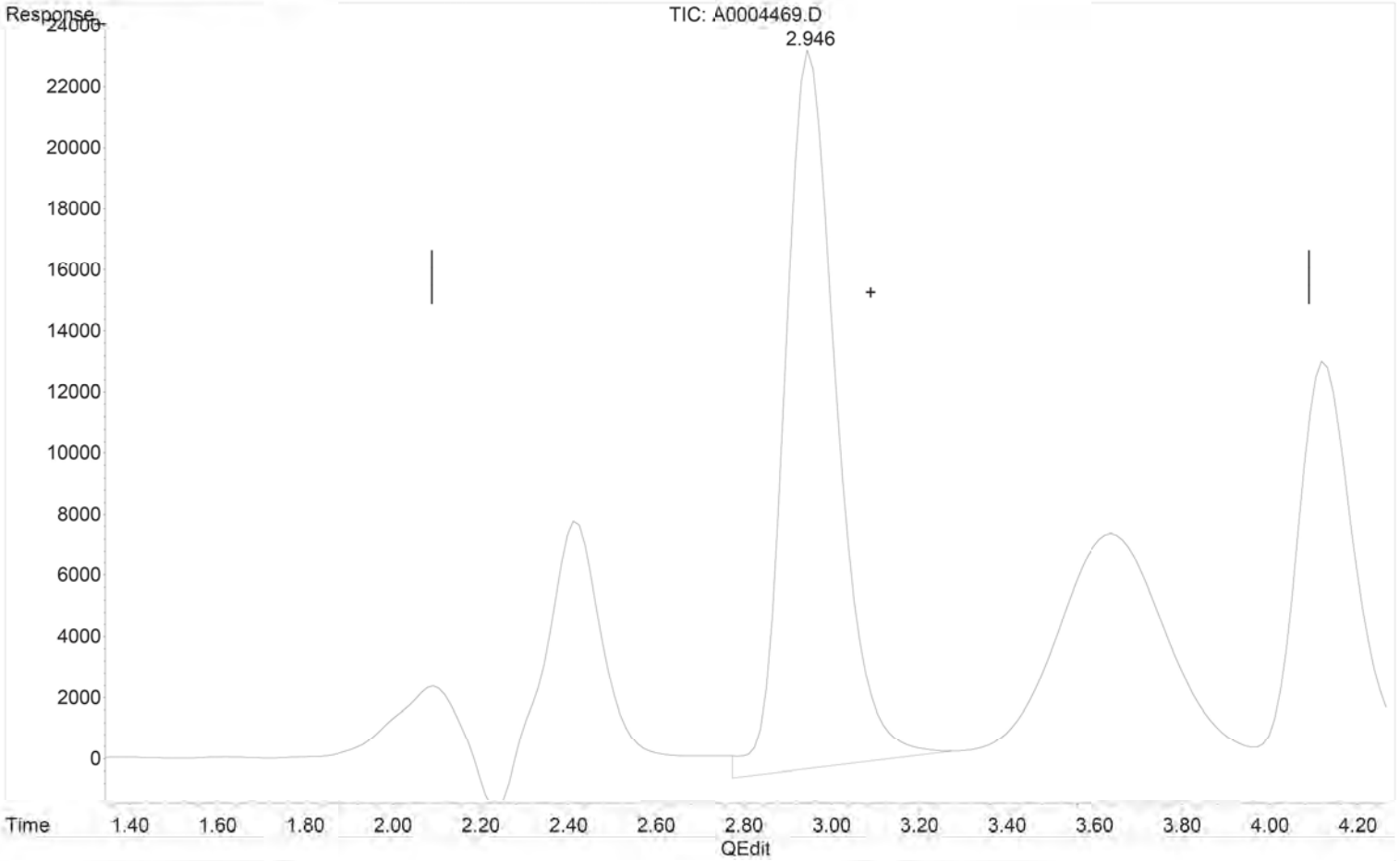
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.953min 20.256 ppm

response 1935353

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

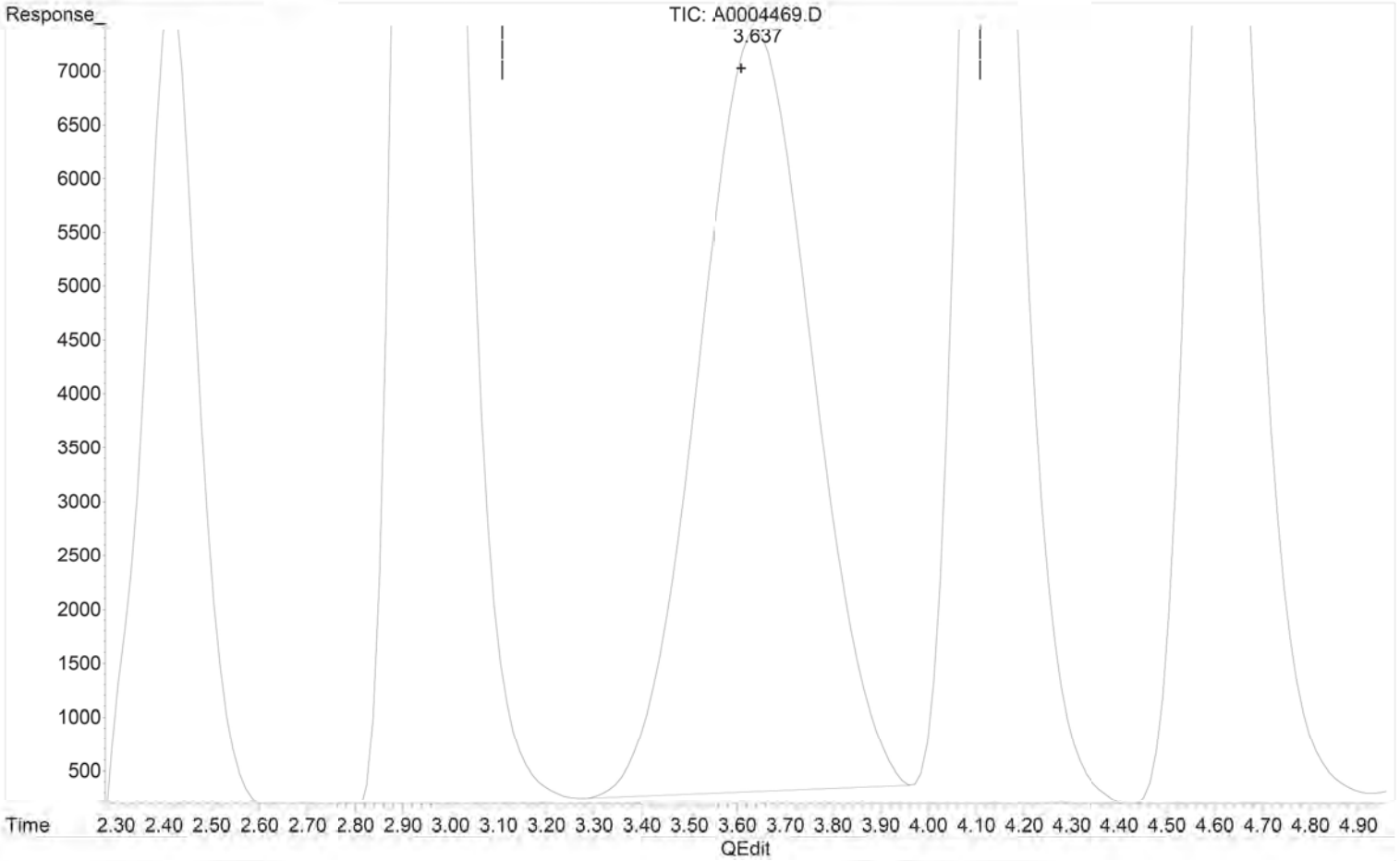
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.637min 2.190 ppm m
response 1165741

Manual Integration:
After
Poor integration.
03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

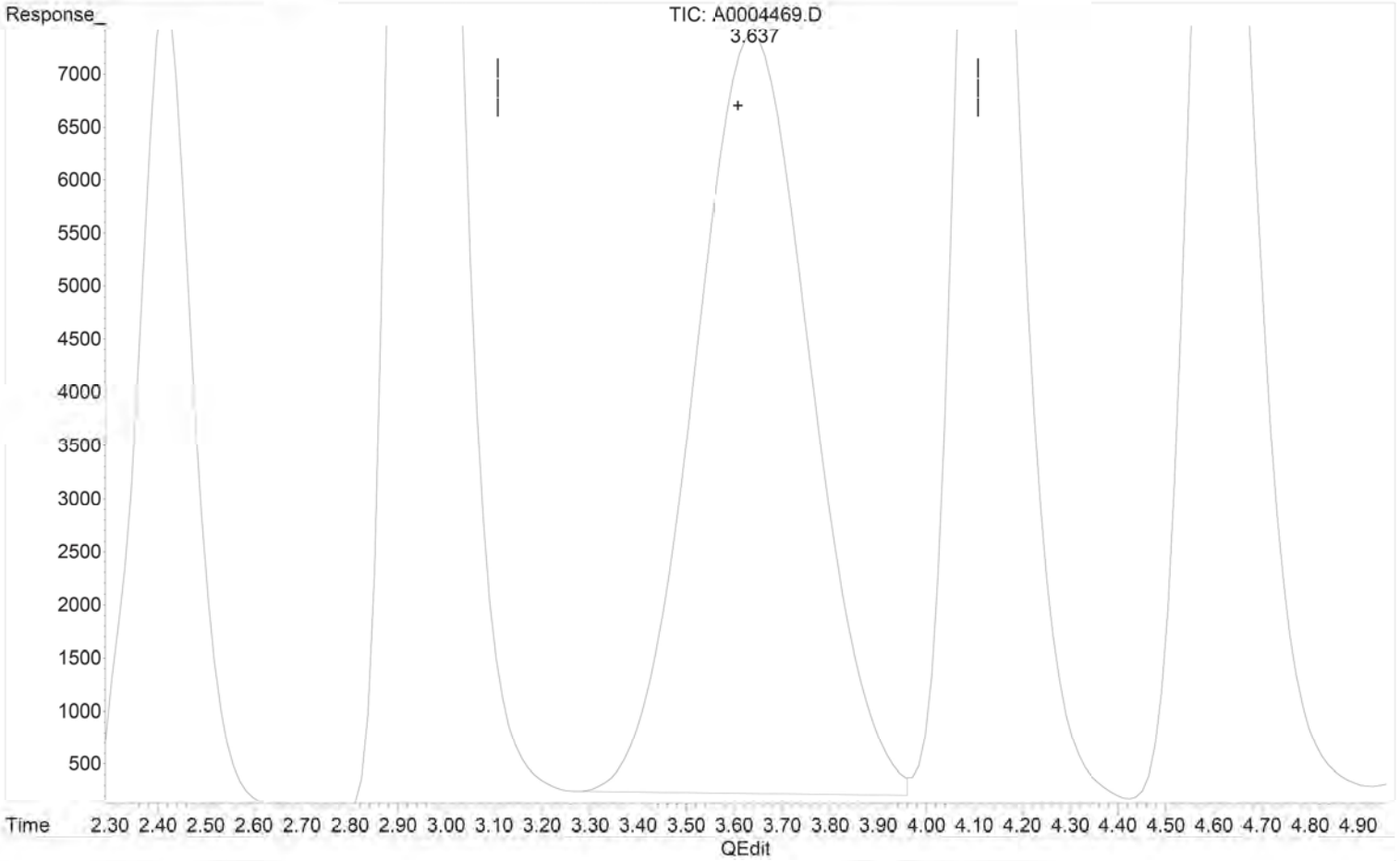
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.642min 2.250 ppm

response 1197650

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

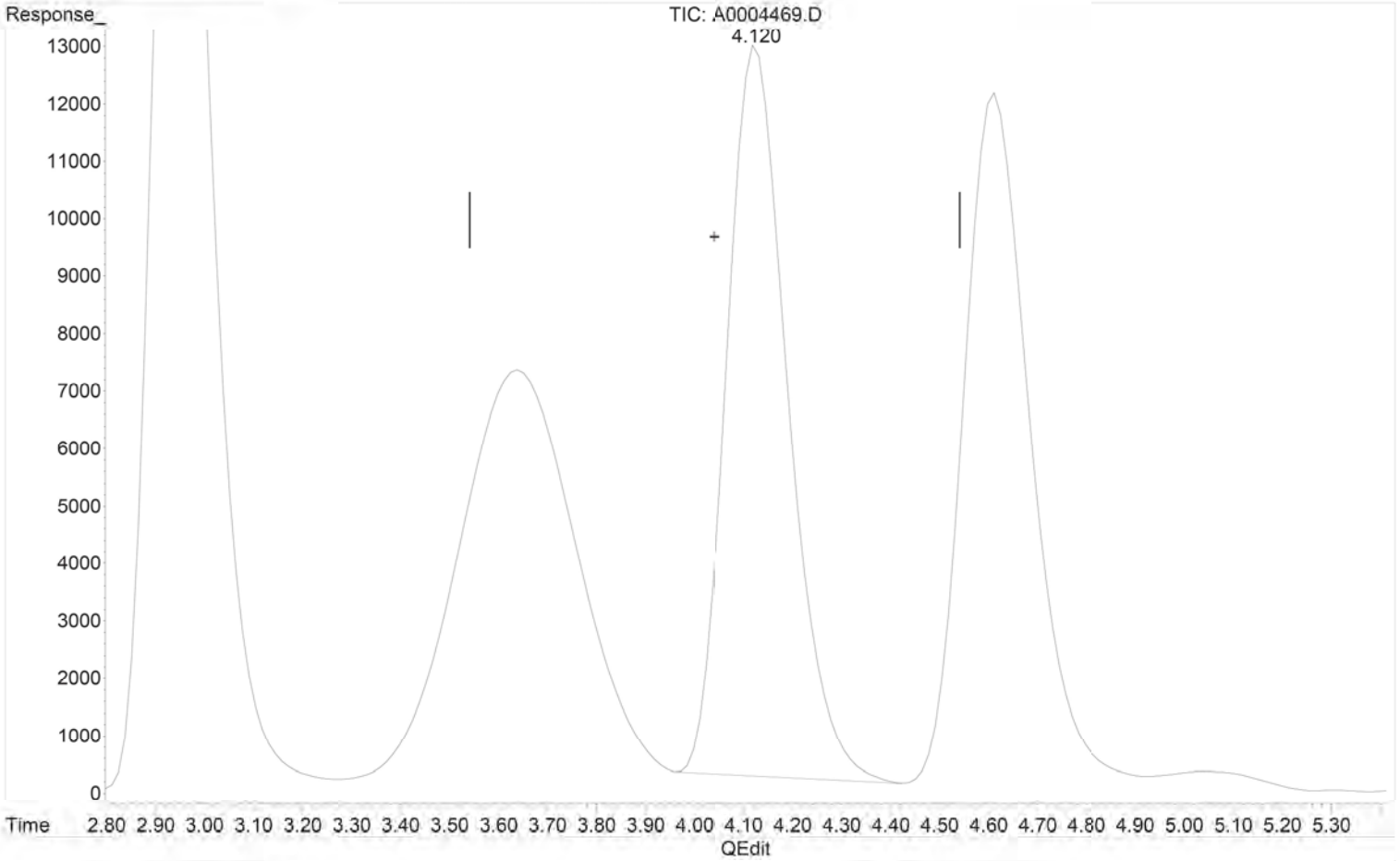
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.120min 21.482 ppm m

response 1107931

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

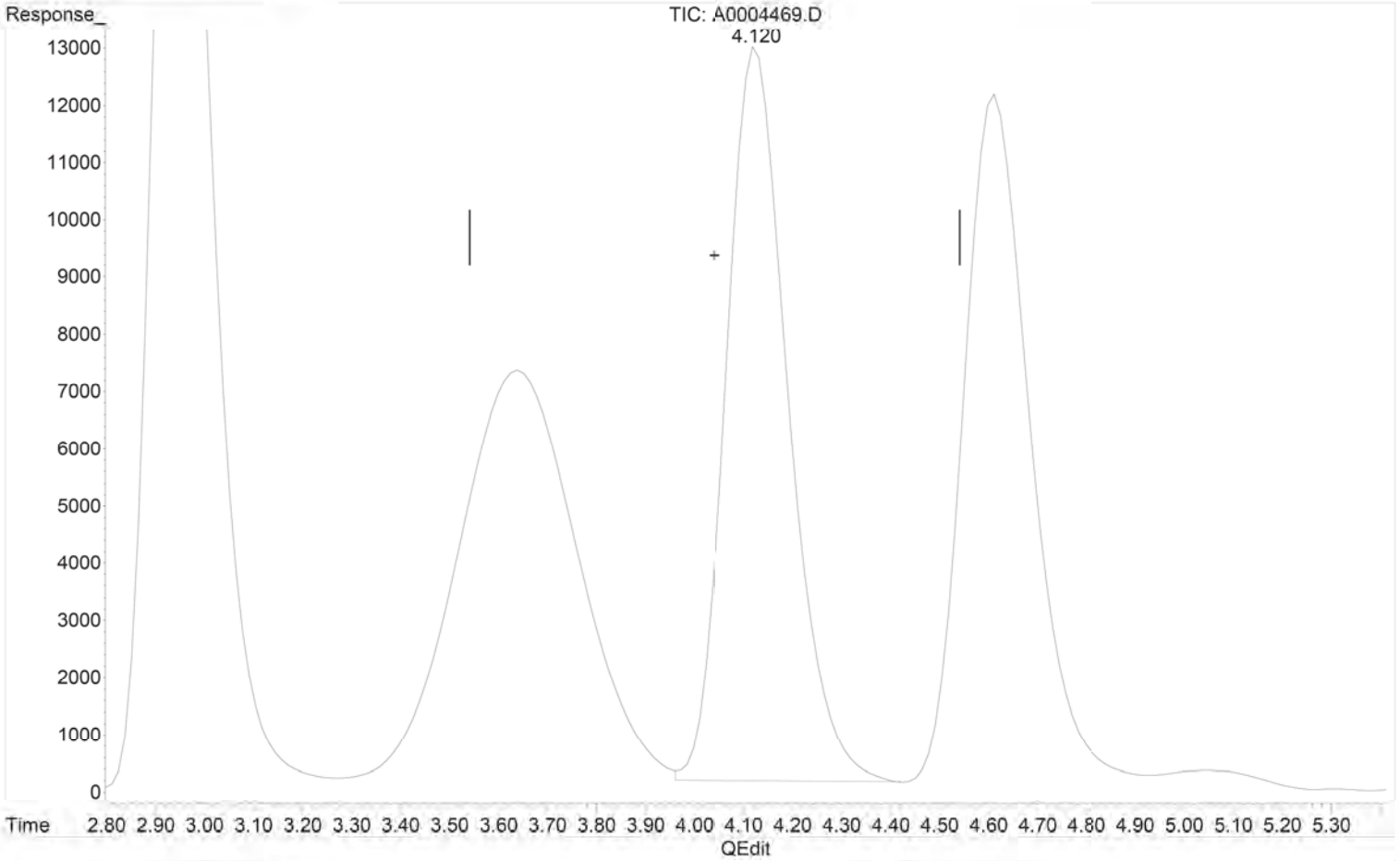
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.127min 21.898 ppm

response 1129421

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

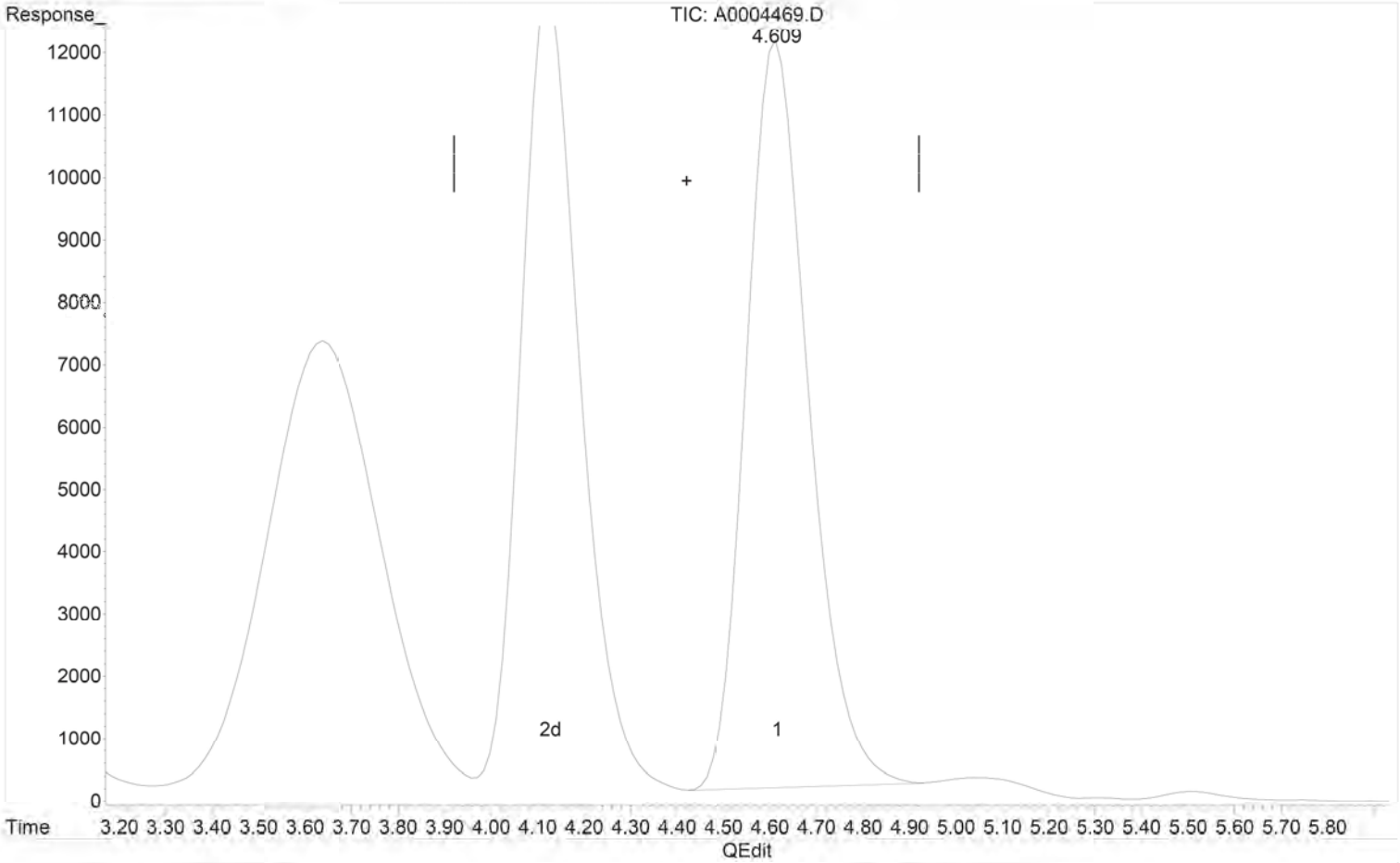
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.609min 19.276 ppm m
response 1115994

Manual Integration:
After
Poor integration.
03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

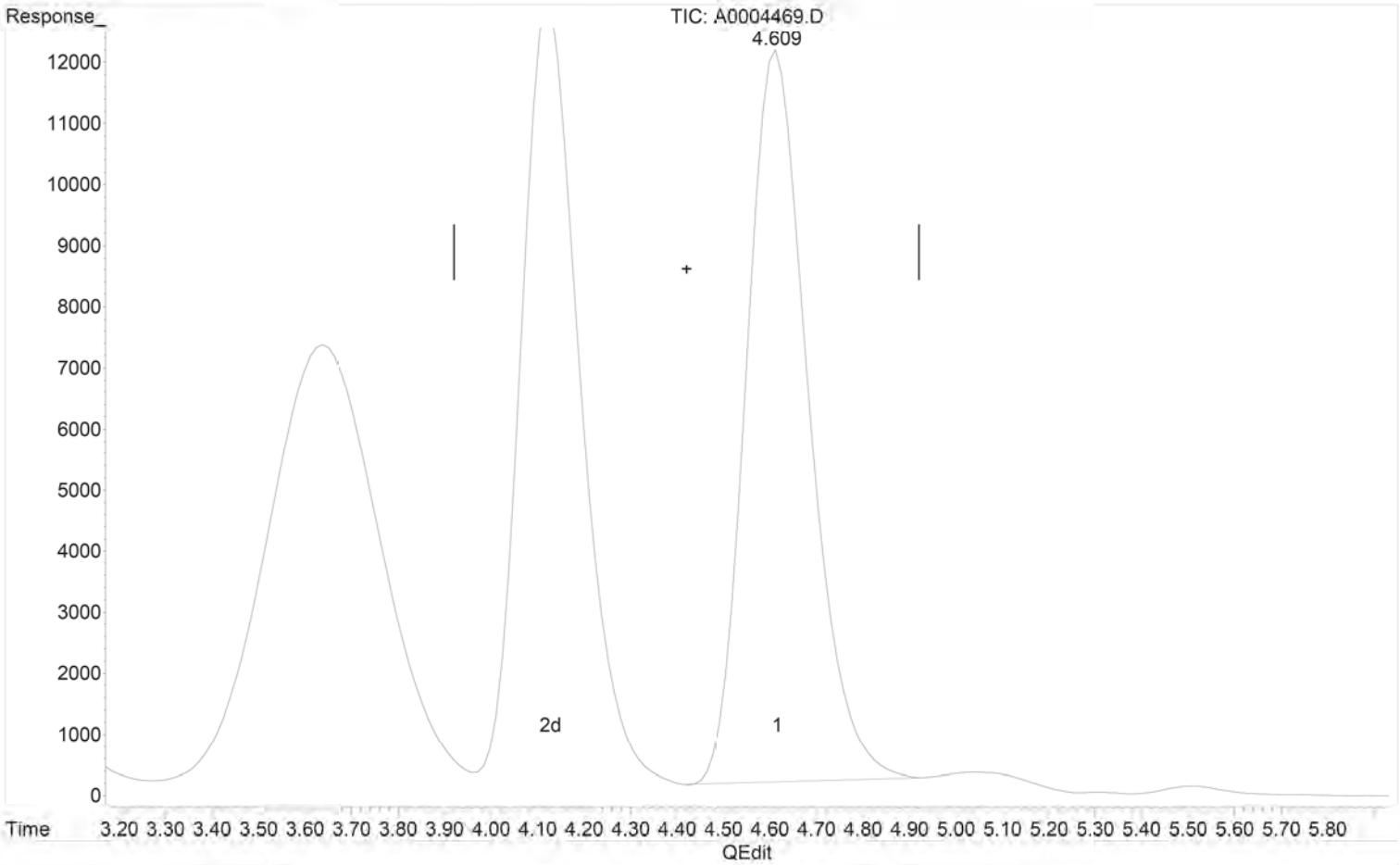
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.615min 19.234 ppm

response 1113595

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

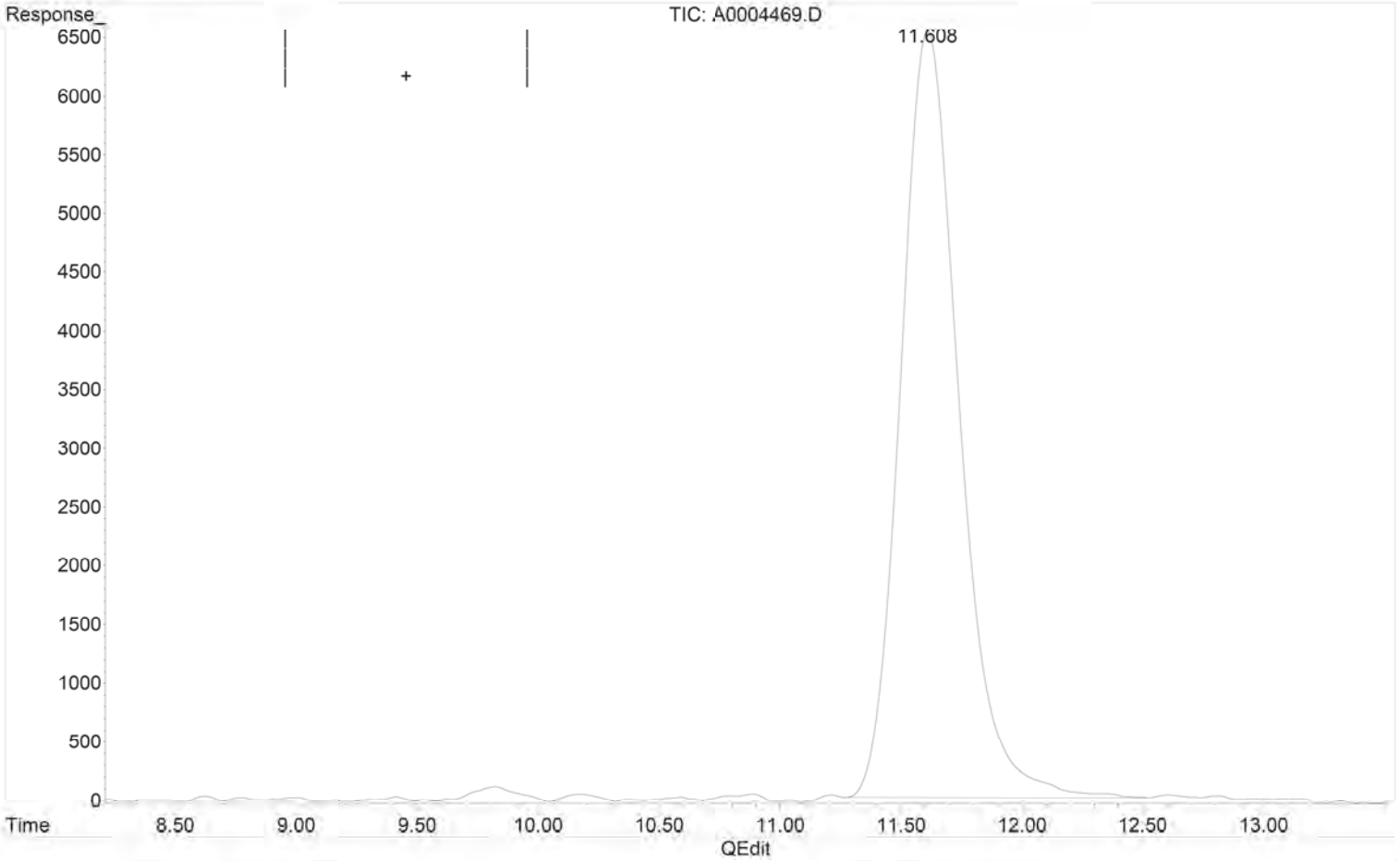
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.608min 19.595 ppm m
response 1098741

Manual Integration:
After
Peak not found.
03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

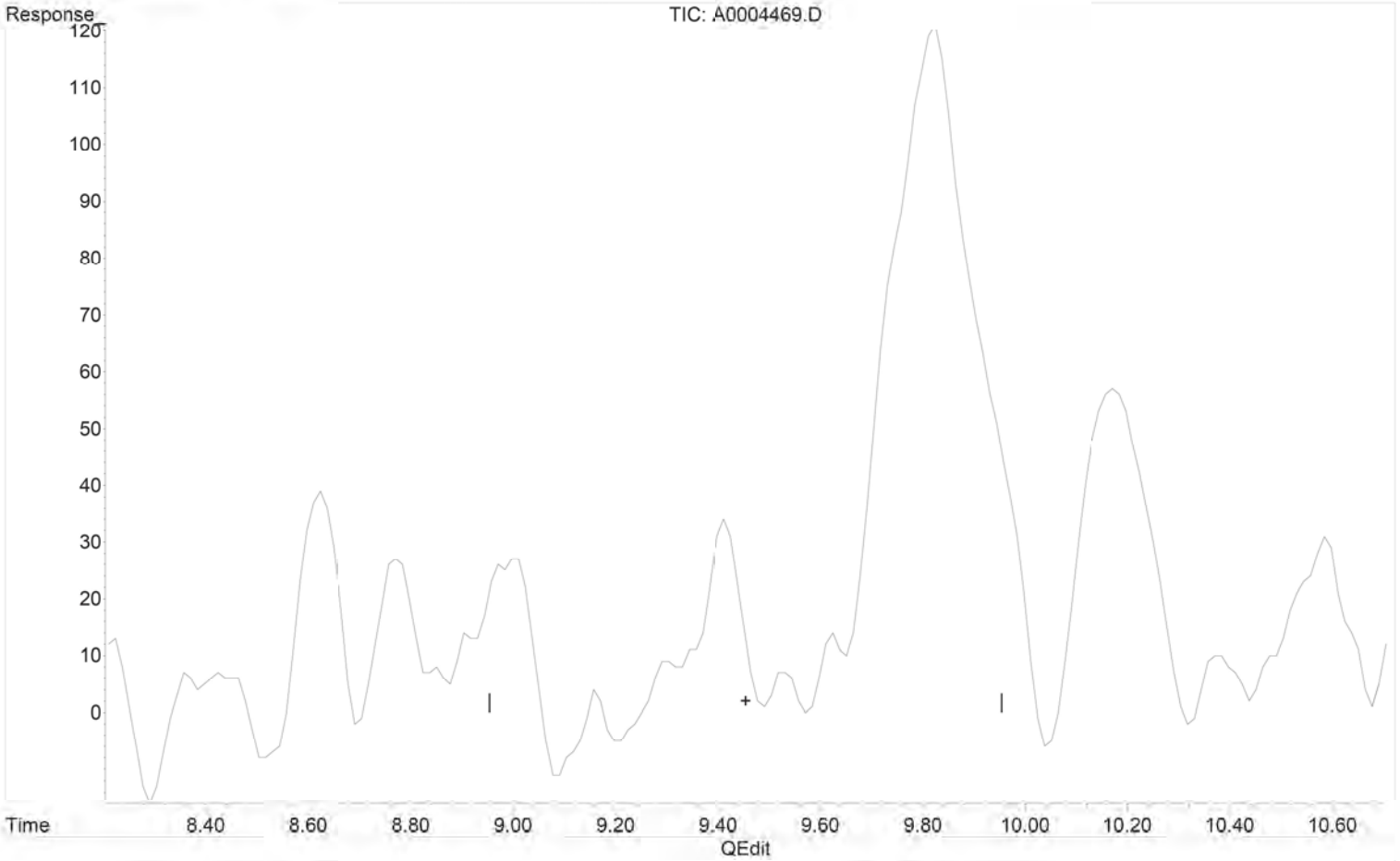
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
9.454min 0.000 ppm
response 0

Manual Integration:
Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

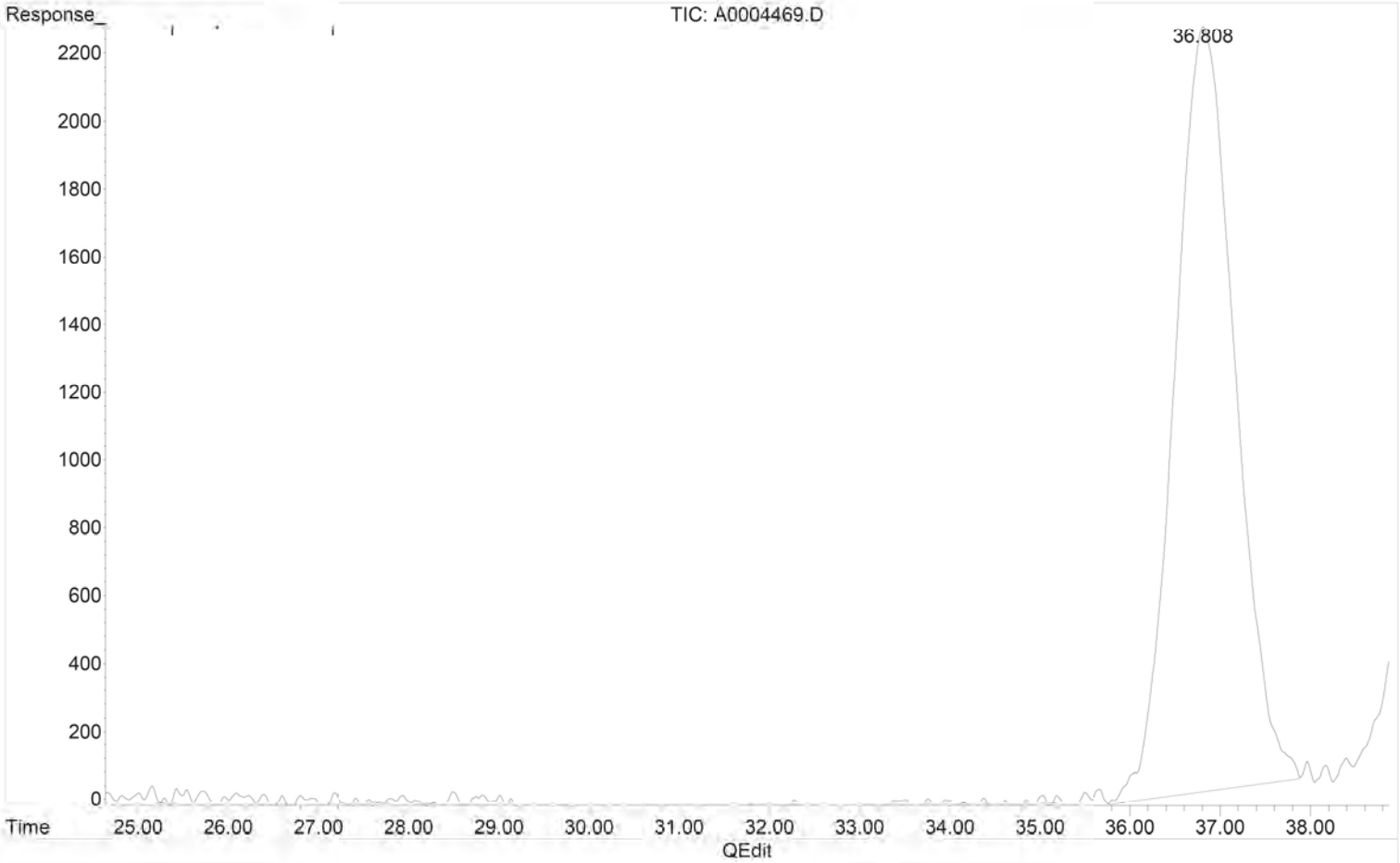
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.808min 19.370 ppm m

response 1052332

Manual Integration:

After

Peak not found.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

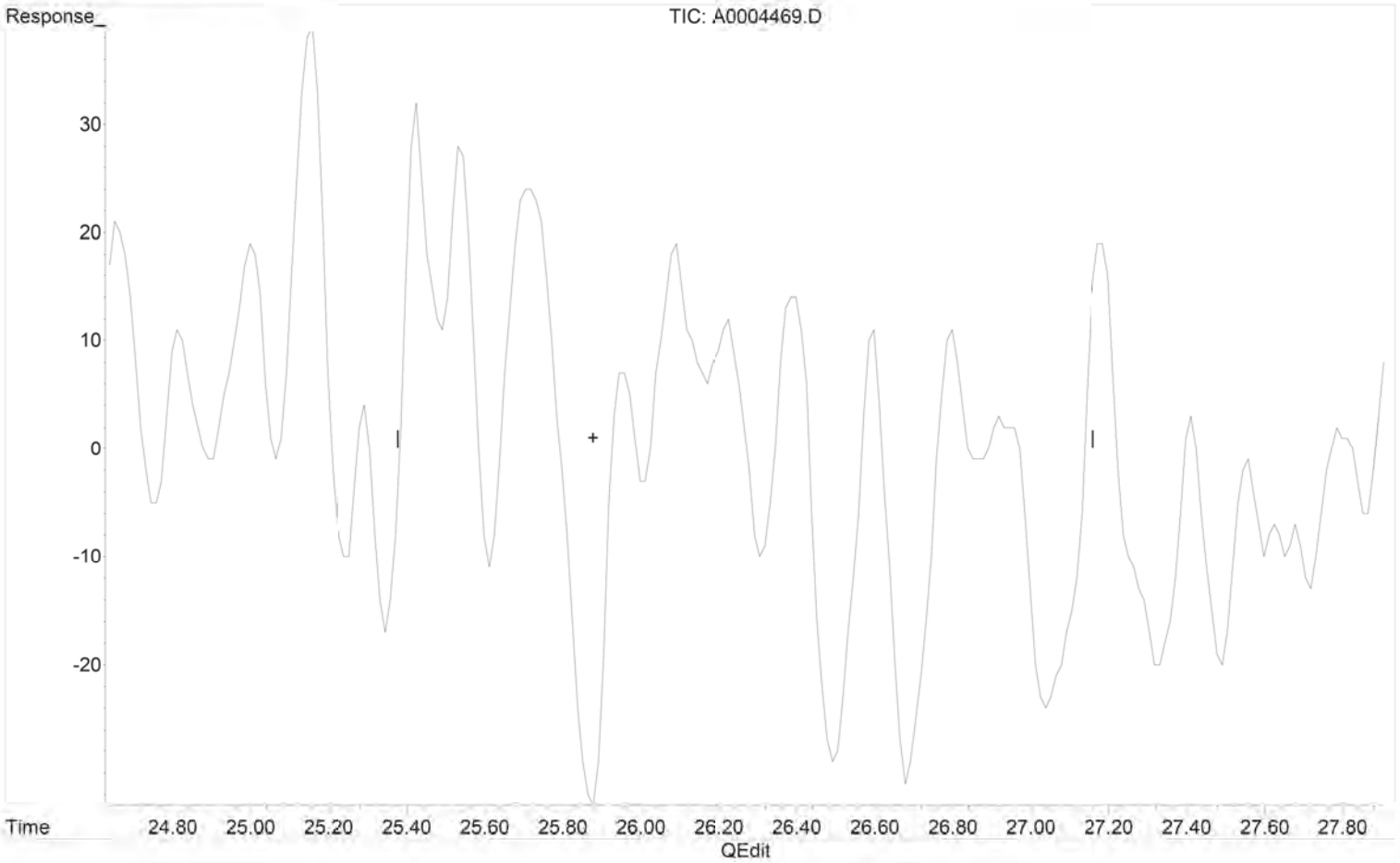
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

25.877min 0.000 ppm

response 0

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : ~~30-Dec-2000, 17:48:02~~ 12-Mar-2020, 16:48
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.946	1830133	19.154	ppm	m
2) T	Pyruvic acid	3.637	1165741	2.190	ppm	m
3) T	Lactic Acid	4.120	1107931	21.482	ppm	m
4) T	Acetic Acid	4.609	1115994	19.276	ppm	m
5) T	Propionic Acid	11.608f	1098741	19.595	ppm	m
6) T	Butyric Acid	36.808f	1052332	19.370	ppm	m

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

RIGHT SOLUTIONS | RIGHT PARTNER

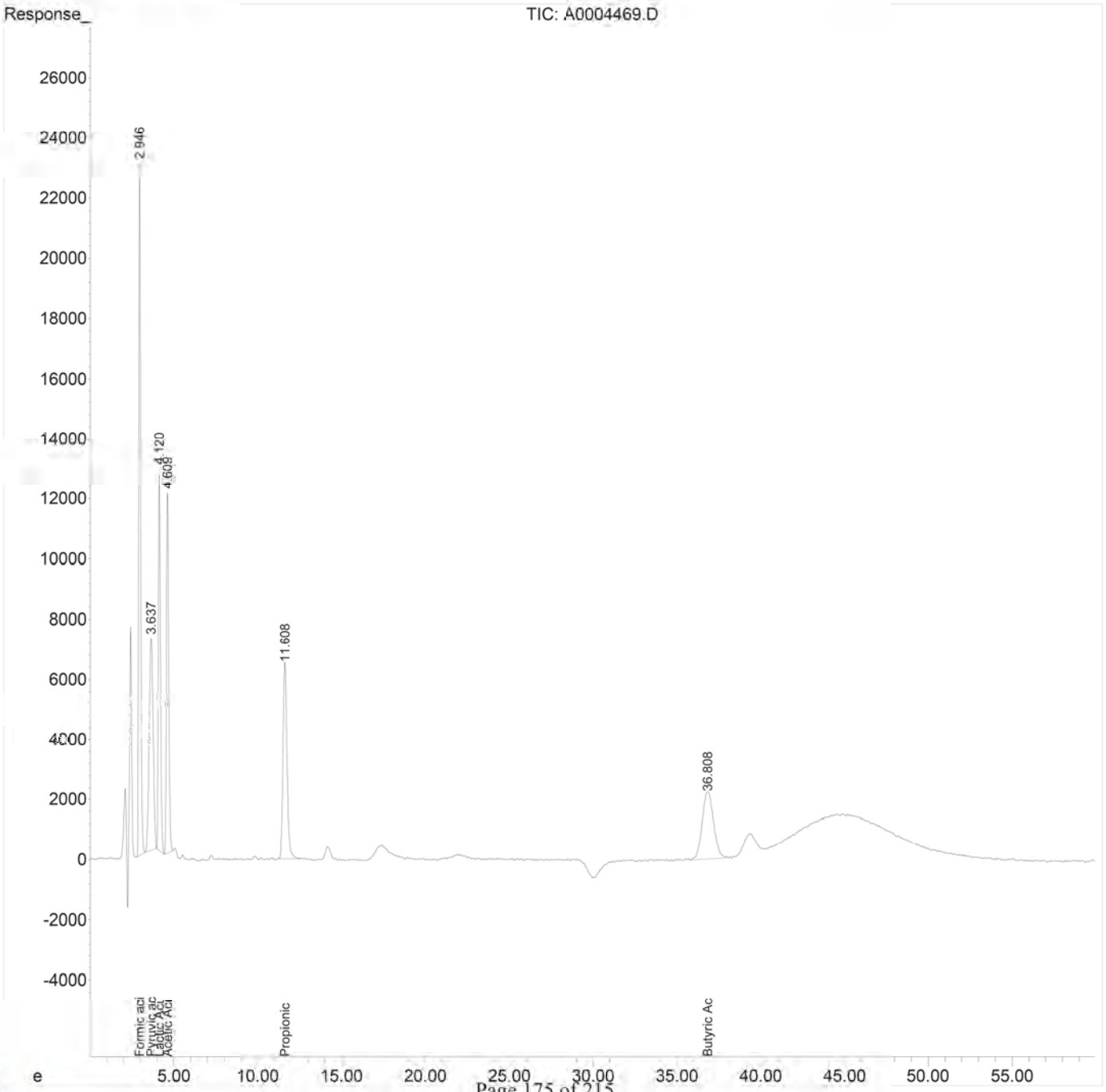
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

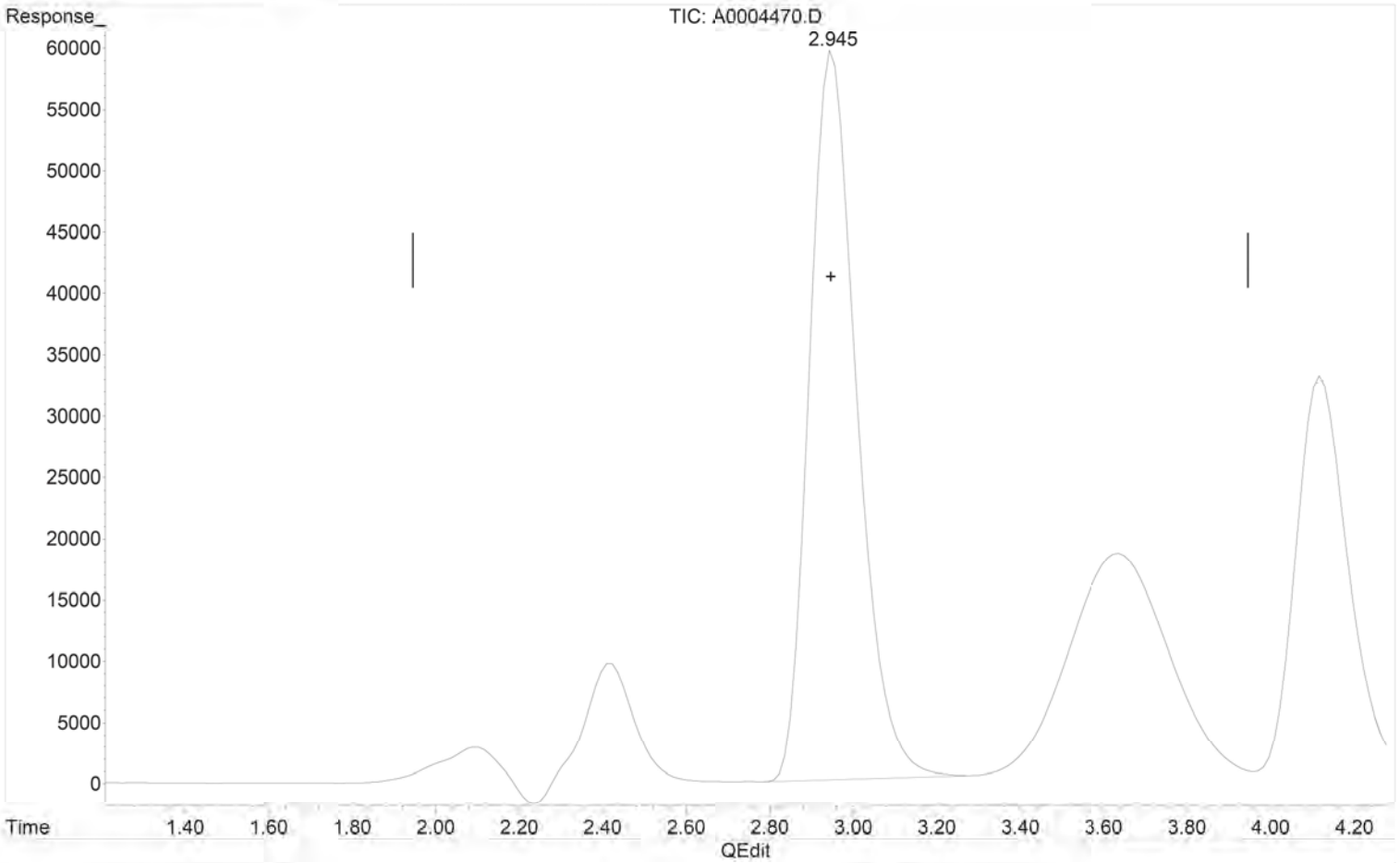
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.945min 51.436 ppm m

response 4706776

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

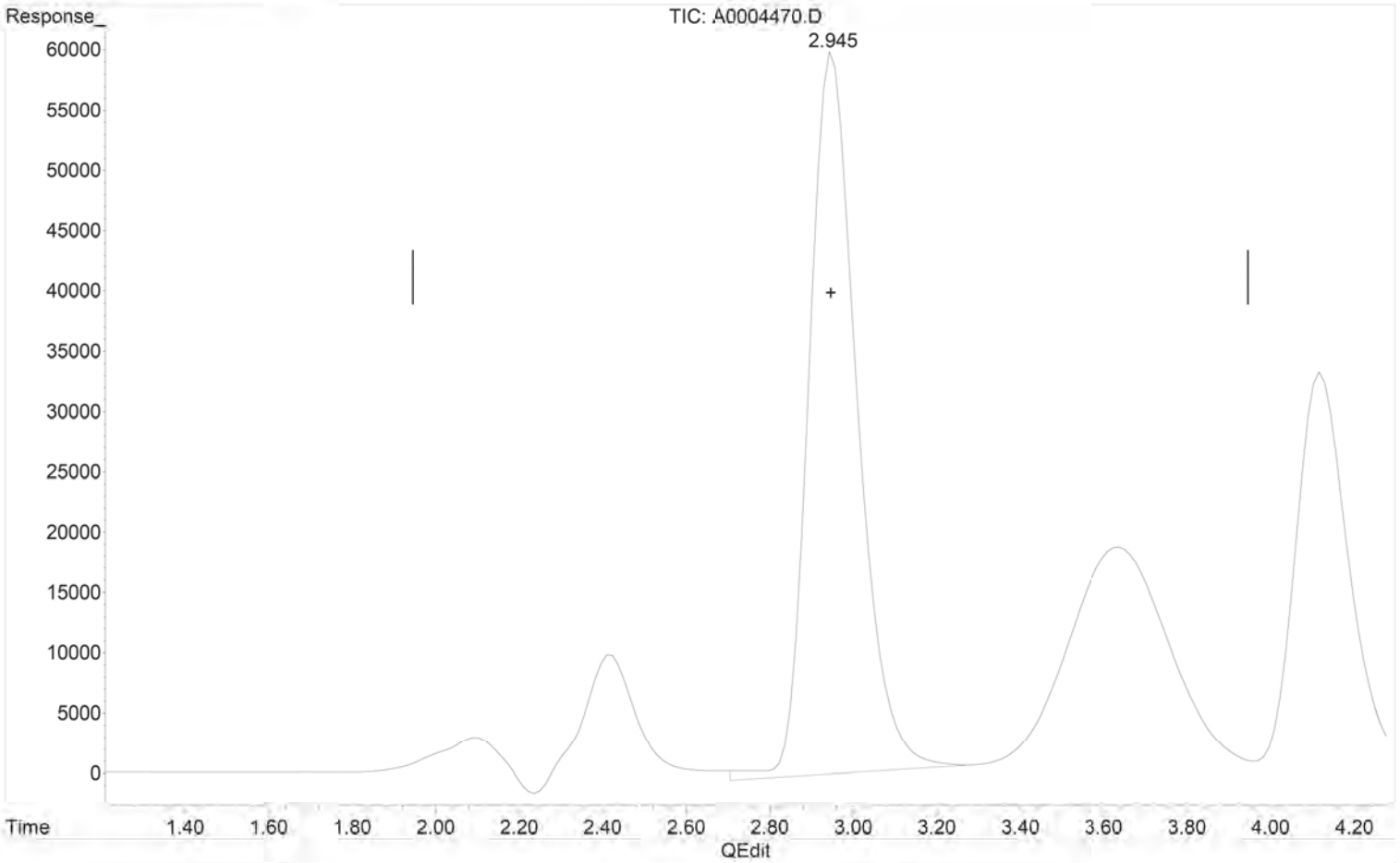
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.952min 52.682 ppm

response 4820746

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

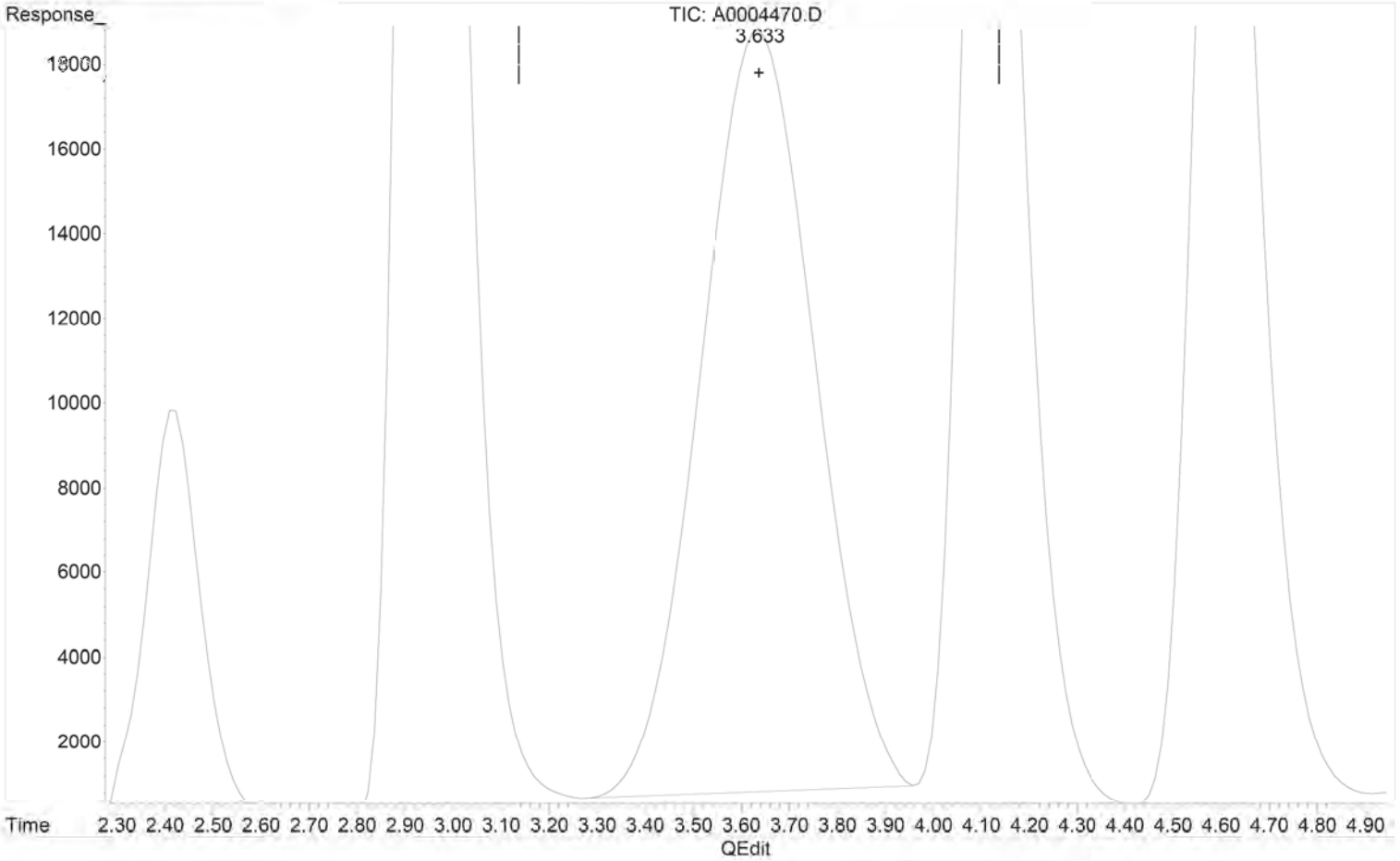
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.633min 5.066 ppm m
response 2952886

Manual Integration:
After
Poor integration.
03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

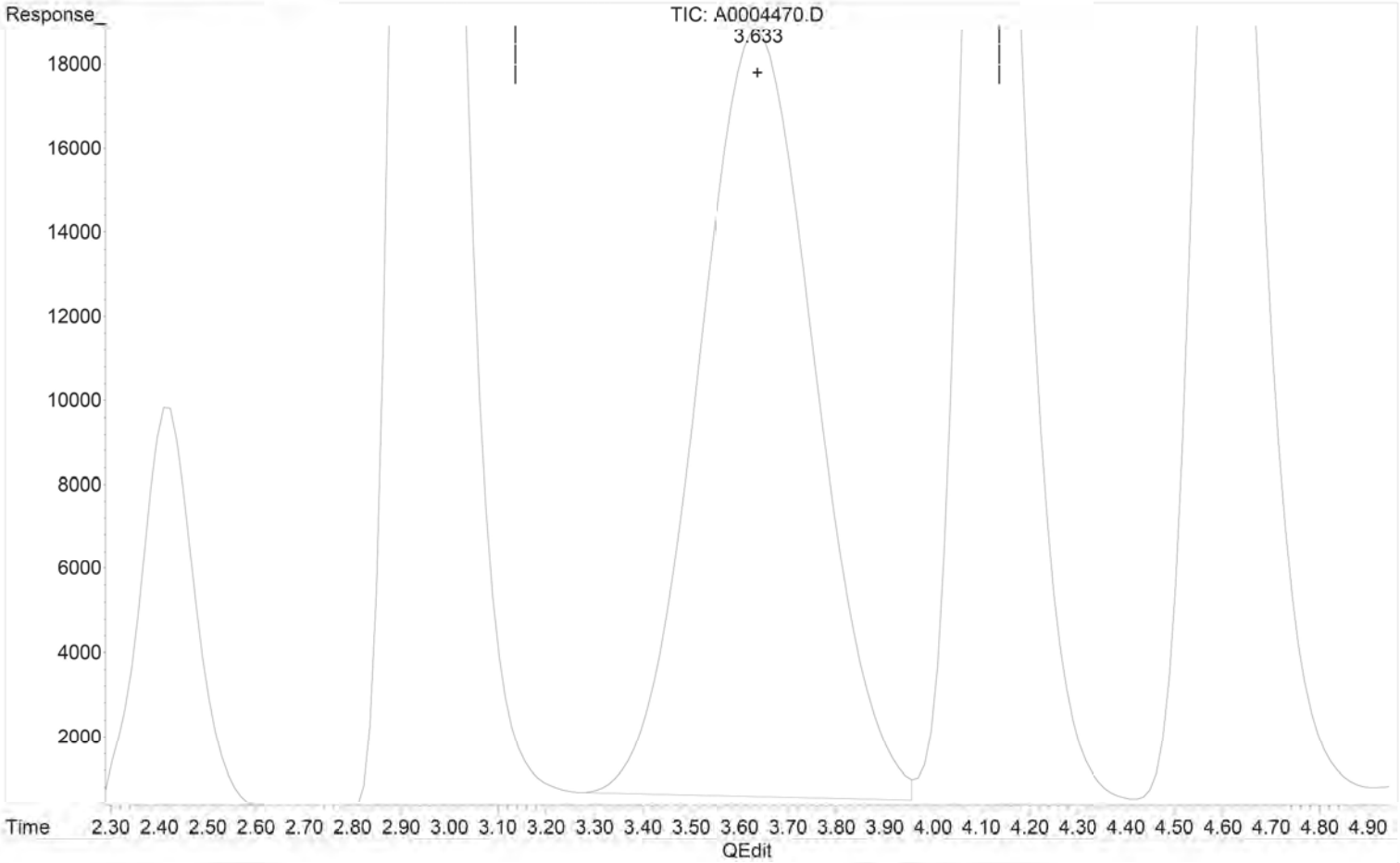
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.639min 5.230 ppm

response 3048306

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

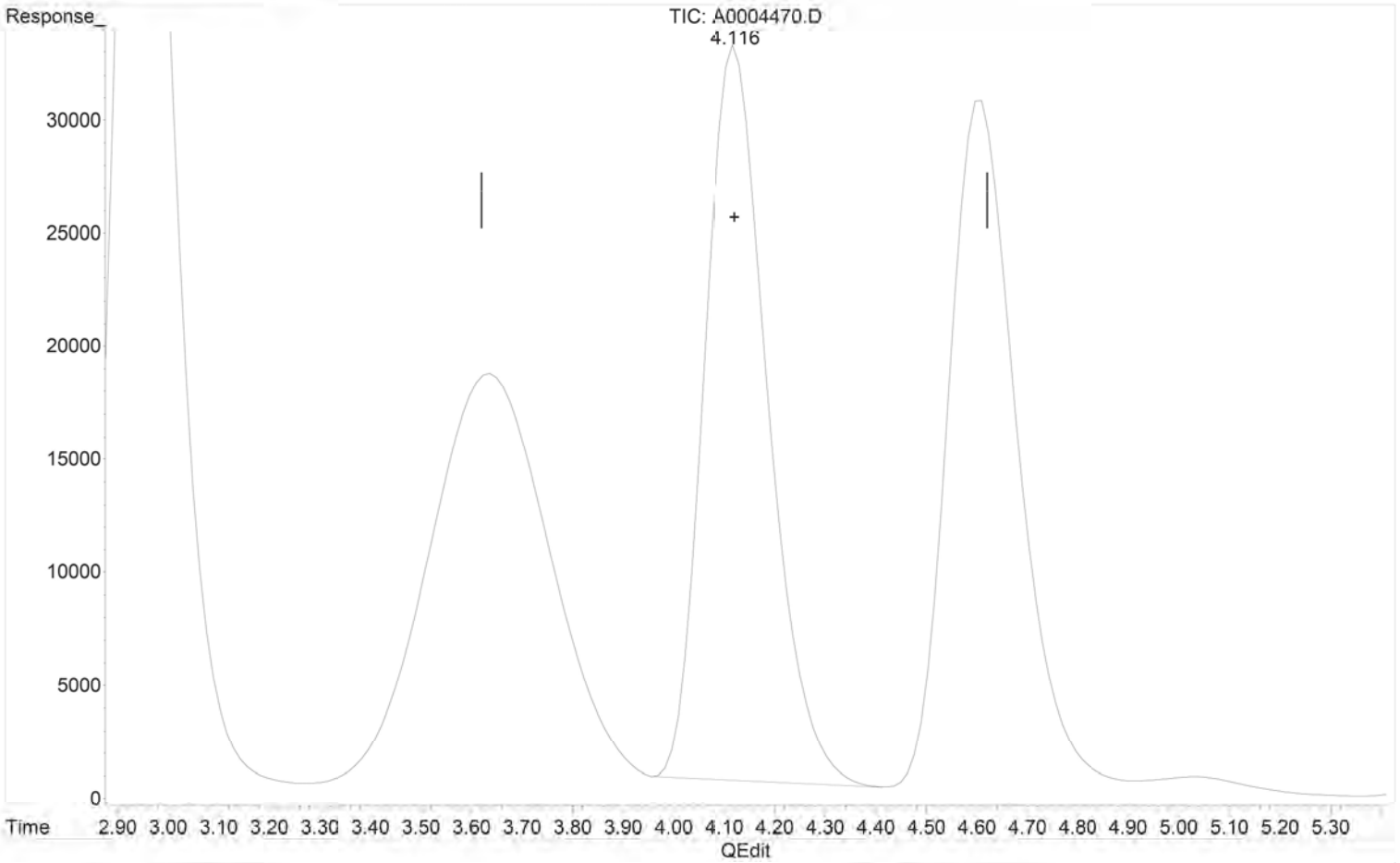
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.116min 50.780 ppm m

response 2813056

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

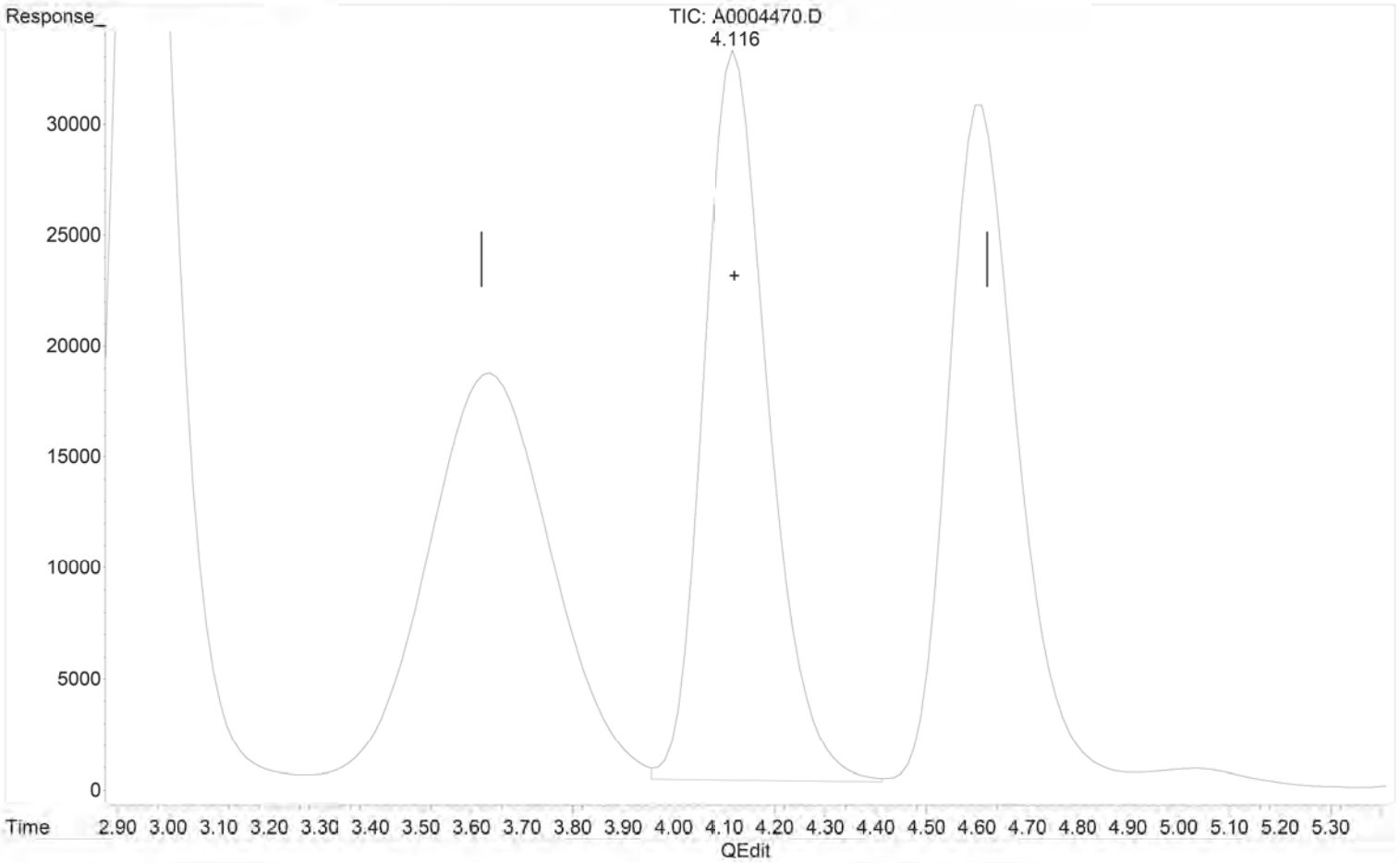
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.123min 52.344 ppm

response 2899673

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

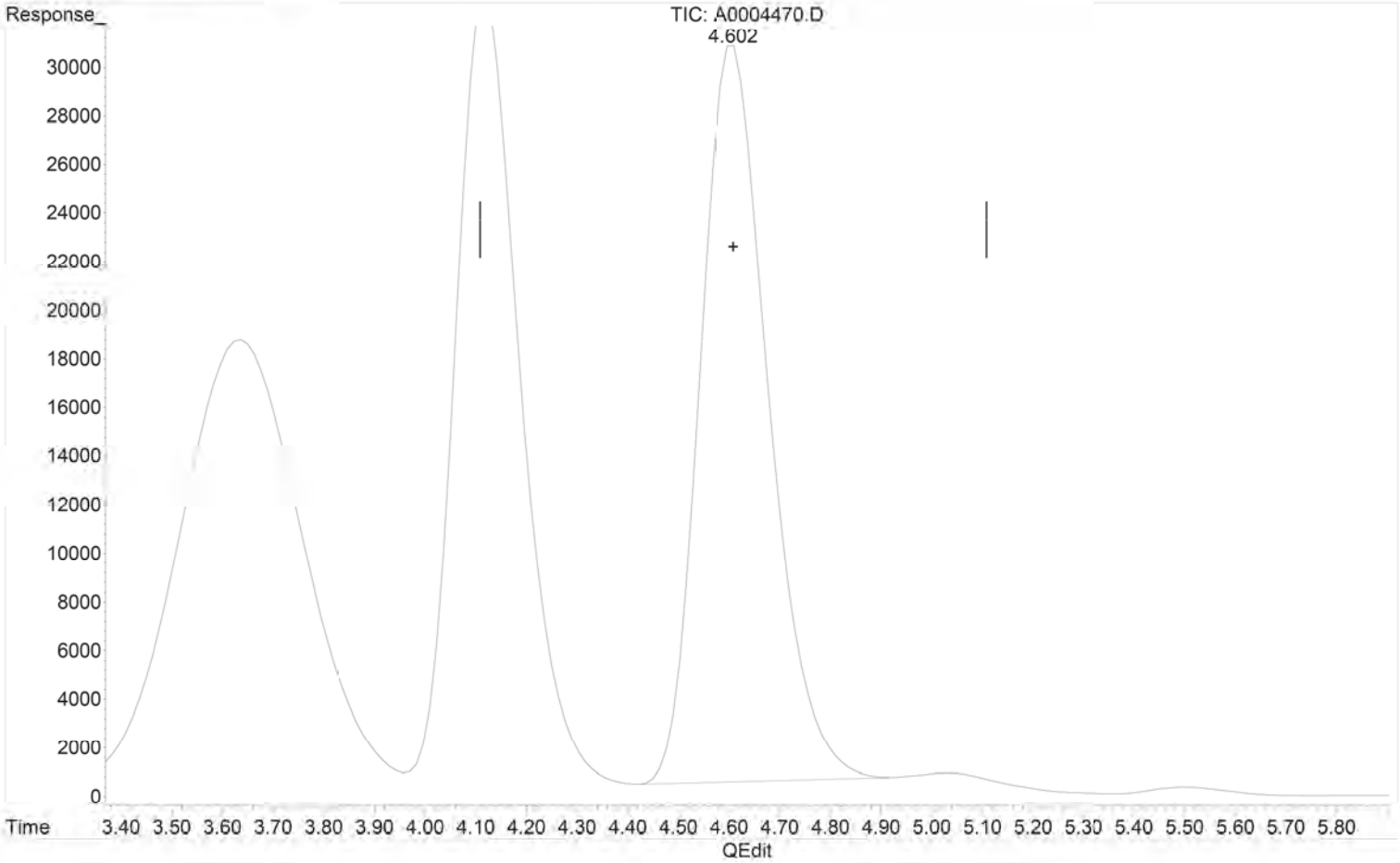
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.602min 50.675 ppm m
response 2827626

Manual Integration:
After
Poor integration.
03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

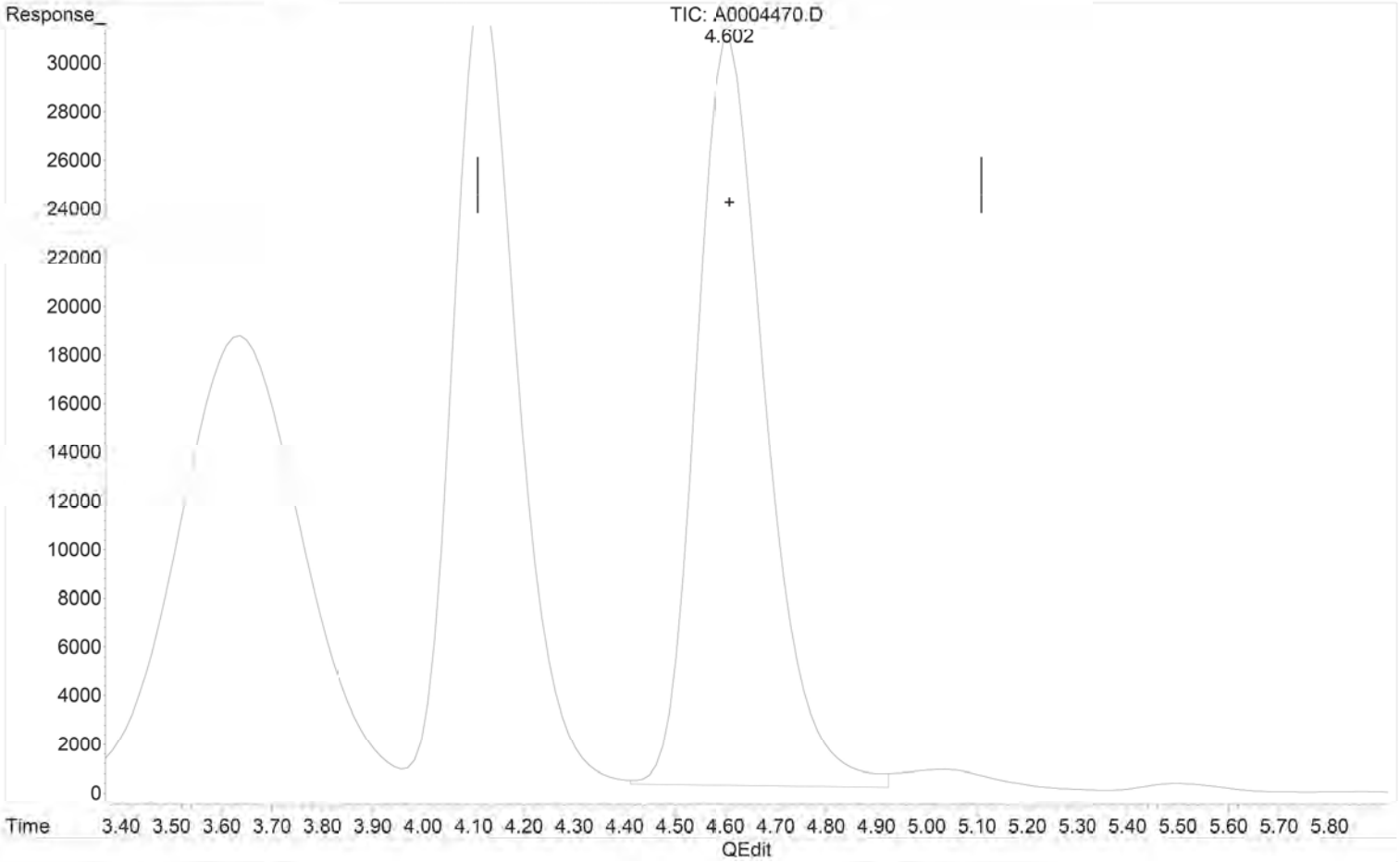
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.610min 52.537 ppm

response 2931536

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

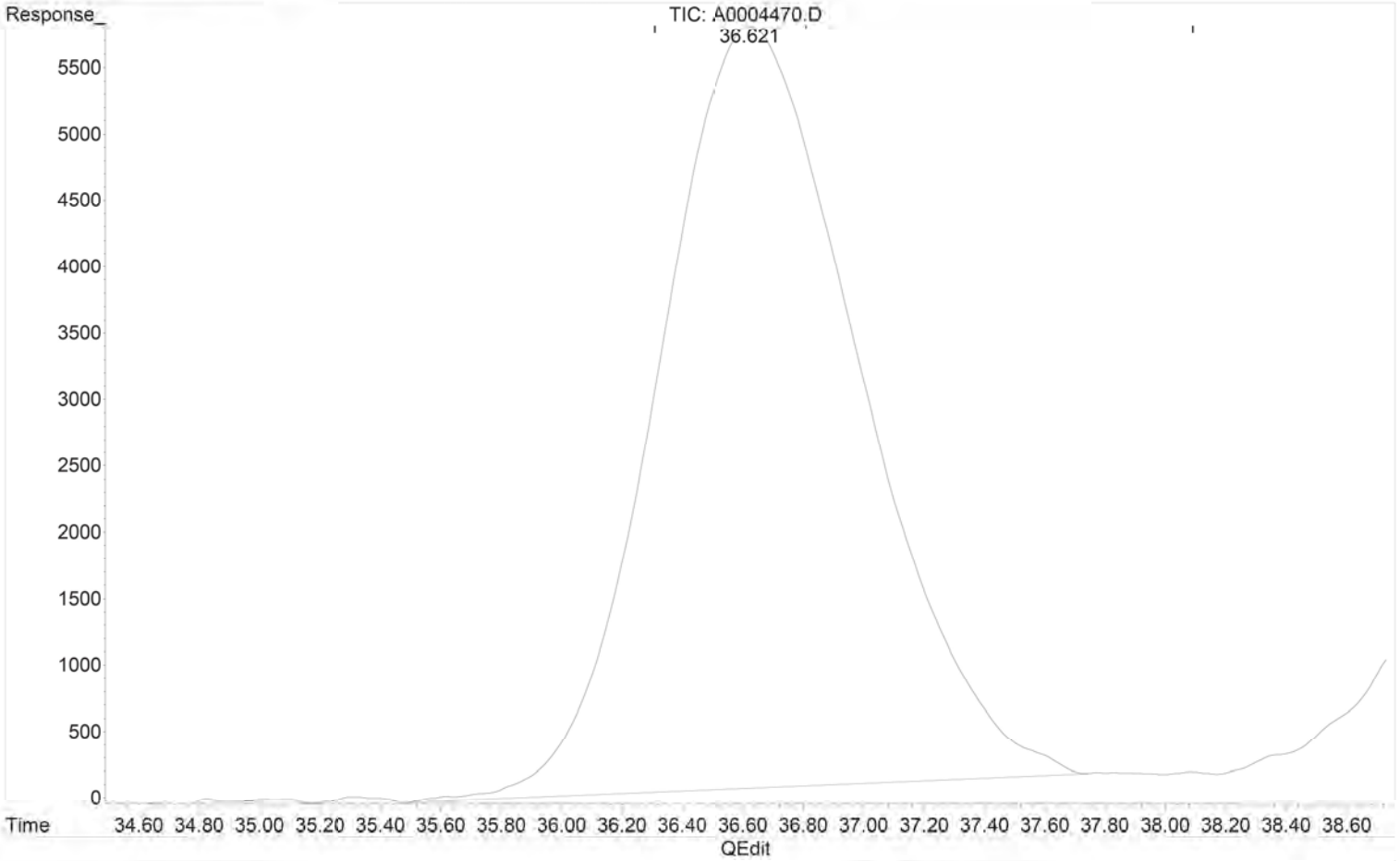
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.621min 50.484 ppm m

response 2656312

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

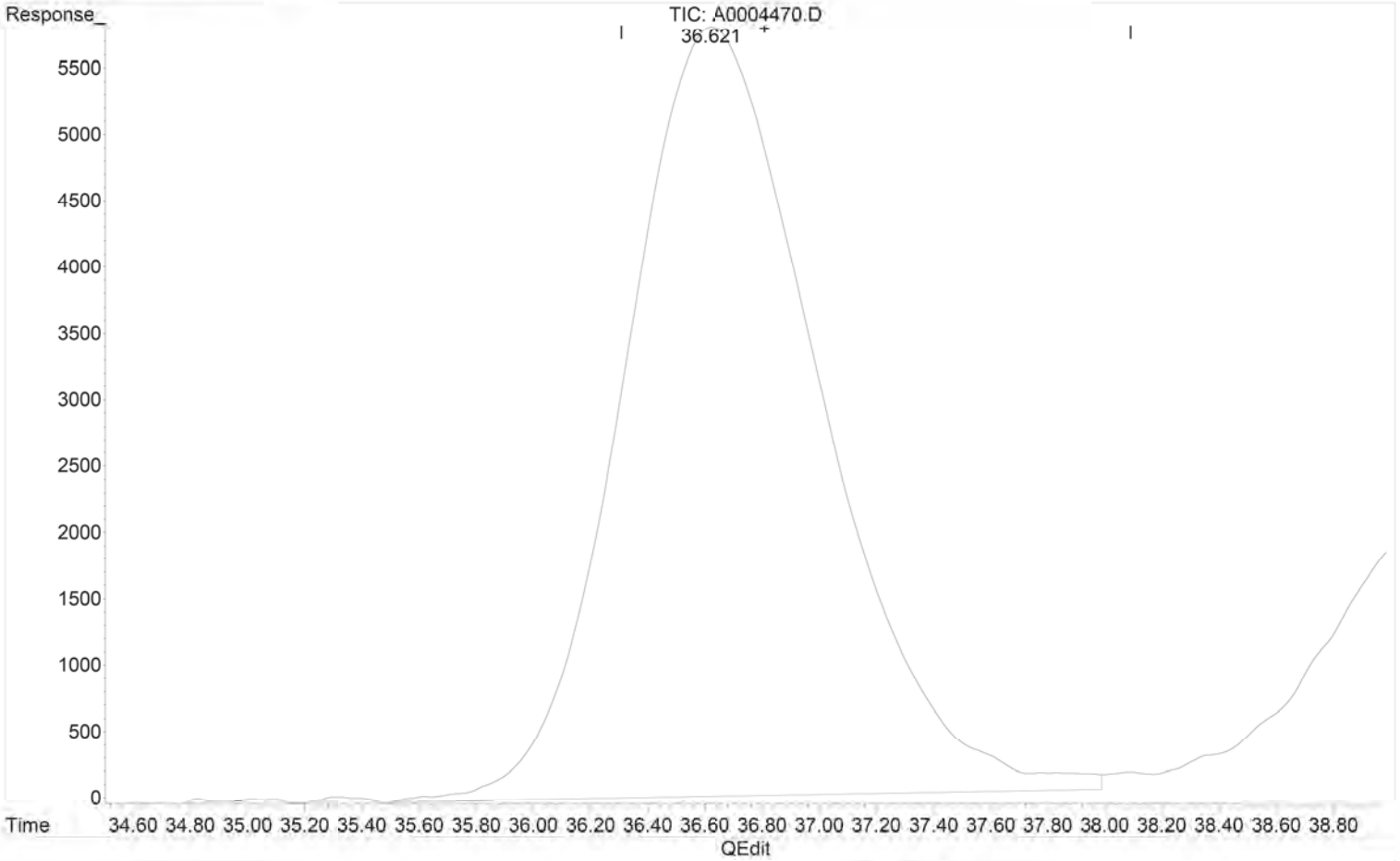
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.628min 52.351 ppm

response 2754505

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : ~~30-Dec-2000, 17:47:58~~ 12-Mar-2020, 17:51
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.945	4706776	51.436	ppm	m
2) T	Pyruvic acid	3.633	2952886	5.066	ppm	m
3) T	Lactic Acid	4.116	2813056	50.780	ppm	m
4) T	Acetic Acid	4.602	2827626	50.675	ppm	m
5) T	Propionic Acid	11.574	2794775	50.872	ppm	
6) T	Butyric Acid	36.621	2656312	50.484	ppm	m

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

RIGHT SOLUTIONS | RIGHT PARTNER

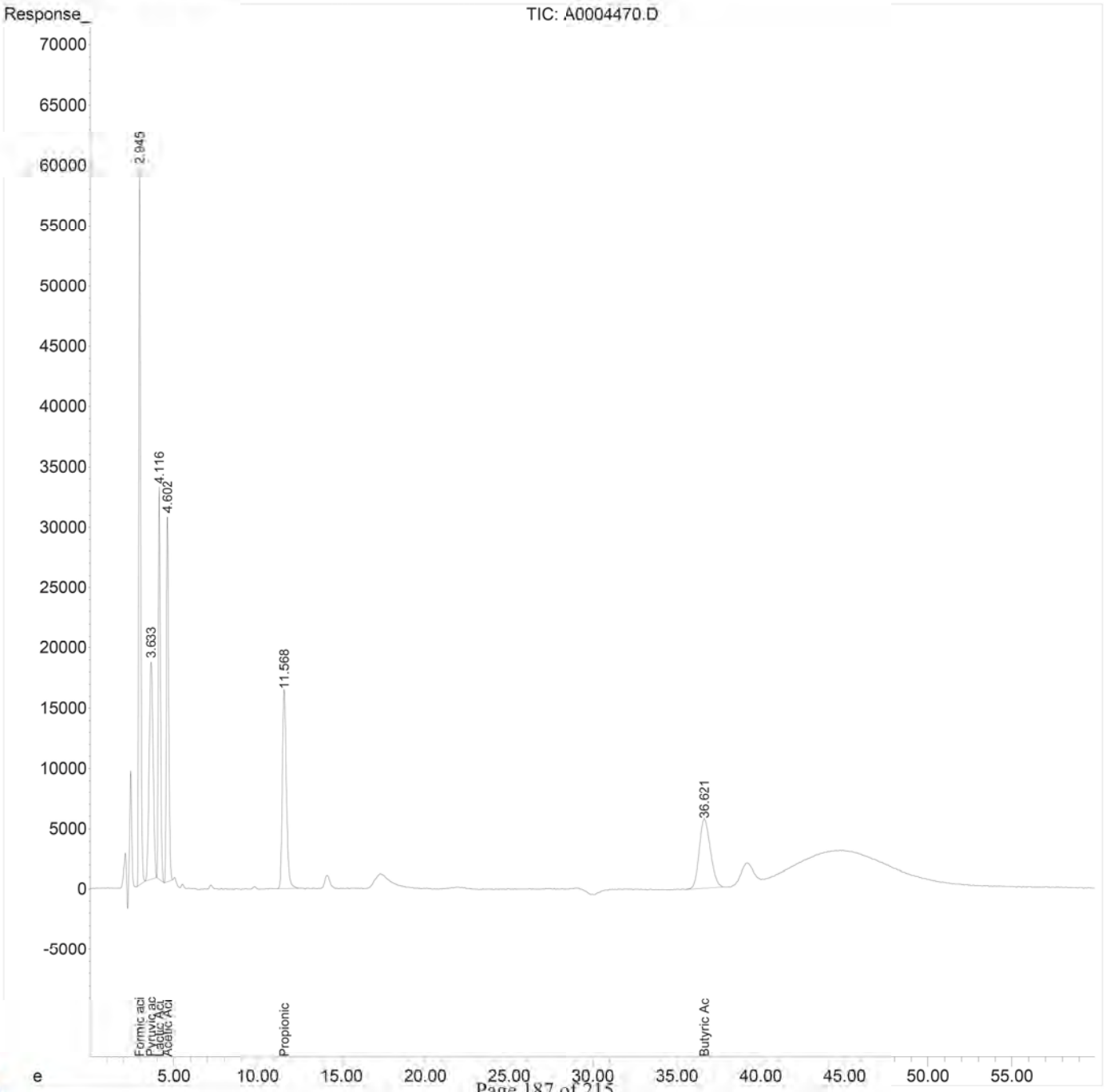
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

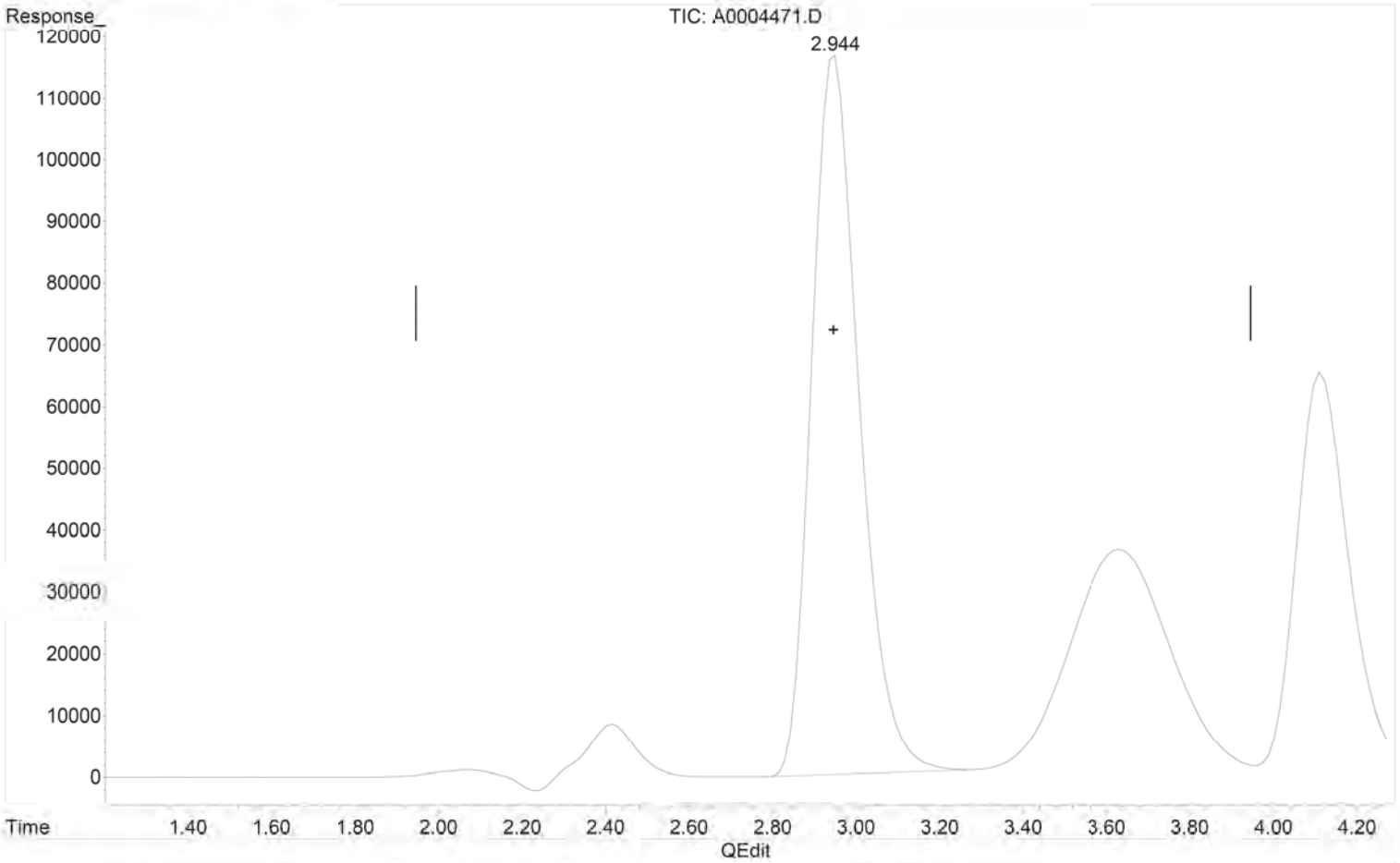
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.944min 101.099 ppm m

response 9251260

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

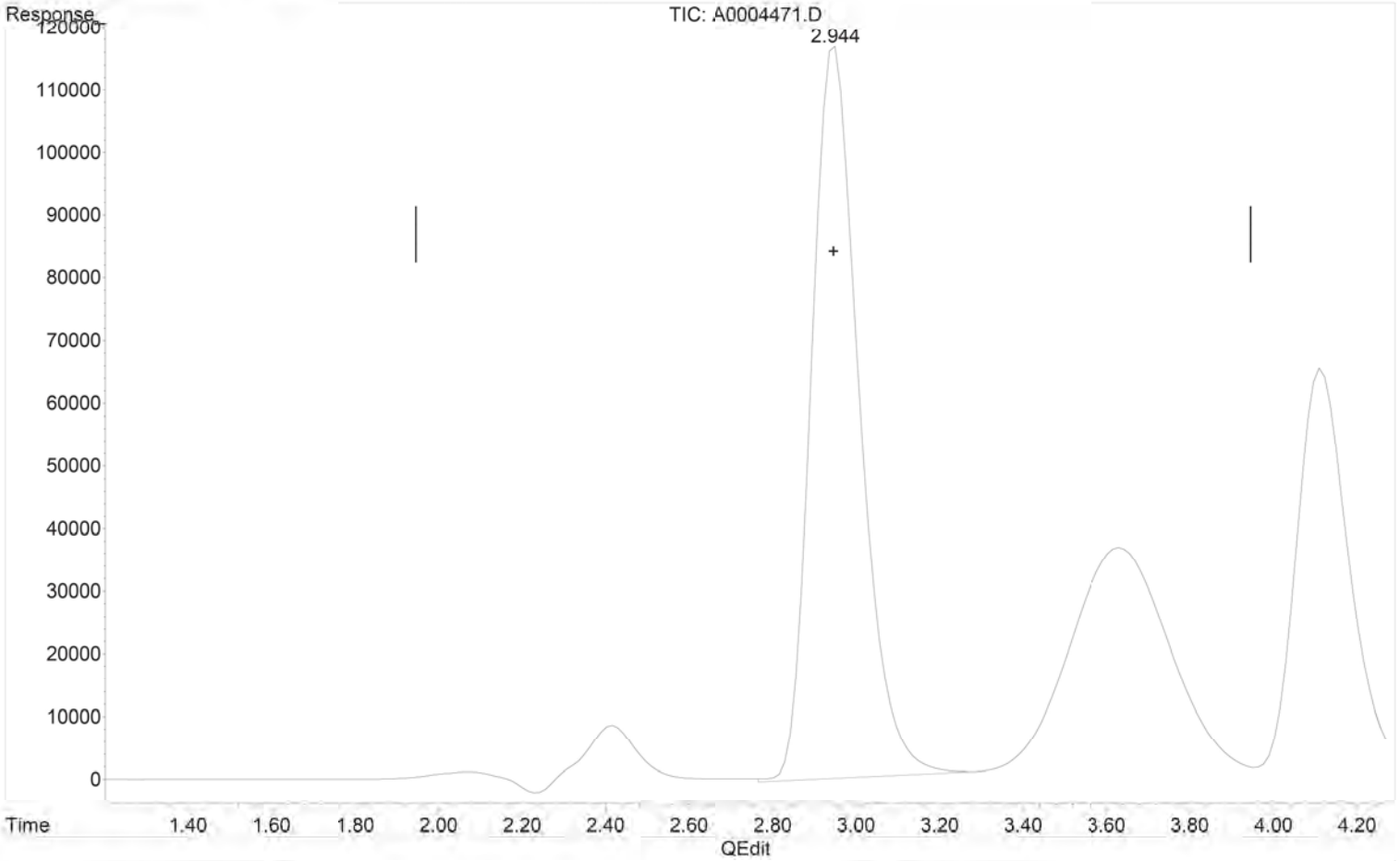
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.950min 101.826 ppm

response 9317801

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

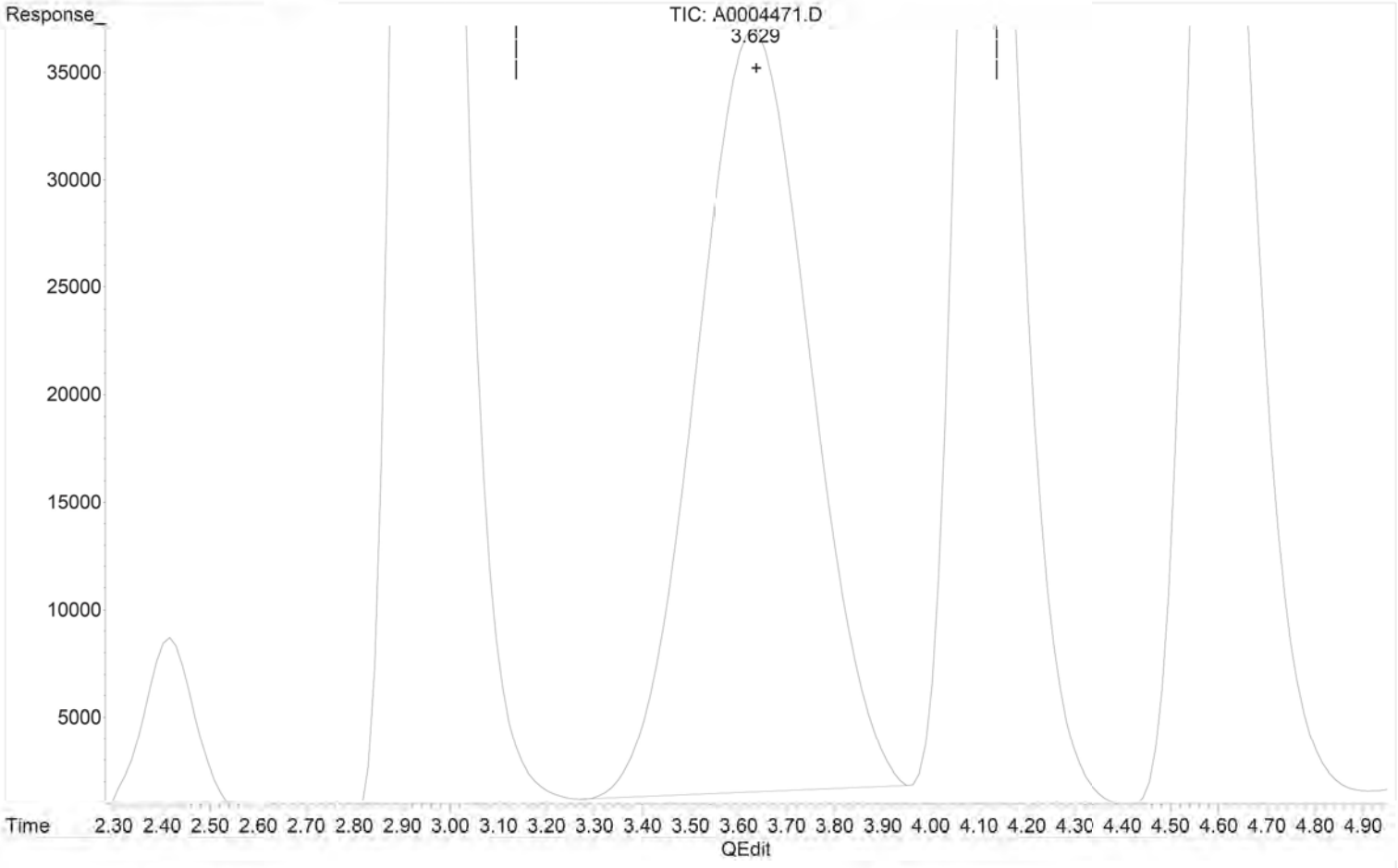
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.629min 9.964 ppm m
response 5807459

Manual Integration:
After
Poor integration.
03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

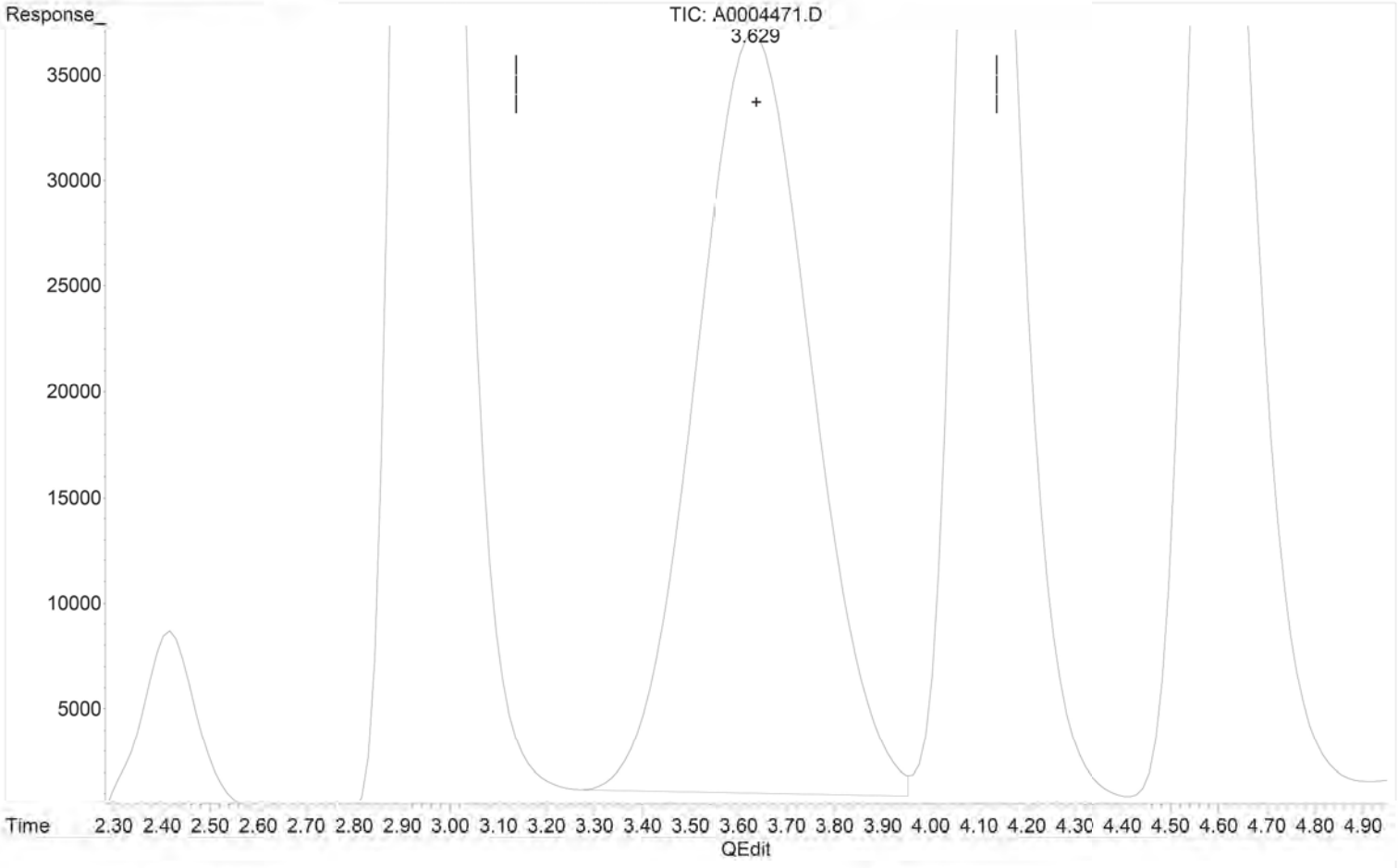
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.635min 10.292 ppm

response 5999073

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

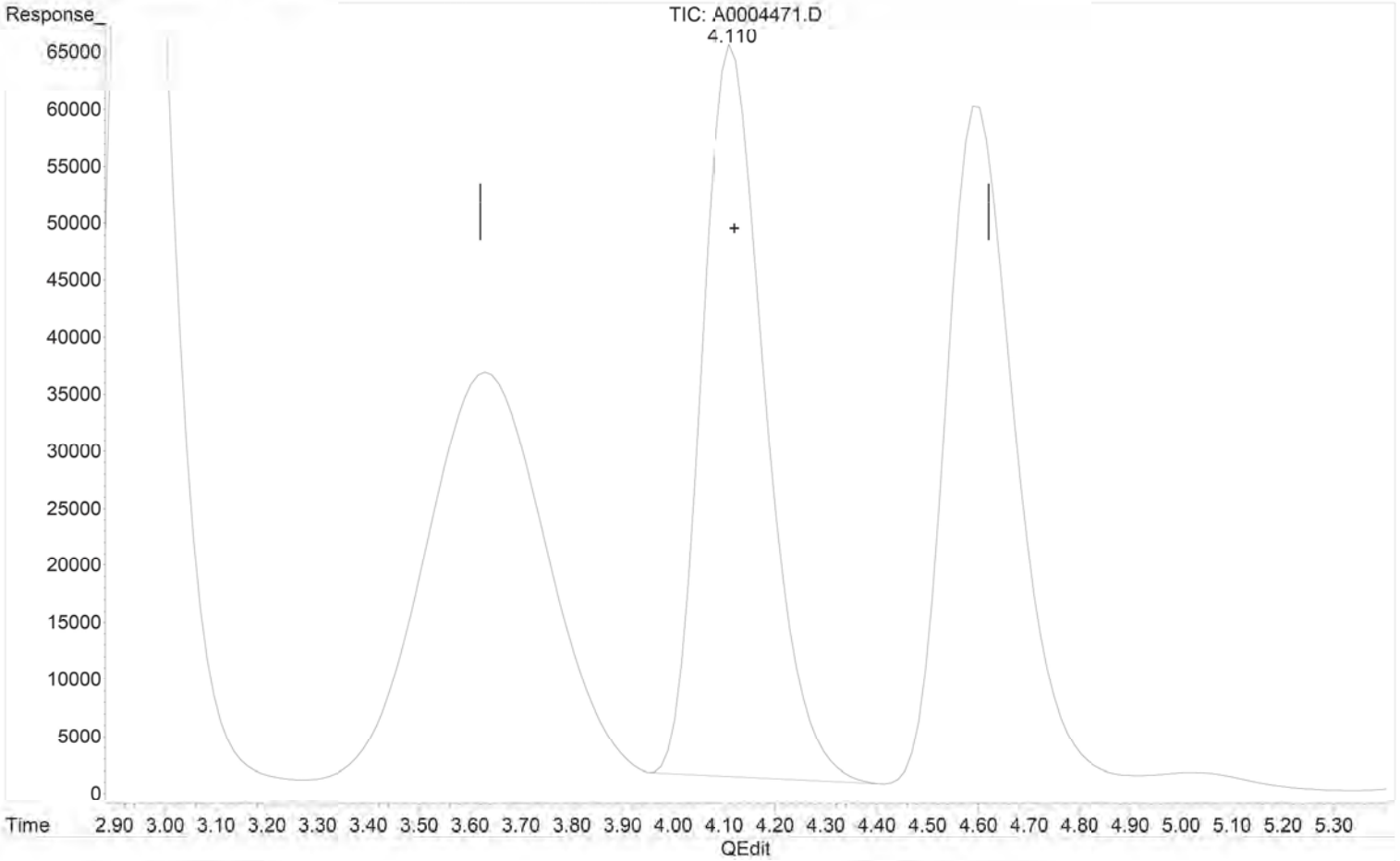
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.110min 100.101 ppm m

response 5545238

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

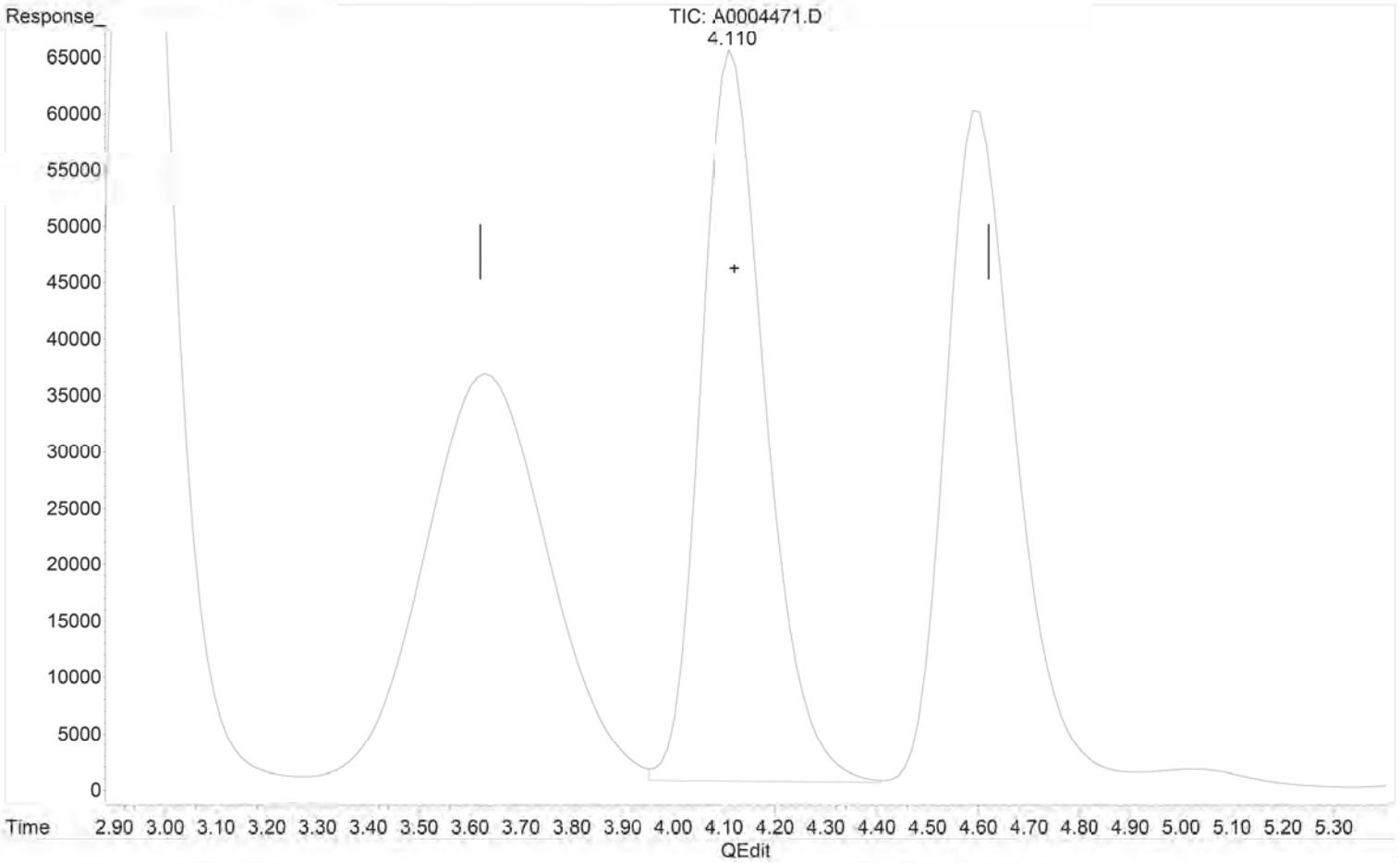
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.117min 102.879 ppm

response 5699157

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

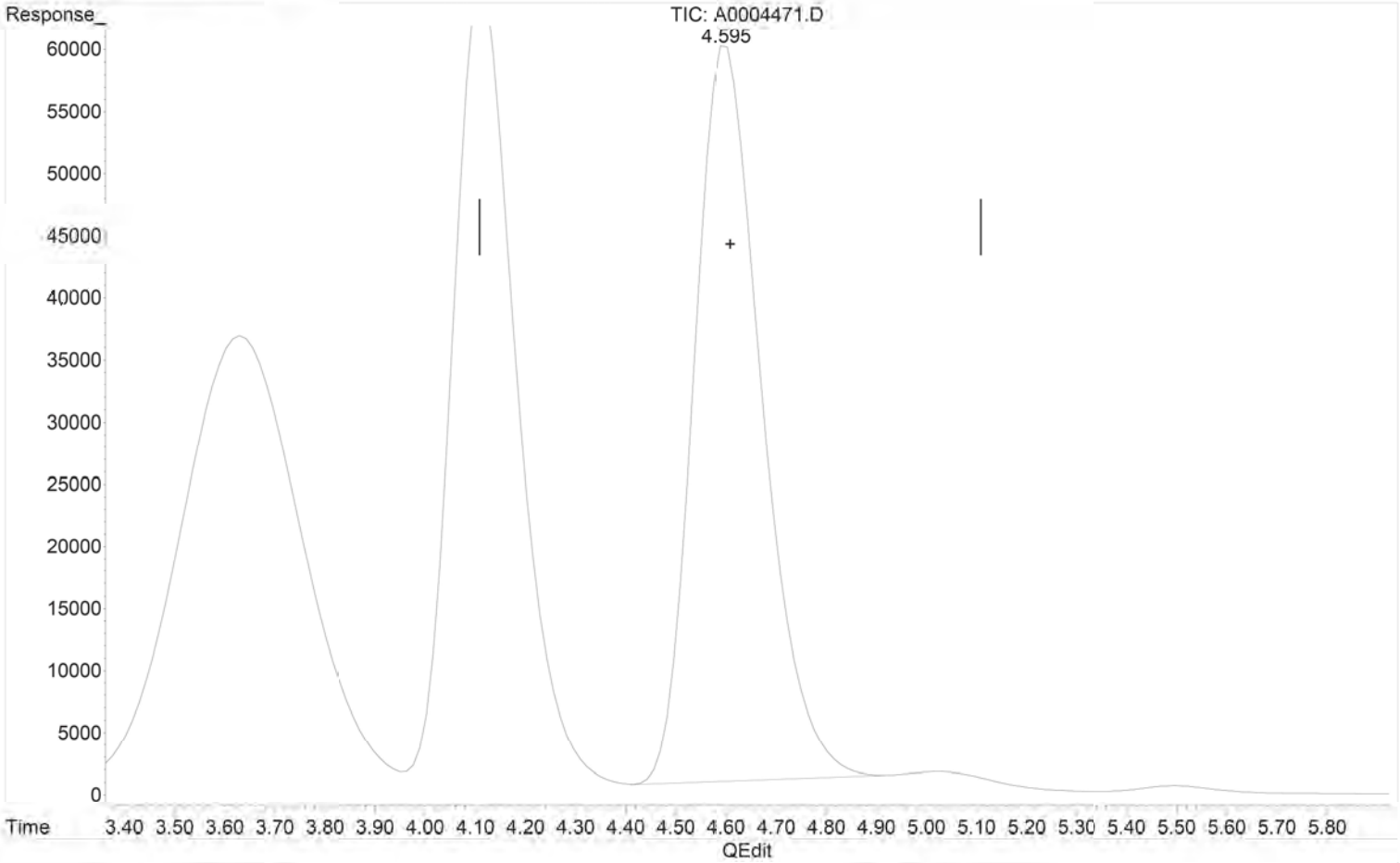
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.595min 99.609 ppm m
response 5558142

Manual Integration:
After
Poor integration.
03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

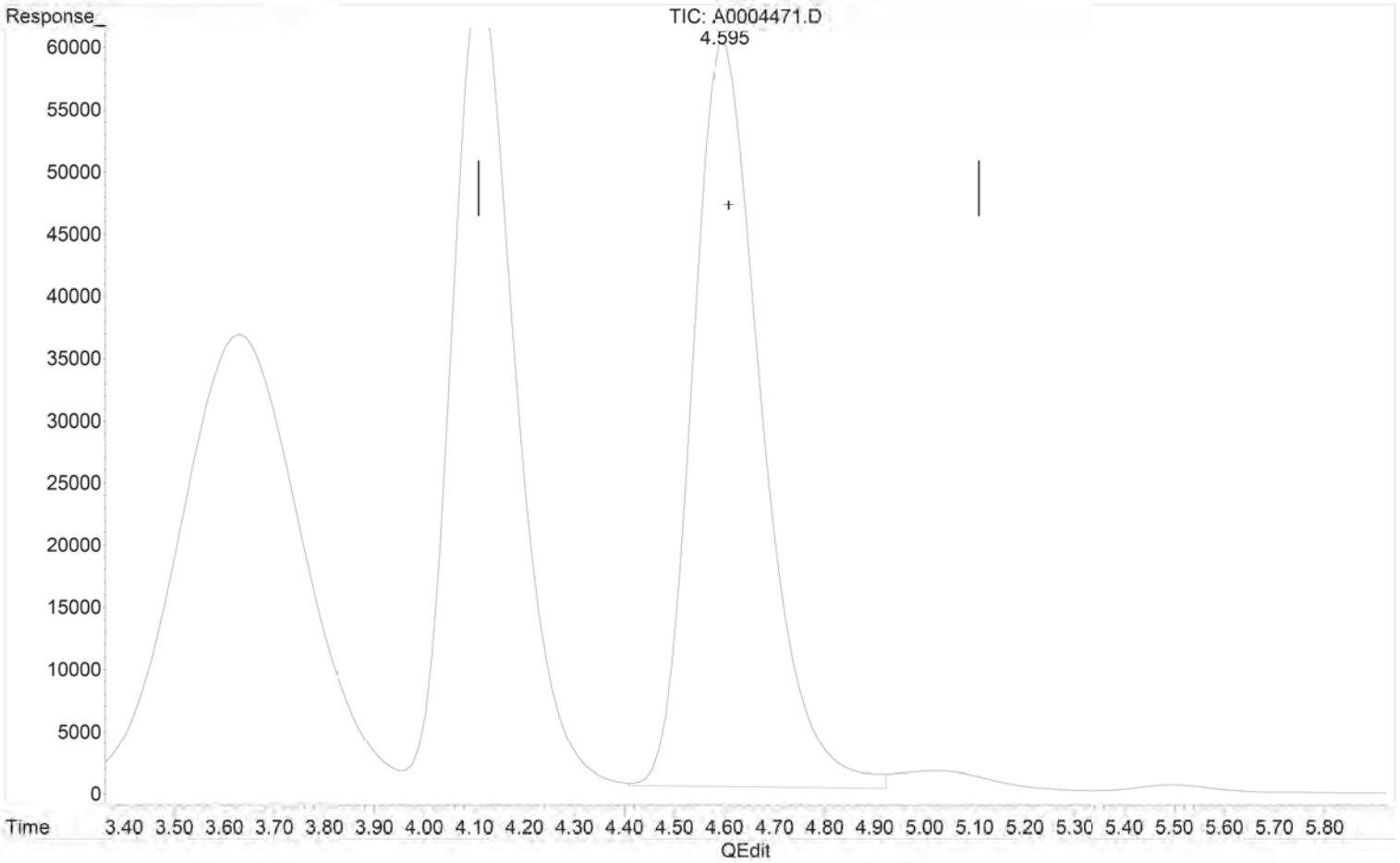
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.602min 103.031 ppm

response 5749108

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

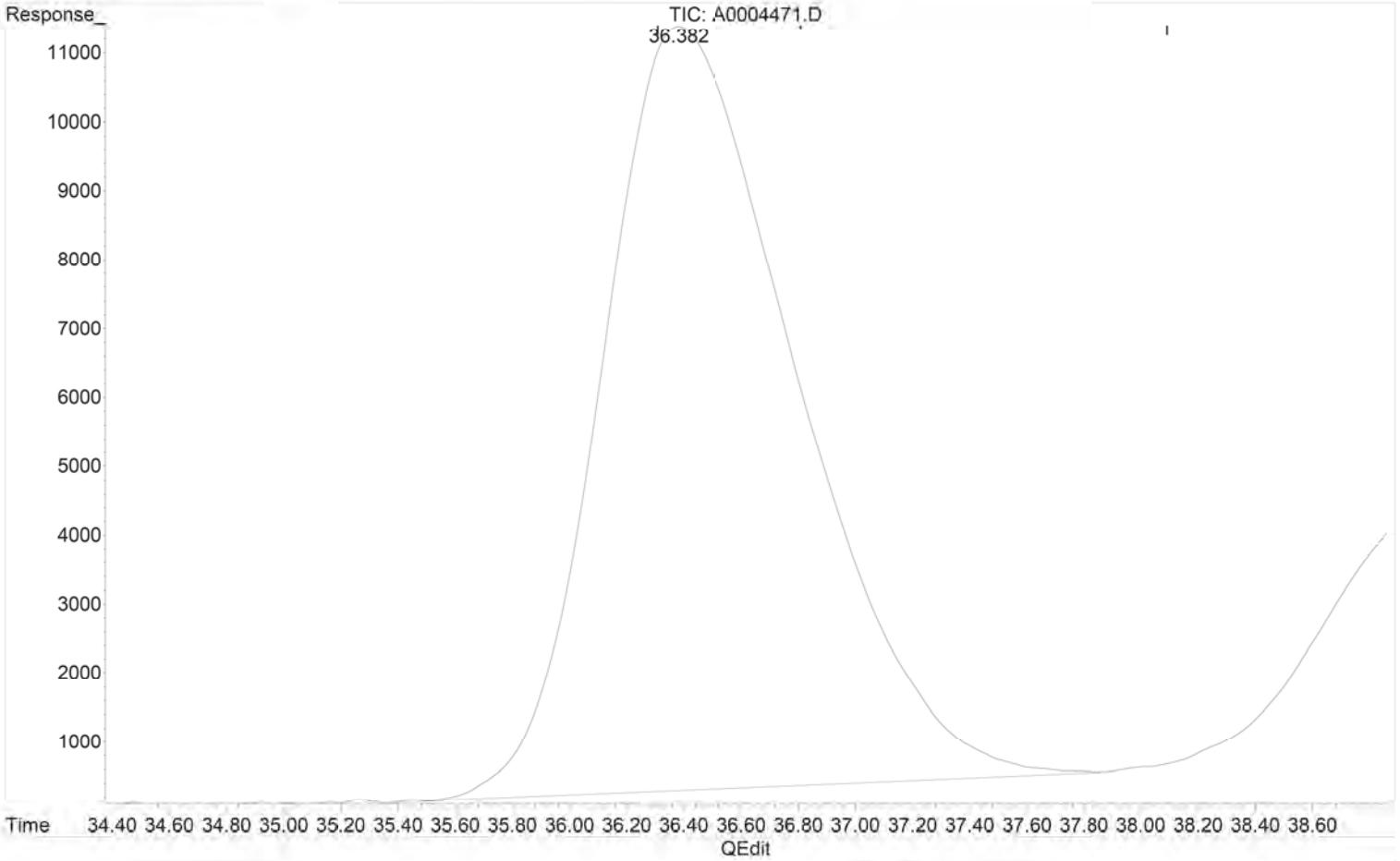
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.382min 99.663 ppm m

response 5243902

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

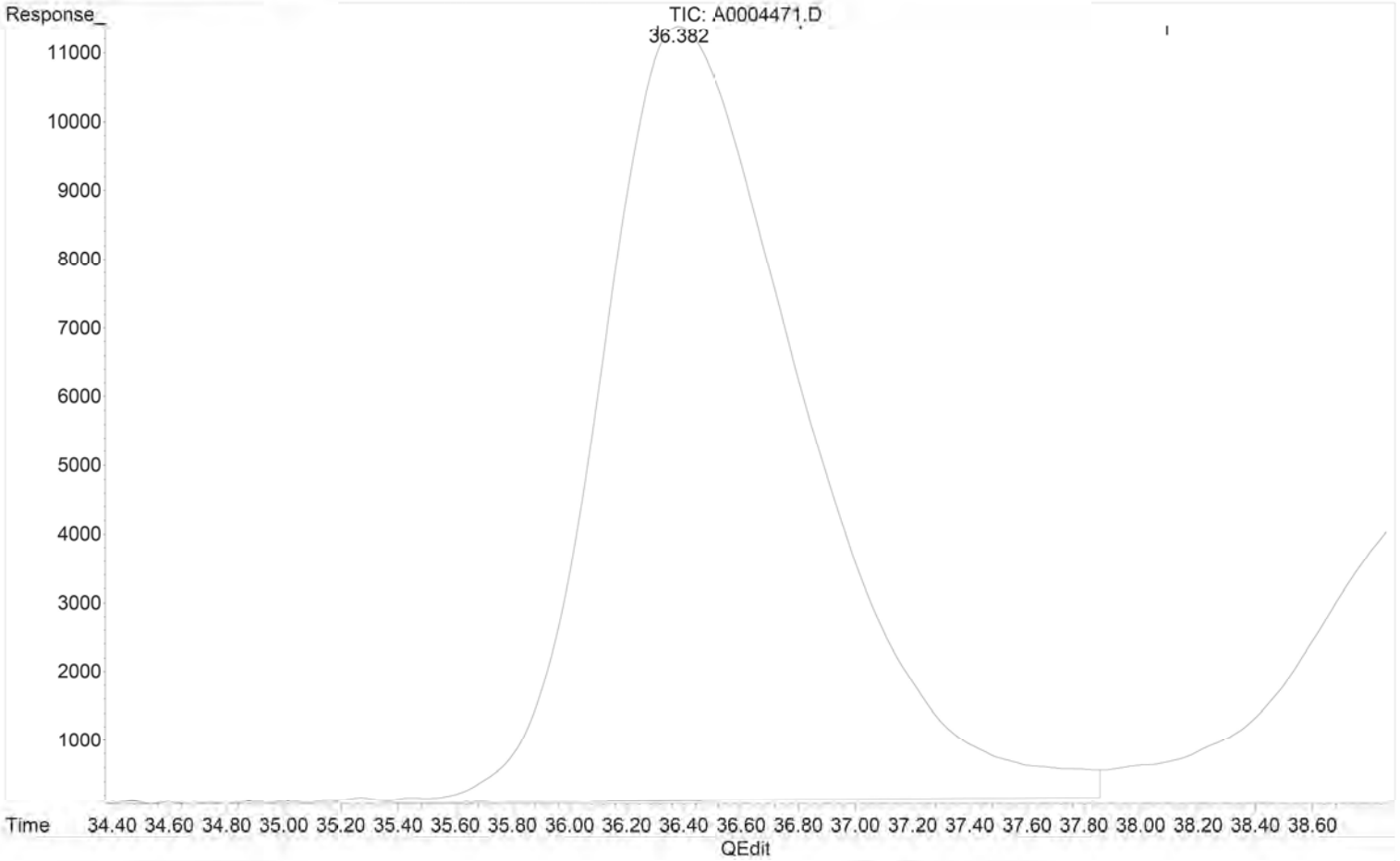
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.387min 105.508 ppm

response 5551464

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.944	9251260	101.099	ppm	m
2) T	Pyruvic acid	3.629	5807459	9.964	ppm	m
3) T	Lactic Acid	4.110	5545238	100.101	ppm	m
4) T	Acetic Acid	4.595	5558142	99.609	ppm	m
5) T	Propionic Acid	11.528	5536155	100.773	ppm	
6) T	Butyric Acid	36.382	5243902	99.663	ppm	m

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

RIGHT SOLUTIONS | RIGHT PARTNER

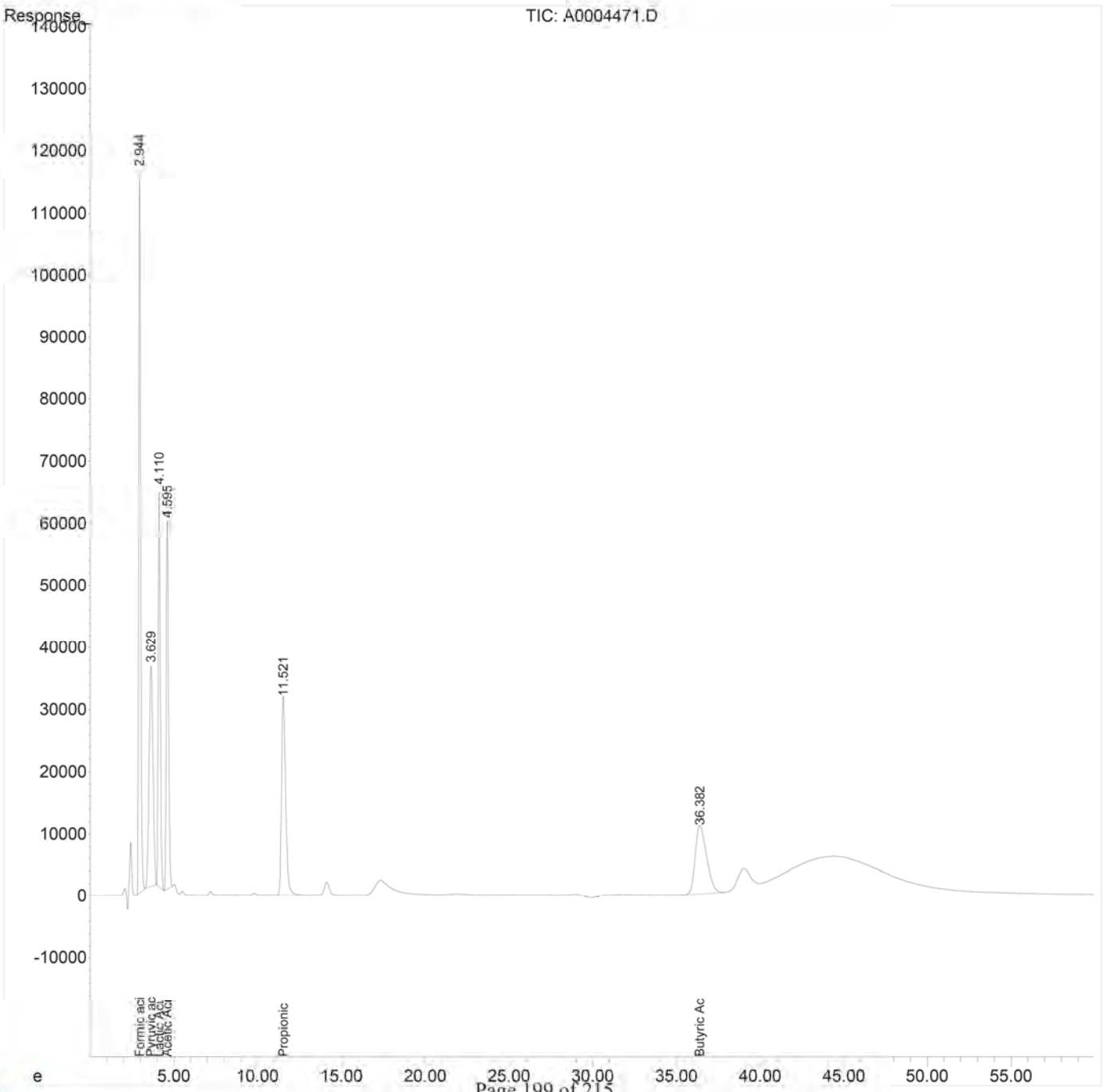
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



RIGHT SOLUTIONS | RIGHT PARTNER

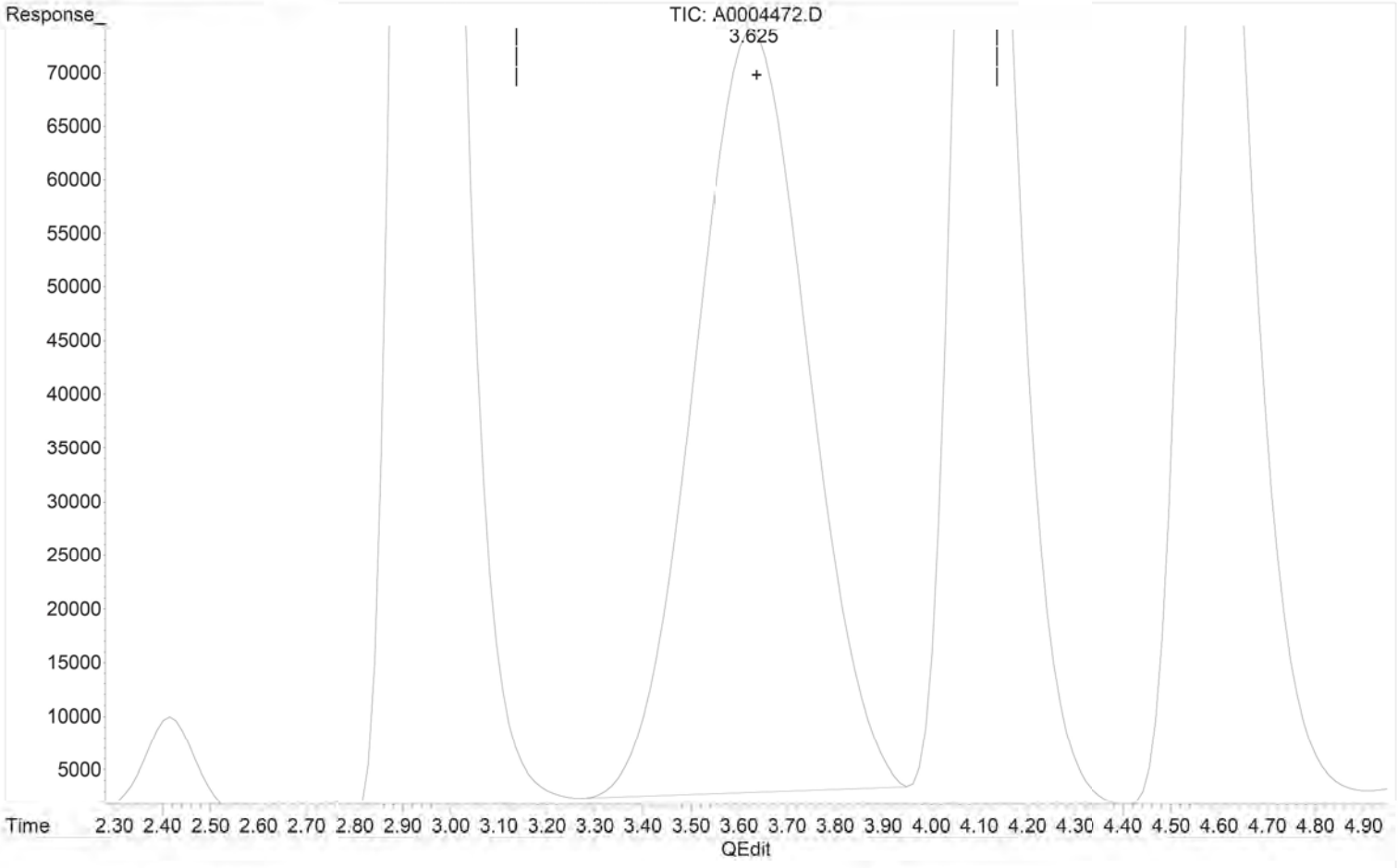
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.625min 19.912 ppm m

response 11605902

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

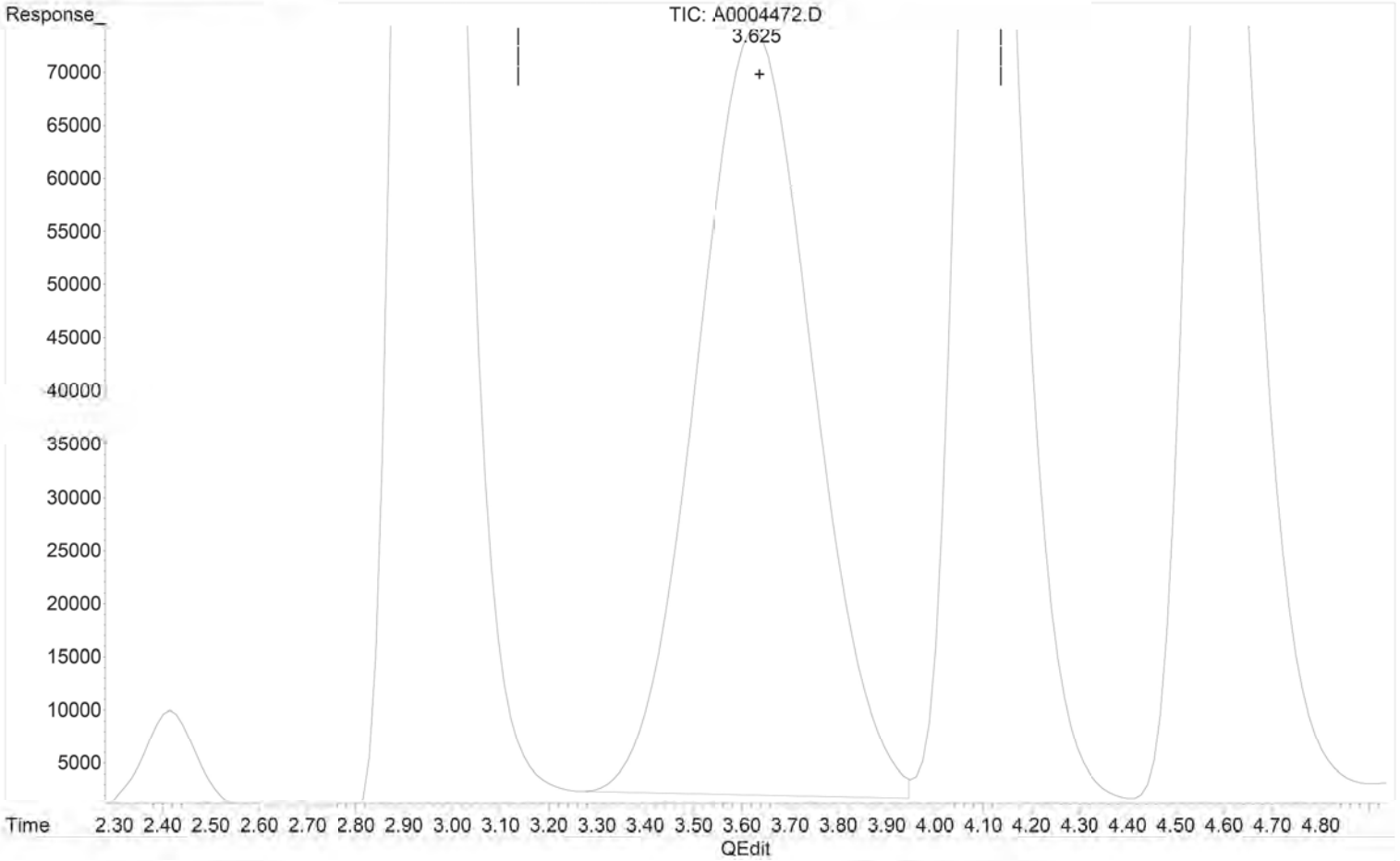
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.630min 20.492 ppm

response 11944441

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

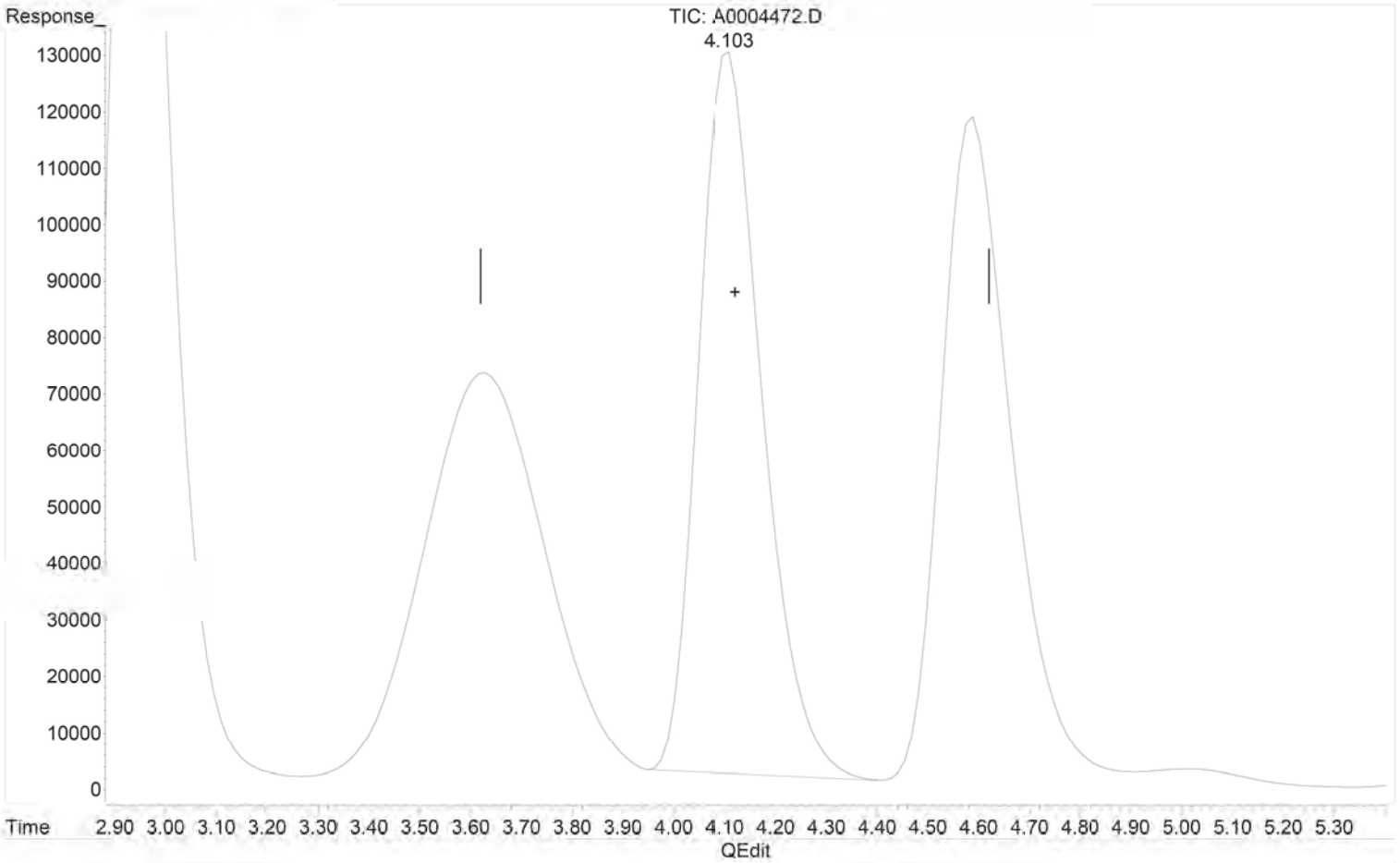
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.103min 199.720 ppm m

response 11063811

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

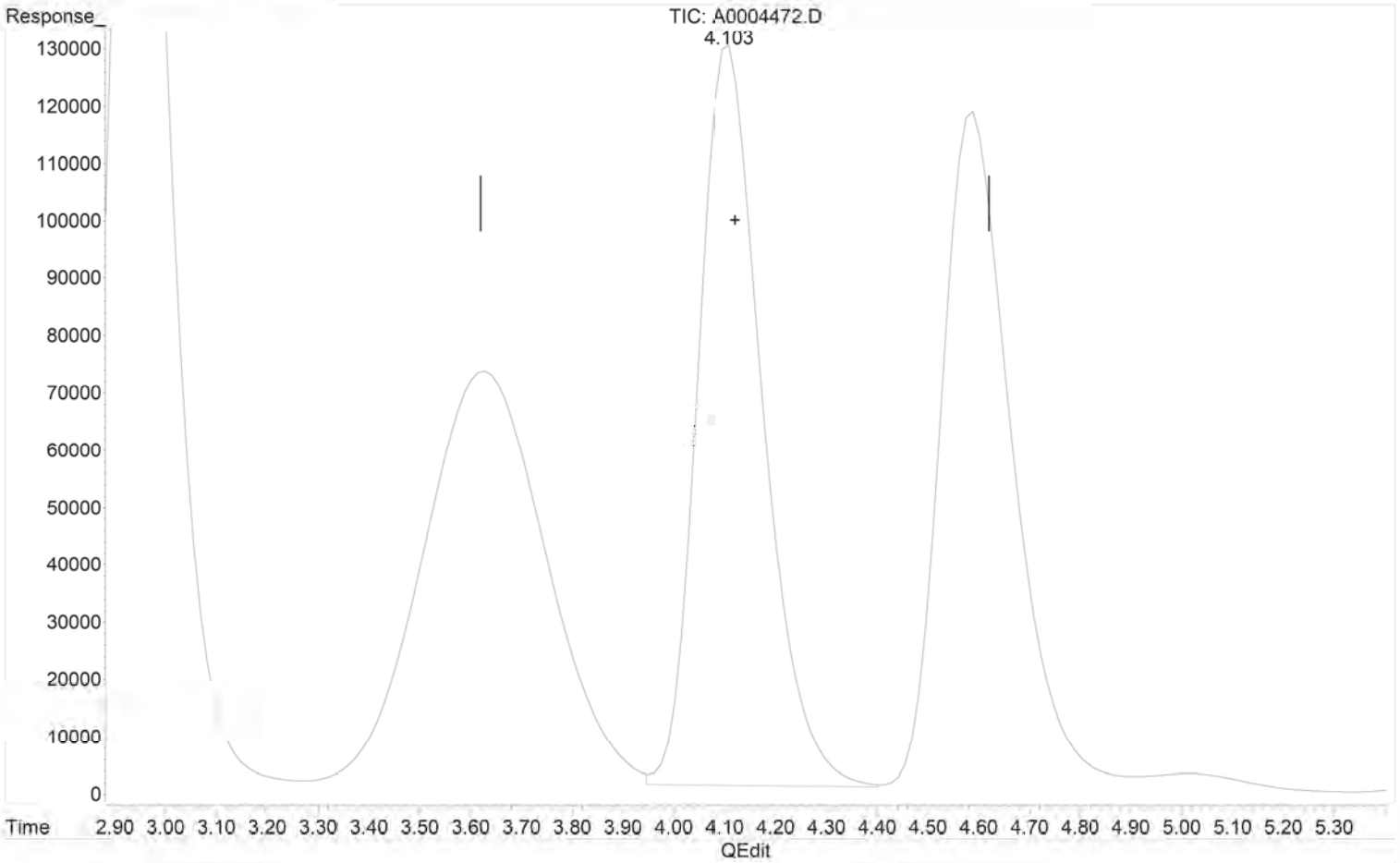
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.110min 205.006 ppm

response 11356650

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

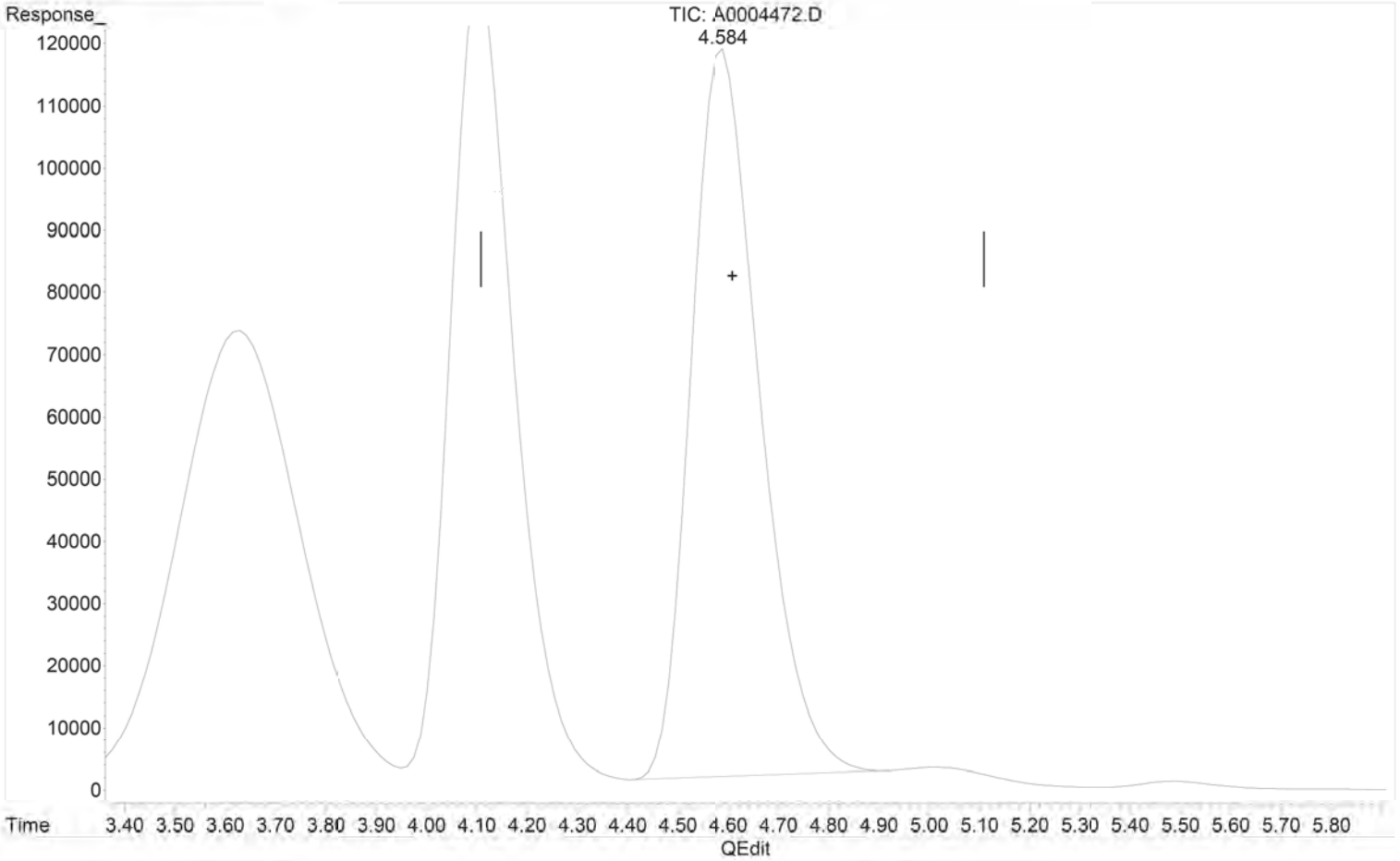
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.584min 197.987 ppm m

response 11047591

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

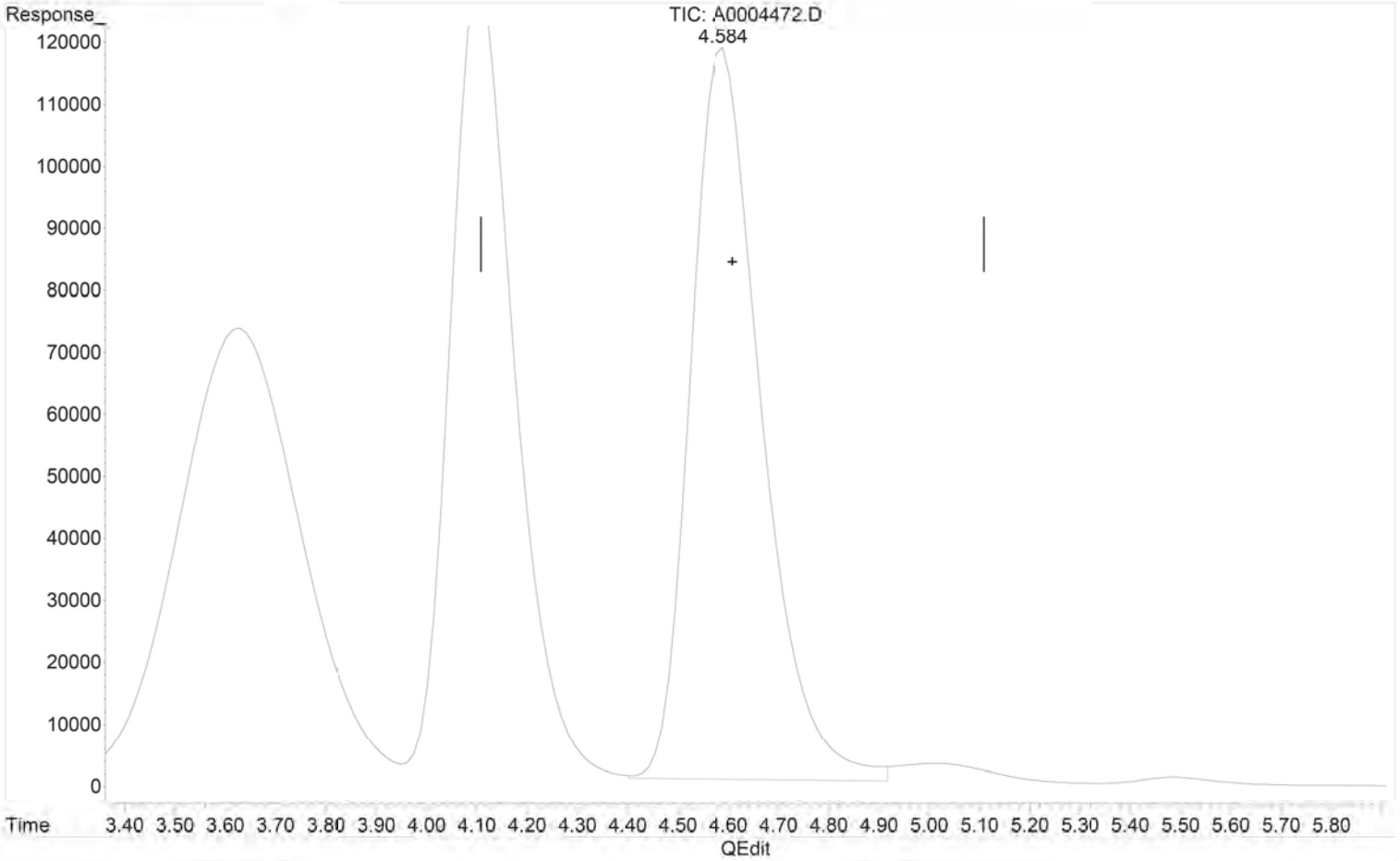
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.592min 205.148 ppm

response 11447174

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

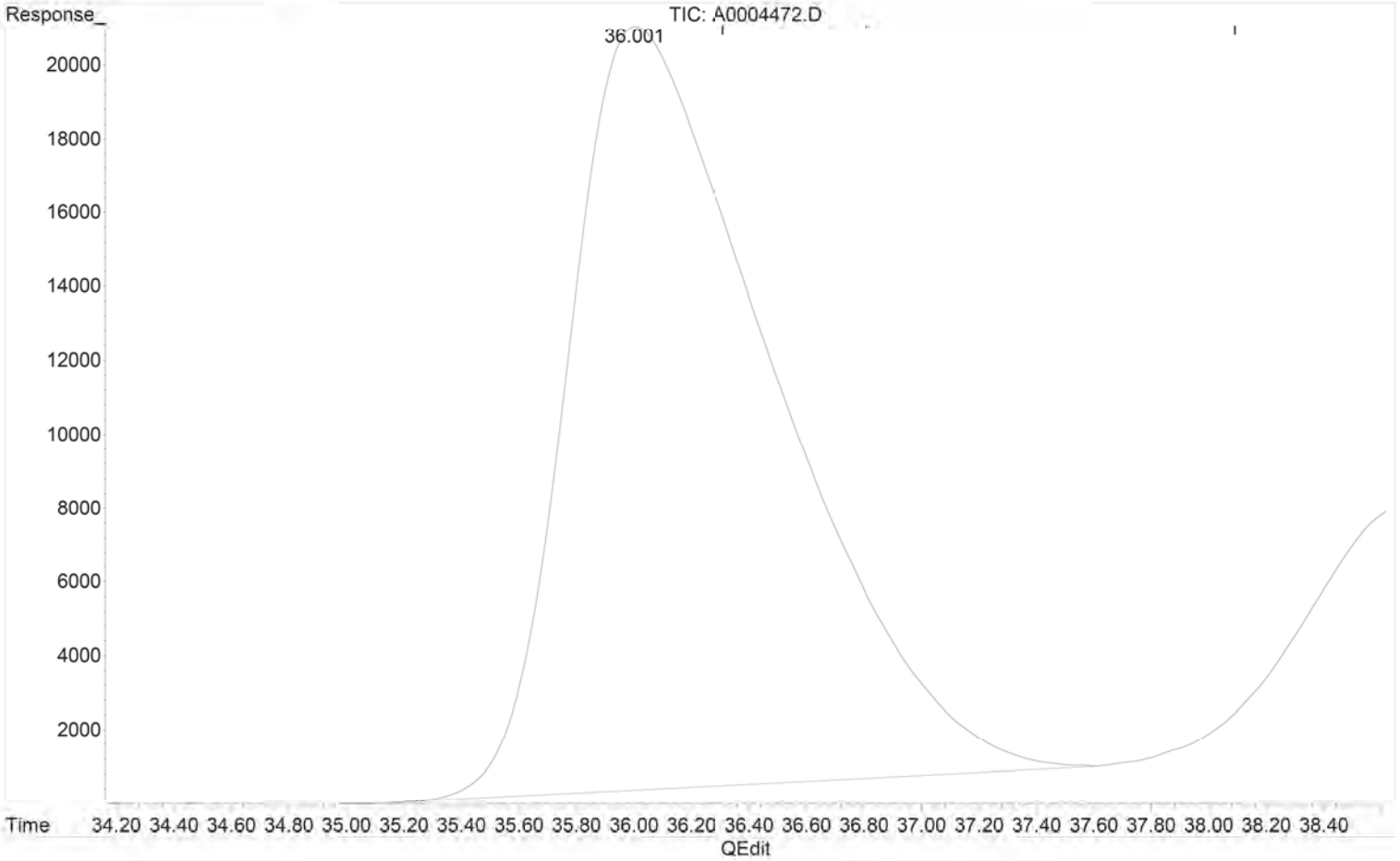
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.001min 196.253 ppm m

response 10326182

Manual Integration:

After

Poor integration.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

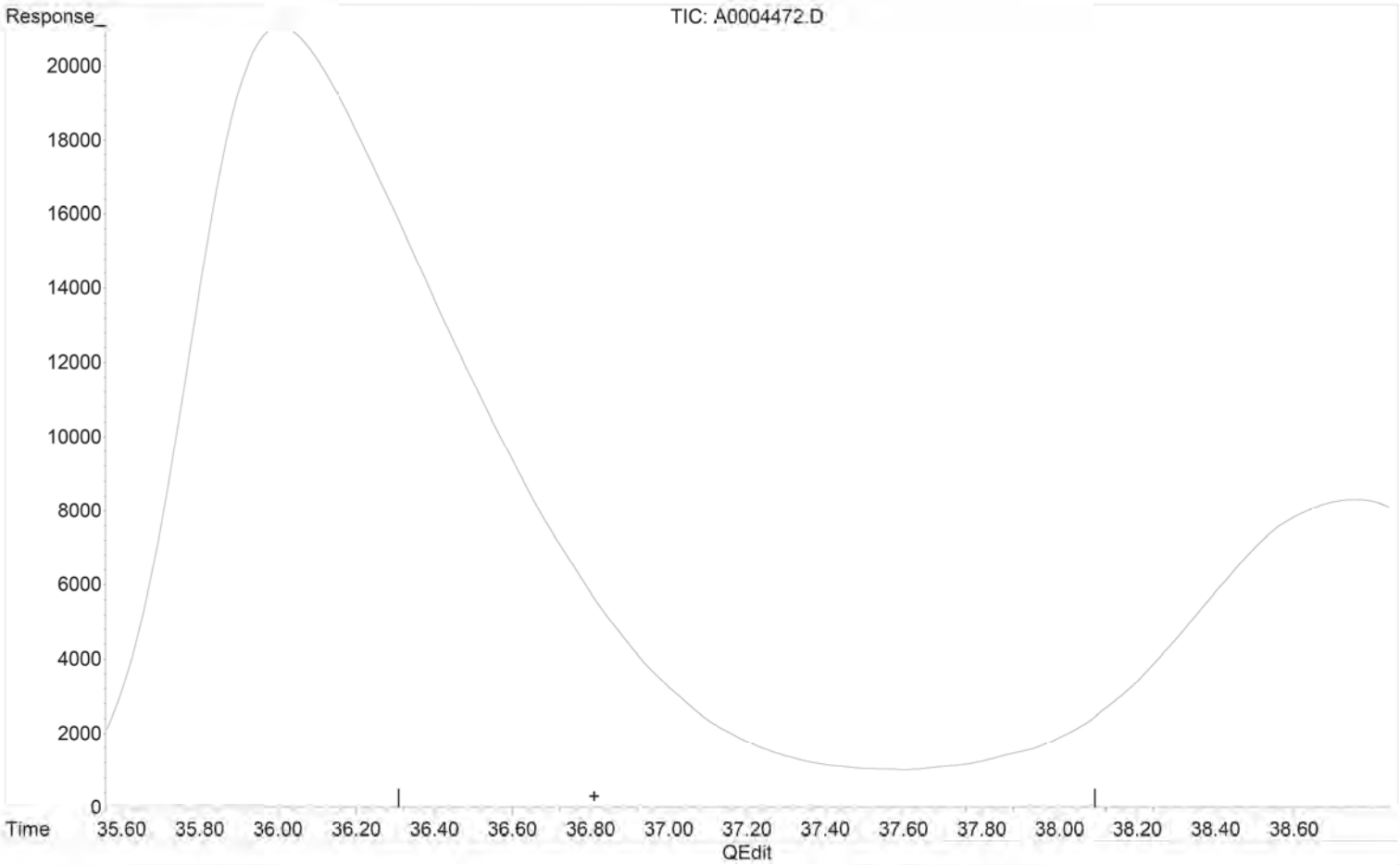
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.808min 0.000 ppm

response 0

Manual Integration:

Before

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

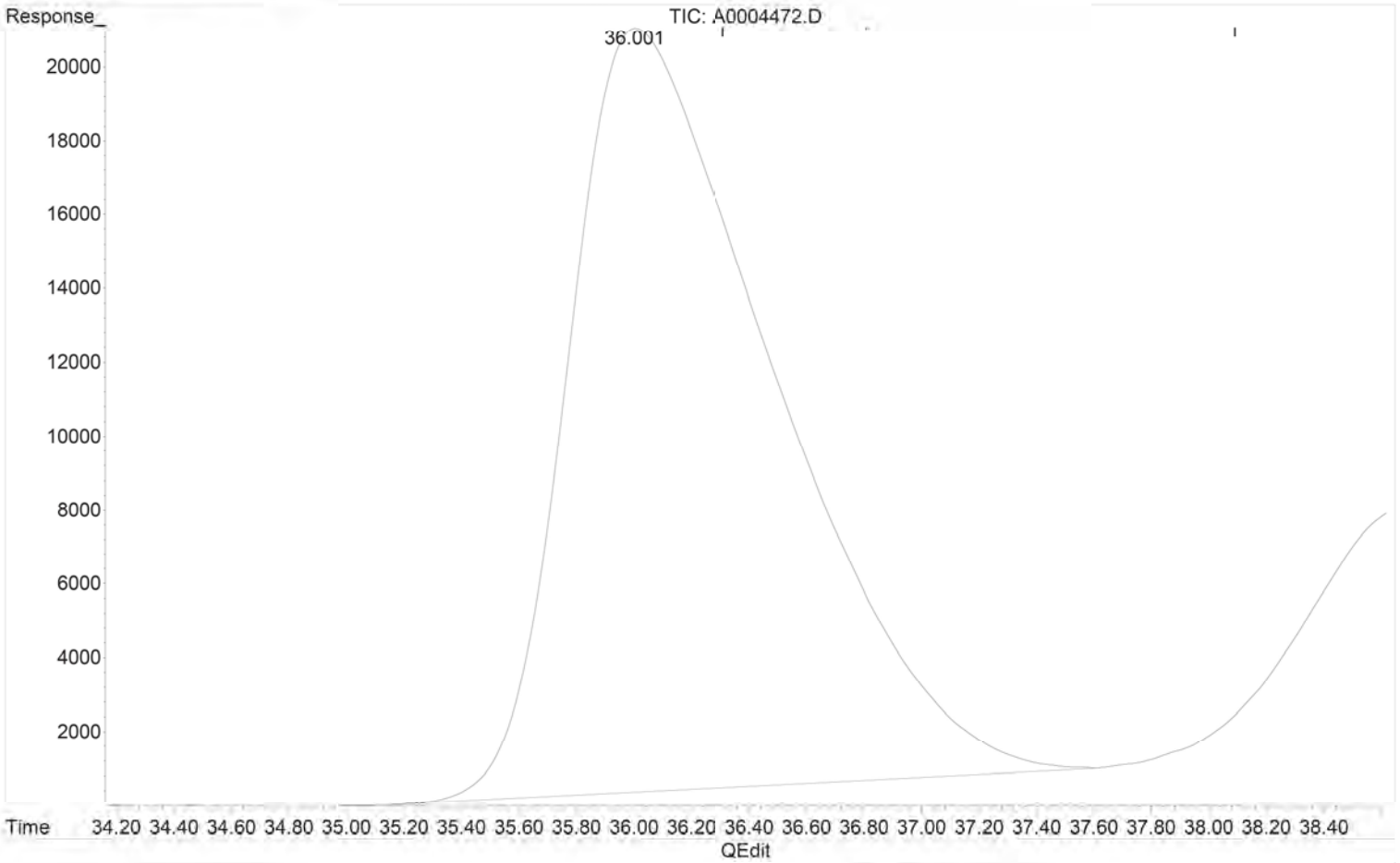
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.001min 196.253 ppm m

response 10326182

Manual Integration:

After

Peak not found.

03/16/20

Expected Retention Time

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58

Service Request: R2002879
Calibration Date: 12/30/2000

Initial Calibration Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Calibration ID: RC2000053
Instrument ID: R-HPLC-05

Signal ID: 1

#	Lab Code	Sample Name	File Location	Acquisition Date
01	RC2000053-01	STD 1	I:\ACQUDATA\hplc05\data\031220\A0004465.D	03/12/2020 12:39
02	RC2000053-02	STD 2	I:\ACQUDATA\hplc05\data\031220\A0004466.D	03/12/2020 13:42
04	RC2000053-04	STD 4	I:\ACQUDATA\hplc05\data\031220\A0004468.D	03/12/2020 15:48
07	RC2000053-07	STD 7	I:\ACQUDATA\hplc05\data\031220\A0004471.D	03/12/2020 18:57
08	RC2000053-08	STD 8	I:\ACQUDATA\hplc05\data\031220\A0004472.D	03/12/2020 20:00
03	RC2000053-03	STD 3	I:\ACQUDATA\hplc05\data\031220\A0004467.D	12/30/2000 02:48
06	RC2000053-06	STD 6	I:\ACQUDATA\hplc05\data\031220\A0004470.D	12/30/2000 17:47
05	RC2000053-05	STD 5	I:\ACQUDATA\hplc05\data\031220\A0004469.D	12/30/2000 17:48

Analyte

Acetic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1	5.521E4	02	2	5.659E4	03	5	5.611E4	04	10	5.731E4
05	20	5.58E4	06	50	5.655E4	07	100	5.558E4	08	200	5.524E4

Butanoic Acid (Butyric Acid)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1	5.323E4	02	2	5.338E4	03	5	5.087E4	04	10	5.32E4
05	20	5.262E4	06	50	5.313E4	07	100	5.244E4	08	200	5.163E4

Lactic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1	6.266E4	02	2	5.467E4	03	5	5.515E4	04	10	5.641E4
05	20	5.54E4	06	50	5.626E4	07	100	5.545E4	08	200	5.532E4

Propionic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1	5.153E4	02	2	5.435E4	03	5	5.182E4	04	10	5.598E4
05	20	5.494E4	06	50	5.59E4	07	100	5.536E4	08	200	5.497E4

Pyruvic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	.1	6.507E5	02	.2	5.665E5	03	.5	5.865E5	04	1	5.943E5
05	2	5.829E5	06	5	5.906E5	07	10	5.807E5	08	20	5.803E5

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58

Service Request: R2002879
Calibration Date: 12/30/2000

Initial Calibration Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Calibration ID: RC2000053
Instrument ID: R-HPLC-05

Signal ID: 1

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Acetic Acid	TRG	Average RF	% RSD	1.3	≤	5.605E4	
Butanoic Acid (Butyric Acid)	TRG	Average RF	% RSD	1.7	≤	5.256E4	
Lactic Acid	TRG	Average RF	% RSD	4.6	≤	5.642E4	
Propionic Acid	TRG	Average RF	% RSD	3.2	≤	5.436E4	
Pyruvic Acid	TRG	Average RF	% RSD	4.3	≤	5.916E5	

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58

Service Request: R2002879
Calibration Date: 12/30/2000

Initial Calibration Verification Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Calibration ID: RC2000053
Instrument ID: R-HPLC-05

Signal ID: 1

#	Lab Code	Sample Name	File Location	Acquisition Date
09	RC2000053-09	ICV	I:\ACQUDATA\hplc05\data\031620\A0004777.D	12/30/2000 00:01

Analyte Name	Expected	Result	Average RF	SSV RF	Rec.	Criteria	Curve Fit
Pyruvic Acid	2.00	1.80	5.916E5	5.334E5	90.0	85-115	Average RF
Acetic Acid	20.0	18.9	5.605E4	5.295E4	94.5	85-115	Average RF
Butanoic Acid (Butyric Acid)	20.0	19.4	5.256E4	5.089E4	97.0	85-115	Average RF
Lactic Acid	20.0	18.8	5.642E4	5.298E4	94.0	85-115	Average RF
Propionic Acid	20.0	20.4	5.436E4	5.533E4	102	85-115	Average RF

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58/NW01312.0150

Service Request: R2002879
Date Analyzed: 04/09/20 11:29

Continuing Calibration Verification (CCV) Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids
File ID: I:\ACQUDATA\hplc05\data\040920\A0004922.D\
Signal ID: 1

Calibration Date: 12/30/2000
Calibration ID: RC2000053
Analysis Lot: 676686
Units: mg/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Pyruvic Acid	5.00	5.48	5.916E5	6.486E5	9.6	NA	±15	Average RF
Acetic Acid	50.0	50.2	5.605E4	5.624E4	0.3	NA	±15	Average RF
Butanoic Acid (Butyric Acid)	50.0	52.1	5.256E4	5.48E4	4.3	NA	±15	Average RF
Lactic Acid	50.0	44.4	5.642E4	5.015E4	-11.1	NA	±15	Average RF
Propionic Acid	50.0	54.4	5.436E4	5.913E4	8.8	NA	±15	Average RF

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58/NW01312.0150

Service Request: R2002879
Date Analyzed: 04/09/20 20:59

Continuing Calibration Verification (CCV) Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids
File ID: I:\ACQUDATA\hplc05\data\040920\A0004931.D\
Signal ID: 1

Calibration Date: 12/30/2000
Calibration ID: RC2000053
Analysis Lot: 676686
Units: mg/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Pyruvic Acid	5.00	5.49	5.916E5	6.495E5	9.8	NA	±15	Average RF
Acetic Acid	50.0	50.2	5.605E4	5.627E4	0.4	NA	±15	Average RF
Butanoic Acid (Butyric Acid)	50.0	51.7	5.256E4	5.436E4	3.4	NA	±15	Average RF
Lactic Acid	50.0	45.0	5.642E4	5.076E4	-10.0	NA	±15	Average RF
Propionic Acid	50.0	53.9	5.436E4	5.852E4	7.7	NA	±15	Average RF

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**R2002879
Project: LHAAP / Site 58/NW01312.0150

Analysis Run Log
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids **Analysis Lot:**676686
Instrument ID:R-HPLC-05

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
I:\ACQUDATA\hplc05\data\040920\A0004922.D\	Continuing Calibration Verification	RQ2003624-01	12/30/2000	01:47:53	
I:\ACQUDATA\hplc05\data\040920\A0004930.D\	ZZZZZZZ	ZZZZZZZ	12/30/2000	01:47:55	
I:\ACQUDATA\hplc05\data\040920\A0004928.D\	35AWW06_040720 DMS	RQ2003624-06	12/31/2000	02:47:45	
I:\ACQUDATA\hplc05\data\040920\A0004922.D\	Continuing Calibration Verification	RQ2003624-01	4/9/2020	11:29:00	
I:\ACQUDATA\hplc05\data\040920\A0004923.D\	Method Blank	RQ2003624-02	4/9/2020	12:35:28	
I:\ACQUDATA\hplc05\data\040920\A0004924.D\	Lab Control Sample	RQ2003624-03	4/9/2020	13:38:30	
I:\ACQUDATA\hplc05\data\040920\A0004925.D\	Duplicate Lab Control Sample	RQ2003624-04	4/9/2020	14:41:36	
I:\ACQUDATA\hplc05\data\040920\A0004926.D\	35AWW06_040720	R2002879-001	4/9/2020	15:44:31	
I:\ACQUDATA\hplc05\data\040920\A0004927.D\	35AWW06_040720 MS	RQ2003624-05	4/9/2020	16:47:25	
I:\ACQUDATA\hplc05\data\040920\A0004928.D\	35AWW06_040720 DMS	RQ2003624-06	4/9/2020	17:47:00	
I:\ACQUDATA\hplc05\data\040920\A0004930.D\	ZZZZZZZ	ZZZZZZZ	4/9/2020	19:53:00	
I:\ACQUDATA\hplc05\data\040920\A0004931.D\	Continuing Calibration Verification	RQ2003624-07	4/9/2020	20:59:35	

RIGHT SOLUTIONS | RIGHT PARTNER

Analysis: Metabolic Acids Analyst: AGelber Run Method: NEWMETA.M

Date: 04/09/2020 Instr. _HPLC05_ Quant Method: MA031220.M

LIMS Run#: 676686

Setup: Column: Synergi Hydro RP 150x4.6 Col.Temp: 35°C Flow: 0.6ml/min

Mobile Phase: 0.02M KH2PO4 pH 2.1m PO4 ul Inj.: 50

Mobile Phase ID: 0-760-766

Pos.	Sample	Dil'n.	Stds. ID	File#	OK?	Comments
2	BLK			A0004920	—	
2	BLK			21	—	
1	CCV	100µL/1mL	208066	22	Y	
2	MB			23	Y	
3	LCS	100µL/1mL	208621	24	Y	
4	DLCS	↓	↓	25	Y	
5	L2002879-001			26	Y	
6	↓ -001 MS		208621	27	Y	
7	↓ -001 DMS		↓	28	Y	
8	L2002910-001	5		29	N	repeat 8th analysis
9	↓ -001			30	Y	
1	CCV	100µL/1mL	208066	31	Y	

AGelber 04/14/2020

Primary: 208066 exp: 4/30/2020 Secondary: 208621 exp: 9/19/2020

pH Paper: 205502 Acid: 203916

Runlog HPLCr2 3/23/18

RIGHT SOLUTIONS | RIGHT PARTNER

QUALITY CONTROL SUMMARY REPORT
LHAAP-58 JUNE 2020
SEMI-ANNUAL SAMPLING EVENT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

July 2020

Prepared For:

Longhorn Army Ammunition Plant
Karnack, Texas

Under Contract To:

U.S. Army Corps of Engineers
Tulsa District
Tulsa, Oklahoma

Contract Number: W9128F-13-D-0012
Task Order Number: W912BV17F0150

Prepared By:

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1 INTRODUCTION

Bhate Environmental Associates, Inc. (Bhate) reviewed four data packages from ALS Environmental, Houston, Texas with the analyses for Volatile Fatty Acids (VFAs) subcontracted to ALS Rochester, NY; Total Organic Carbon (TOC) subcontracted to ALS Kelso, WA; and the analyses of dissolved gases to ALS Simi Valley, CA. The dechlorinating bacteria analysis was subcontracted to Microbial Insights in Knoxville, TN. Groundwater samples were collected June 24-29, 2020, from Site LHAAP-58 at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas. Data were reviewed for conformance to the requirements of the following guidance documents: [United States Environmental Protection Agency] *USEPA Contract Laboratory Program* [CLP] *National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA, January 2017), *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (USEPA, January 2017) and the *Final Basewide Uniform Federal Policy* [UFP] – *Quality Assurance Project Plan* [QAPP] *Longhorn Army Ammunition Plant* which is in Appendix C of the *Final Installation-Wide Work Plan for Longhorn Army Ammunition Plant Karnack, Texas* (Bhate, May 2018).

1.1 Intended Use of Data

The objective of sampling at LHAAP-58 was to complete the semi-annual event.

Analyses performed include:

- RSK-175 – Dissolved Gases (methane, ethane, ethene, carbon dioxide)
- SM5310C –TOC
- SW8260C – Volatile Organic Compounds (VOCs)
- SW9056A – Anions (chloride, nitrate, nitrite and sulfate)
- High Performance Liquid Chromatography (HPLC)-METACIDS –VFAs
- CENSUS – Dechlorinating Bacteria (dehalococcoides [DHC]/dehalobacter [DHB])
- SW6020A - Arsenic

Table 1 lists the sample identification (ID) numbers and their associated laboratory package.

Table 2 lists qualified results with the qualification flag and reason code.

The following narrative is a brief synopsis of data that required qualification due to quality control discrepancies.

1.2 Preservation and Holding Times

Sample identification data were evaluated for agreement with the chain-of-custody (COC). All samples were received in appropriate containers, within the proper temperature range, in good condition, and within the required hold time.

1.3 Calibrations

All analytes reported must be present in the initial and continuing calibration. The calibrations must meet the acceptance criteria specified in Worksheet 24 (Analytical Instrument Calibration) of the QAPP. All results reported must be within the calibration range. Samples were diluted, if necessary, to bring analyte responses within the calibration range.

1.3.1 Continuing Calibration Verifications (CCV)

The calibrations must meet the following criteria otherwise the compound is qualified J or UJ: The continuing calibration verification (CCV) criteria are 20 percent difference (%D) for VOCs and 50% for closing CCVs. Metals and general chemistry - 10%D; VFAs, Dissolved Gases and TOC - 15%D.

All calibration verification was within control limits.

1.4 Blanks

If the analyte result for an associated sample was less than 5X (10X for common laboratory contaminants) the analyte concentration in the blank, that result was qualified "UB" and considered an artifact of blank contamination. Where the sample result for the affected analyte was non-detect or greater than 5X the amount in the blank, no qualifier was applied.

No compounds warranted blank qualification.

1.5 Surrogates

Surrogates were evaluated using limits defined by each method in the project-specific QAPP Worksheet 28.

No surrogates were reported outside control limits.

1.6 Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

LCS/LCSD recoveries were evaluated using limits defined in the project-specific QAPP Worksheet 15.

No LCS recoveries warranted qualification.

1.7 Matrix Spike (MS)/Matrix Spike Duplicate Sample (MSD)

MS/MSD recoveries were evaluated using limits defined in Worksheet 15 of the project-specific QAPP. When sample results were greater than 4x the spike amount, control limits were not applicable and require no qualification. Furthermore, if a MS/MSD analyses was performed on a batched (unrelated) sample no qualification was made to the sample data.

1.7.1 SW8260

The MS and/or MSD recoveries of acetone, in spike samples 35AWW13_062920, 35AWW10_062920 and 35AWW19_062420, were below control limits. Due to matrix effect, these non-detected compounds were flagged "UJ" (see Table 2).

1.7.2 VFA

The MSD recovery of pyruvic acid, in spike sample 35AWW19_062420, was below control limits. Due to matrix effect, this compound was flagged "UJ".

1.8 Internal Standards

If the percent recovery (%R) for an internal standard in a sample is not within the limit, the associated sample is qualified for those analytes associated with the internal standard(s) outside of the limit.

Internal standards were within acceptance criteria for the associated compounds.

1.9 Precision

Precision is the measure of variability of individual sample measurements. Evaluation of field duplicates for precision was done using the RPD. The RPD is defined as the difference between two duplicate samples divided by the mean and expressed as a percent. Field duplicate RPD limits were set at <30% for groundwater matrices.

1.9.1 Lab Precision

The laboratory RPDs were within control limits.

1.9.2 Field Precision

The RPD for all compounds were within control limits.

2.0 DATA USABILITY SUMMARY

The data are usable for the intended purposes of the project (see Table 3). The data quality objectives have been met for the project.

Table 1: Field Sample Identification and Laboratory Packages

Client Sample ID	Lab Package/ID	SM2320B	E365.3	SM5310 C	SW6020A	SW8260C	HPLC-METACIDS	SW9056A	RSK-175	SM3500Fe	E376.1	CENSUS	Arsenic 6020A
03WW01_062320	HS20061178			X		X	X	X	X			X	X
35AWW01_062520	HS20061390					X							
35AWW01_062520-a	HS20061390					X							
35AWW06_062420	HS20061218			X		X	X	X	X			X	
35AWW08_062320	HS20061178			X		X	X	X	X			X	X
35AWW09_062320	HS20061178			X		X	X	X	X				X
35AWW10_062920	HS20070055					X							
35AWW11_062320	HS20061178			X		X	X	X	X			X	
35AWW12_062520	HS20061390					X							
35AWW13_062920	HS20070055					X							
35AWW14_062520	HS20061390					X							
35AWW15_062520	HS20061390					X							
35AWW16_062520	HS20061390					X							
35AWW17_062920	HS20070055					X							
35AWW18_062520	HS20061390					X							
35AWW19_062420	HS20061218			X		X	X	X	X			X	
35AWW20_062420	HS20061218			X		X	X	X	X			X	X
34AWW21_062920	HS20070055					X							
34AWW21_062920_a	HS20070055					X							
35AWW22_062420	HS20061218					X							
35AWW23_062420	HS20061218			X		X	X	X	X			X	
35AWW24_062520	HS20061390					X							
35AWW24_062520-a	HS20061390					X							
LHSMW06_062520	HS20061390					X							X
LHSMW07_062420	HS20061218			X		X	X	X	X			X	

Notes:
MW – Monitoring Well
SM – Standard Method
SW-846 - Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.
E – U.S. Environmental Protection Agency Method
HS – Houston

Table 2: Qualified Analytical Data

Client Sample ID Laboratory	Laboratory Package	Analyte Name	Result and Qualifier (µg/L)	Reason for Qualification
35AWW10_062920	HS20070055	Acetone	< 1.0 UJ	MSD <
35AWW13_062920	HS20070055	Acetone	< 1.0 UJ	MS/MSD <
35AWW19_062420	HS20061218	Acetone Pyruvic Acid (mg/L)	< 1.0 UJ < 0.10 UJ	MS/MSD < MSD <

Notes:
mg/L – milligrams per liter; µg/L – micrograms per liter
UJ – The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
MS/MSD< – Matrix spike/duplicate recoveries were below control limits

Table 3: Completeness by Method

Method	No. of Rejected Results	% Completeness
SM5310C	0	100
SW8260C	0	100
HPLC-METACIDS	0	100
SW9056A	0	100
RSK-175	0	100
CENSUS	0	100
SW6020A	0	100

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July 13, 2020

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS20061178**

Laboratory Results for: **LHAAP-58**

Dear Marcia Olive,

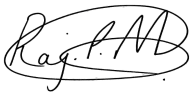
ALS Environmental received 5 sample(s) on Jun 24, 2020 for the analysis presented in the following report.

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: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS20061178

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20061178-01	35AWW09_062320	Groundwater		23-Jun-2020 10:05	24-Jun-2020 09:30	☐
HS20061178-02	03WW01_062320	Groundwater		23-Jun-2020 11:00	24-Jun-2020 09:30	☐
HS20061178-03	35AWW08_062320	Groundwater		23-Jun-2020 12:05	24-Jun-2020 09:30	☐
HS20061178-04	35AWW11_062320	Groundwater		23-Jun-2020 13:25	24-Jun-2020 09:30	☐
HS20061178-05	Trip Blank	Water	CG-032420-141	23-Jun-2020 00:00	24-Jun-2020 09:30	☐

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: LHAAP-58
Work Order: HS20061178

Work Order Comments

- The analyses for Volatile Fatty Acids were subcontracted to ALS Environmental in Rochester, NY. Final Report attached.

  The analysis for TOC was subcontracted to ALS Environmental in Kelso, WA. Final Report attached.

  The analyses for RSK-175 Dissolved Gases and CO2 were subcontracted to ALS Environmental in Simi Valley, CA. Final Report attached

  The analyses for RSK-175 Dissolved Gases and CO2 were subcontracted to ALS Environmental in Simi Valley, CA. Final Report attached.

  The analyses for DHC/DHB were subcontracted to Microbial Insights in Knoxville, TN. Final Report attached.

GCMS Volatiles by Method SW8260

Batch ID: R364190

Sample ID: 35AWW08_062320 (HS20061178-03)

- Lowest practical dilution for sample Hs20061178-03. Sample is foamy.

Sample ID: VLCSW-200629

- 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene, Hexachlorobutadiene and Naphthalene exceeded QC limits for LCS. Samples are ND for these compounds.

Sample ID: HS20061208-15MS

- MS and MSD were performed on unrelated sample

Batch ID: R364080

Sample ID: 03WW01_062320 (HS20061178-02)

- Lowest practical dilution for sample HS20061178-02. Sample is foamy.

Sample ID: 35AWW11_062320 (HS20061178-04)

- Toluene-d8 (SURR) exceeded QC recovery limits. Sample is ND.

Sample ID: VLCSW-200626

- 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene, Hexachlorobutadiene and Naphthalene exceeded QC limits for LCS. Samples are ND for these compounds.

Sample ID: HS20061206-02MS

- MS and MSD were performed on unrelated sample

Metals by Method SW6020

Batch ID: 154955

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: R364313

Sample ID: 03WW01_062320 (HS20061178-02)

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS20061178

CASE NARRATIVE

WetChemistry by Method SW9056

Batch ID: R364313

- Sample ran at 2X due to high concentration of Chloride

Sample ID: 35AWW08_062320 (HS20061178-03)

- Sample ran at 2X due to high concentration of Chloride

Batch ID: R364738

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW09_062320
Collection Date: 23-Jun-2020 10:05

ANALYTICAL REPORT
WorkOrder:HS20061178
Lab ID:HS20061178-01
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	26-Jun-2020 17:32
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 17:32
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 17:32
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
1,1-Dichloroethane	**0.77**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	26-Jun-2020 17:32
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 17:32
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 17:32
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 17:32
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 17:32
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 17:32
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 17:32
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 17:32
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 17:32
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 17:32
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 17:32
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 17:32
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 17:32
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	26-Jun-2020 17:32
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	26-Jun-2020 17:32
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 17:32
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	26-Jun-2020 17:32
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	26-Jun-2020 17:32
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 17:32
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 17:32
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 17:32
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 17:32
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 17:32
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 17:32
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	26-Jun-2020 17:32
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 17:32
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 17:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW09_062320
Collection Date: 23-Jun-2020 10:05

ANALYTICAL REPORT
WorkOrder:HS20061178
Lab ID:HS20061178-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 17:32
cis-1,2-Dichloroethene	**1.1**		**0.20**	**0.50**	**1.0**	**UG/L**	1	26-Jun-2020 17:32
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	26-Jun-2020 17:32
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 17:32
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	26-Jun-2020 17:32
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	26-Jun-2020 17:32
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	26-Jun-2020 17:32
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 17:32
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
Tetrachloroethene	**440**		**6.0**	**20**	**20**	**UG/L**	20	26-Jun-2020 18:43
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 17:32
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 17:32
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 17:32
Trichloroethene	**140**		**0.20**	**0.50**	**1.0**	**UG/L**	1	26-Jun-2020 17:32
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 17:32
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 17:32
Surr: 1,2-Dichloroethane-d4	*90.0*			**0**	*81-118*	*%REC*	*1*	*26-Jun-2020 17:32*
Surr: 1,2-Dichloroethane-d4	*108*			**0**	*81-118*	*%REC*	*20*	*26-Jun-2020 18:43*
Surr: 4-Bromofluorobenzene	*95.9*			**0**	*85-114*	*%REC*	*1*	*26-Jun-2020 17:32*
Surr: 4-Bromofluorobenzene	*109*			**0**	*85-114*	*%REC*	*20*	*26-Jun-2020 18:43*
Surr: Dibromofluoromethane	*91.2*			**0**	*80-119*	*%REC*	*1*	*26-Jun-2020 17:32*
Surr: Dibromofluoromethane	*107*			**0**	*80-119*	*%REC*	*20*	*26-Jun-2020 18:43*
Surr: Toluene-d8	*112*			**0**	*89-112*	*%REC*	*20*	*26-Jun-2020 18:43*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*26-Jun-2020 17:32*
METALS BY ICPMS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 29-Jun-2020		Analyst: JHD
Arsenic	0.000500	U	0.000400	0.000500	0.00500	mg/L	1	02-Jul-2020 12:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW09_062320
Collection Date: 23-Jun-2020 10:05

ANALYTICAL REPORT
WorkOrder:HS20061178
Lab ID:HS20061178-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**1,490**		**10.0**	**25.0**	**25.0**	**mg/L**	50	08-Jul-2020 03:48
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	25-Jun-2020 04:40
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	25-Jun-2020 04:40
Sulfate	**1,060**		**10.0**	**25.0**	**25.0**	**mg/L**	50	08-Jul-2020 03:48
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	09-Jul-2020 10:18
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	13-Jul-2020 09:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 03WW01_062320
Collection Date: 23-Jun-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20061178
Lab ID:HS20061178-02
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	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
1,1,1-Trichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	26-Jun-2020 20:43
1,1,2,2-Tetrachloroethane	5.0	U	2.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
1,1,2-Trichloroethane	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
1,1-Dichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	26-Jun-2020 20:43
1,1-Dichloroethene	2.5	U	1.0	2.5	5.0	UG/L	5	26-Jun-2020 20:43
1,1-Dichloropropene	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
1,2,3-Trichlorobenzene	5.0	U	2.0	5.0	5.0	UG/L	5	26-Jun-2020 20:43
1,2,3-Trichloropropane	5.0	U	2.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
1,2,4-Trichlorobenzene	5.0	U	2.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
1,2,4-Trimethylbenzene	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
1,2-Dibromo-3-chloropropane	2.5	U	1.0	2.5	5.0	UG/L	5	26-Jun-2020 20:43
1,2-Dibromoethane	2.5	U	1.0	2.5	5.0	UG/L	5	26-Jun-2020 20:43
1,2-Dichlorobenzene	5.0	U	2.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
1,2-Dichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	26-Jun-2020 20:43
1,2-Dichloropropane	5.0	U	2.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
1,3,5-Trimethylbenzene	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
1,3-Dichlorobenzene	5.0	U	2.0	5.0	5.0	UG/L	5	26-Jun-2020 20:43
1,3-Dichloropropane	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
1,4-Dichlorobenzene	5.0	U	2.0	5.0	5.0	UG/L	5	26-Jun-2020 20:43
2,2-Dichloropropane	2.5	U	1.0	2.5	5.0	UG/L	5	26-Jun-2020 20:43
2-Butanone	5.0	U	2.5	5.0	10	UG/L	5	26-Jun-2020 20:43
2-Chlorotoluene	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
2-Hexanone	10	U	5.0	10	10	UG/L	5	26-Jun-2020 20:43
4-Chlorotoluene	5.0	U	2.0	5.0	5.0	UG/L	5	26-Jun-2020 20:43
4-Isopropyltoluene	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
4-Methyl-2-pentanone	10	U	3.5	10	10	UG/L	5	26-Jun-2020 20:43
Acetone	5.0	U	2.0	5.0	10	UG/L	5	26-Jun-2020 20:43
Benzene	2.5	U	1.0	2.5	5.0	UG/L	5	26-Jun-2020 20:43
Bromobenzene	5.0	U	2.0	5.0	5.0	UG/L	5	26-Jun-2020 20:43
Bromochloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	26-Jun-2020 20:43
Bromodichloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	26-Jun-2020 20:43
Bromoform	5.0	U	2.0	5.0	5.0	UG/L	5	26-Jun-2020 20:43
Bromomethane	5.0	U	2.0	5.0	5.0	UG/L	5	26-Jun-2020 20:43
Carbon disulfide	5.0	U	3.0	5.0	10	UG/L	5	26-Jun-2020 20:43
Carbon tetrachloride	5.0	U	2.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
Chlorobenzene	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
Chloroethane	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
Chloroform	2.5	U	1.0	2.5	5.0	UG/L	5	26-Jun-2020 20:43

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 03WW01_062320
Collection Date: 23-Jun-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20061178
Lab ID:HS20061178-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	26-Jun-2020 20:43
cis-1,2-Dichloroethene	**17**		**1.0**	**2.5**	**5.0**	**UG/L**	5	26-Jun-2020 20:43
cis-1,3-Dichloropropene	2.5	U	0.50	2.5	5.0	UG/L	5	26-Jun-2020 20:43
Dibromochloromethane	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
Dibromomethane	2.5	U	1.0	2.5	5.0	UG/L	5	26-Jun-2020 20:43
Dichlorodifluoromethane	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
Ethylbenzene	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
Hexachlorobutadiene	5.0	U	5.0	5.0	5.0	UG/L	5	26-Jun-2020 20:43
Isopropylbenzene	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
m,p-Xylene	5.0	U	2.5	5.0	10	UG/L	5	26-Jun-2020 20:43
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	26-Jun-2020 20:43
n-Butylbenzene	5.0	U	2.0	5.0	5.0	UG/L	5	26-Jun-2020 20:43
n-Propylbenzene	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
Naphthalene	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
o-Xylene	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
sec-Butylbenzene	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
Styrene	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
tert-Butylbenzene	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
Tetrachloroethene	**4.5**	J	**1.5**	**5.0**	**5.0**	**UG/L**	5	26-Jun-2020 20:43
Toluene	2.5	U	1.0	2.5	5.0	UG/L	5	26-Jun-2020 20:43
trans-1,2-Dichloroethene	2.5	U	1.0	2.5	5.0	UG/L	5	26-Jun-2020 20:43
trans-1,3-Dichloropropene	2.5	U	1.0	2.5	5.0	UG/L	5	26-Jun-2020 20:43
Trichloroethene	**4.5**	J	**1.0**	**2.5**	**5.0**	**UG/L**	5	26-Jun-2020 20:43
Trichlorofluoromethane	5.0	U	1.5	5.0	5.0	UG/L	5	26-Jun-2020 20:43
Vinyl chloride	**7.2**		**1.0**	**2.5**	**5.0**	**UG/L**	5	26-Jun-2020 20:43
Surr: 1,2-Dichloroethane-d4	*106*			**0**	*81-118*	*%REC*	*5*	*26-Jun-2020 20:43*
Surr: 4-Bromofluorobenzene	*106*			**0**	*85-114*	*%REC*	*5*	*26-Jun-2020 20:43*
Surr: Dibromofluoromethane	*105*			**0**	*80-119*	*%REC*	*5*	*26-Jun-2020 20:43*
Surr: Toluene-d8	*109*			**0**	*89-112*	*%REC*	*5*	*26-Jun-2020 20:43*
METALS BY ICPMS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 29-Jun-2020		Analyst: JHD
Arsenic	**0.00936**		**0.000400**	**0.000500**	**0.00500**	**mg/L**	1	02-Jul-2020 12:56
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**965**		**2.00**	**5.00**	**5.00**	**mg/L**	10	08-Jul-2020 04:06
Nitrogen, Nitrate (As N)	0.200	U	0.0600	0.200	0.200	mg/L	2	25-Jun-2020 04:58
Nitrogen, Nitrite (As N)	0.200	U	0.0600	0.200	0.200	mg/L	2	25-Jun-2020 04:58
Sulfate	**231**		**2.00**	**5.00**	**5.00**	**mg/L**	10	08-Jul-2020 04:06
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Jul-2020 12:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 03WW01_062320
Collection Date: 23-Jun-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20061178
Lab ID:HS20061178-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	09-Jul-2020 10:18
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	13-Jul-2020 09:42
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	09-Jul-2020 10:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW08_062320
Collection Date: 23-Jun-2020 12:05

ANALYTICAL REPORT
WorkOrder:HS20061178
Lab ID:HS20061178-03
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	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
1,1,1-Trichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	29-Jun-2020 15:38
1,1,2,2-Tetrachloroethane	5.0	U	2.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
1,1,2-Trichloroethane	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
1,1-Dichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	29-Jun-2020 15:38
1,1-Dichloroethene	2.5	U	1.0	2.5	5.0	UG/L	5	29-Jun-2020 15:38
1,1-Dichloropropene	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
1,2,3-Trichlorobenzene	5.0	U	2.0	5.0	5.0	UG/L	5	29-Jun-2020 15:38
1,2,3-Trichloropropane	5.0	U	2.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
1,2,4-Trichlorobenzene	5.0	U	2.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
1,2,4-Trimethylbenzene	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
1,2-Dibromo-3-chloropropane	2.5	U	1.0	2.5	5.0	UG/L	5	29-Jun-2020 15:38
1,2-Dibromoethane	2.5	U	1.0	2.5	5.0	UG/L	5	29-Jun-2020 15:38
1,2-Dichlorobenzene	5.0	U	2.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
1,2-Dichloroethane	2.5	U	1.0	2.5	5.0	UG/L	5	29-Jun-2020 15:38
1,2-Dichloropropane	5.0	U	2.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
1,3,5-Trimethylbenzene	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
1,3-Dichlorobenzene	5.0	U	2.0	5.0	5.0	UG/L	5	29-Jun-2020 15:38
1,3-Dichloropropane	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
1,4-Dichlorobenzene	5.0	U	2.0	5.0	5.0	UG/L	5	29-Jun-2020 15:38
2,2-Dichloropropane	2.5	U	1.0	2.5	5.0	UG/L	5	29-Jun-2020 15:38
2-Butanone	5.0	U	2.5	5.0	10	UG/L	5	29-Jun-2020 15:38
2-Chlorotoluene	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
2-Hexanone	10	U	5.0	10	10	UG/L	5	29-Jun-2020 15:38
4-Chlorotoluene	5.0	U	2.0	5.0	5.0	UG/L	5	29-Jun-2020 15:38
4-Isopropyltoluene	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
4-Methyl-2-pentanone	10	U	3.5	10	10	UG/L	5	29-Jun-2020 15:38
Acetone	**54**		**2.0**	**5.0**	**10**	**UG/L**	5	29-Jun-2020 15:38
Benzene	2.5	U	1.0	2.5	5.0	UG/L	5	29-Jun-2020 15:38
Bromobenzene	5.0	U	2.0	5.0	5.0	UG/L	5	29-Jun-2020 15:38
Bromochloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	29-Jun-2020 15:38
Bromodichloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	29-Jun-2020 15:38
Bromoform	5.0	U	2.0	5.0	5.0	UG/L	5	29-Jun-2020 15:38
Bromomethane	5.0	U	2.0	5.0	5.0	UG/L	5	29-Jun-2020 15:38
Carbon disulfide	5.0	U	3.0	5.0	10	UG/L	5	29-Jun-2020 15:38
Carbon tetrachloride	5.0	U	2.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
Chlorobenzene	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
Chloroethane	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
Chloroform	2.5	U	1.0	2.5	5.0	UG/L	5	29-Jun-2020 15:38

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW08_062320
Collection Date: 23-Jun-2020 12:05

ANALYTICAL REPORT
WorkOrder:HS20061178
Lab ID:HS20061178-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	2.5	U	1.0	2.5	5.0	UG/L	5	29-Jun-2020 15:38
cis-1,2-Dichloroethene	**7.3**		**1.0**	**2.5**	**5.0**	**UG/L**	5	29-Jun-2020 15:38
cis-1,3-Dichloropropene	2.5	U	0.50	2.5	5.0	UG/L	5	29-Jun-2020 15:38
Dibromochloromethane	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
Dibromomethane	2.5	U	1.0	2.5	5.0	UG/L	5	29-Jun-2020 15:38
Dichlorodifluoromethane	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
Ethylbenzene	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
Hexachlorobutadiene	5.0	U	5.0	5.0	5.0	UG/L	5	29-Jun-2020 15:38
Isopropylbenzene	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
m,p-Xylene	5.0	U	2.5	5.0	10	UG/L	5	29-Jun-2020 15:38
Methylene chloride	5.0	U	2.0	5.0	10	UG/L	5	29-Jun-2020 15:38
n-Butylbenzene	5.0	U	2.0	5.0	5.0	UG/L	5	29-Jun-2020 15:38
n-Propylbenzene	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
Naphthalene	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
o-Xylene	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
sec-Butylbenzene	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
Styrene	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
tert-Butylbenzene	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
Tetrachloroethene	**6.7**		**1.5**	**5.0**	**5.0**	**UG/L**	5	29-Jun-2020 15:38
Toluene	2.5	U	1.0	2.5	5.0	UG/L	5	29-Jun-2020 15:38
trans-1,2-Dichloroethene	**4.5**	J	**1.0**	**2.5**	**5.0**	**UG/L**	5	29-Jun-2020 15:38
trans-1,3-Dichloropropene	2.5	U	1.0	2.5	5.0	UG/L	5	29-Jun-2020 15:38
Trichloroethene	**17**		**1.0**	**2.5**	**5.0**	**UG/L**	5	29-Jun-2020 15:38
Trichlorofluoromethane	5.0	U	1.5	5.0	5.0	UG/L	5	29-Jun-2020 15:38
Vinyl chloride	2.5	U	1.0	2.5	5.0	UG/L	5	29-Jun-2020 15:38
Surr: 1,2-Dichloroethane-d4	*87.8*			**0**	*81-118*	*%REC*	*5*	*29-Jun-2020 15:38*
Surr: 4-Bromofluorobenzene	*90.9*			**0**	*85-114*	*%REC*	*5*	*29-Jun-2020 15:38*
Surr: Dibromofluoromethane	*89.2*			**0**	*80-119*	*%REC*	*5*	*29-Jun-2020 15:38*
Surr: Toluene-d8	*94.2*			**0**	*89-112*	*%REC*	*5*	*29-Jun-2020 15:38*
METALS BY ICPMS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 29-Jun-2020		Analyst: JHD
Arsenic	**0.0210**		**0.000800**	**0.00100**	**0.0100**	**mg/L**	2	02-Jul-2020 12:58
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**2,510**		**20.0**	**50.0**	**50.0**	**mg/L**	100	08-Jul-2020 04:42
Nitrogen, Nitrate (As N)	0.200	U	0.0600	0.200	0.200	mg/L	2	25-Jun-2020 05:16
Nitrogen, Nitrite (As N)	0.200	U	0.0600	0.200	0.200	mg/L	2	25-Jun-2020 05:16
Sulfate	**15.5**		**0.400**	**1.00**	**1.00**	**mg/L**	2	25-Jun-2020 05:16
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Jul-2020 12:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW08_062320
Collection Date: 23-Jun-2020 12:05

ANALYTICAL REPORT
WorkOrder:HS20061178
Lab ID:HS20061178-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	09-Jul-2020 10:18
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	13-Jul-2020 09:42
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	09-Jul-2020 10:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW11_062320
Collection Date: 23-Jun-2020 13:25

ANALYTICAL REPORT
WorkOrder:HS20061178
Lab ID:HS20061178-04
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	26-Jun-2020 20:19
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 20:19
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 20:19
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 20:19
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 20:19
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 20:19
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 20:19
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 20:19
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 20:19
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	26-Jun-2020 20:19
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	26-Jun-2020 20:19
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 20:19
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	26-Jun-2020 20:19
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	26-Jun-2020 20:19
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 20:19
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 20:19
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 20:19
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	26-Jun-2020 20:19
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 20:19
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW11_062320
Collection Date: 23-Jun-2020 13:25

ANALYTICAL REPORT
WorkOrder:HS20061178
Lab ID:HS20061178-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	26-Jun-2020 20:19
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	26-Jun-2020 20:19
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	26-Jun-2020 20:19
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	26-Jun-2020 20:19
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 20:19
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 20:19
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 20:19
Surr: 1,2-Dichloroethane-d4	*98.1*			**0**	*81-118*	*%REC*	*1*	*26-Jun-2020 20:19*
Surr: 4-Bromofluorobenzene	*105*			**0**	*85-114*	*%REC*	*1*	*26-Jun-2020 20:19*
Surr: Dibromofluoromethane	*98.9*			**0**	*80-119*	*%REC*	*1*	*26-Jun-2020 20:19*
Surr: Toluene-d8	*113*	*S*		**0**	*89-112*	*%REC*	*1*	*26-Jun-2020 20:19*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**2,040**		**20.0**	**50.0**	**50.0**	**mg/L**	100	08-Jul-2020 05:18
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	25-Jun-2020 05:34
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	25-Jun-2020 05:34
Sulfate	**416**		**2.00**	**5.00**	**5.00**	**mg/L**	10	08-Jul-2020 05:00
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Jul-2020 12:17
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	09-Jul-2020 10:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW11_062320
Collection Date: 23-Jun-2020 13:25

ANALYTICAL REPORT
WorkOrder:HS20061178
Lab ID:HS20061178-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	13-Jul-2020 09:42
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	09-Jul-2020 10:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 23-Jun-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20061178
Lab ID:HS20061178-05
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	26-Jun-2020 19:31
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 19:31
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 19:31
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 19:31
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 19:31
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 19:31
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 19:31
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 19:31
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 19:31
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	26-Jun-2020 19:31
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	26-Jun-2020 19:31
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 19:31
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	26-Jun-2020 19:31
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	26-Jun-2020 19:31
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 19:31
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 19:31
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 19:31
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	26-Jun-2020 19:31
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	26-Jun-2020 19:31
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 23-Jun-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20061178
Lab ID:HS20061178-05
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	26-Jun-2020 19:31
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	26-Jun-2020 19:31
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	26-Jun-2020 19:31
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	26-Jun-2020 19:31
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	26-Jun-2020 19:31
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	26-Jun-2020 19:31
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	26-Jun-2020 19:31
Surr: 1,2-Dichloroethane-d4	*100*			**0**	*81-118*	*%REC*	*1*	*26-Jun-2020 19:31*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*26-Jun-2020 19:31*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*1*	*26-Jun-2020 19:31*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*26-Jun-2020 19:31*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 13-Jul-20

Weight / Prep Log

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

Batch ID: 154955 **Start Date:** 29 Jun 2020 10:30 **End Date:** 29 Jun 2020 14:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20061178-01		10 (mL)	10 (mL)	1
HS20061178-02		10 (mL)	10 (mL)	1
HS20061178-03		10 (mL)	10 (mL)	1

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 154955 (0)	**Test Name :** METALS BY ICPMS BY SW6020A				**Matrix:** Groundwater	
HS20061178-01	35AWW09_062320	23 Jun 2020 10:05		29 Jun 2020 14:30	02 Jul 2020 12:54	1
HS20061178-02	03WW01_062320	23 Jun 2020 11:00		29 Jun 2020 14:30	02 Jul 2020 12:56	1
HS20061178-03	35AWW08_062320	23 Jun 2020 12:05		29 Jun 2020 14:30	02 Jul 2020 12:58	2
Batch ID: R364080 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS20061178-05	Trip Blank	23 Jun 2020 00:00			26 Jun 2020 19:31	1
Batch ID: R364080 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20061178-01	35AWW09_062320	23 Jun 2020 10:05			26 Jun 2020 18:43	20
HS20061178-01	35AWW09_062320	23 Jun 2020 10:05			26 Jun 2020 17:32	1
HS20061178-02	03WW01_062320	23 Jun 2020 11:00			26 Jun 2020 20:43	5
HS20061178-04	35AWW11_062320	23 Jun 2020 13:25			26 Jun 2020 20:19	1
Batch ID: R364190 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20061178-03	35AWW08_062320	23 Jun 2020 12:05			29 Jun 2020 15:38	5
Batch ID: R364313 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20061178-01	35AWW09_062320	23 Jun 2020 10:05			25 Jun 2020 04:40	1
HS20061178-02	03WW01_062320	23 Jun 2020 11:00			25 Jun 2020 04:58	2
HS20061178-03	35AWW08_062320	23 Jun 2020 12:05			25 Jun 2020 05:16	2
HS20061178-04	35AWW11_062320	23 Jun 2020 13:25			25 Jun 2020 05:34	1
Batch ID: R364318 (0)	**Test Name :** SUBCONTRACT ANALYSIS - DHC/DHB				**Matrix:** Groundwater	
HS20061178-02	03WW01_062320	23 Jun 2020 11:00			01 Jul 2020 12:17	1
HS20061178-03	35AWW08_062320	23 Jun 2020 12:05			01 Jul 2020 12:17	1
HS20061178-04	35AWW11_062320	23 Jun 2020 13:25			01 Jul 2020 12:17	1
Batch ID: R364738 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20061178-01	35AWW09_062320	23 Jun 2020 10:05			08 Jul 2020 03:48	50
HS20061178-02	03WW01_062320	23 Jun 2020 11:00			08 Jul 2020 04:06	10
HS20061178-03	35AWW08_062320	23 Jun 2020 12:05			08 Jul 2020 04:42	100
HS20061178-04	35AWW11_062320	23 Jun 2020 13:25			08 Jul 2020 05:18	100
HS20061178-04	35AWW11_062320	23 Jun 2020 13:25			08 Jul 2020 05:00	10
Batch ID: R364756 (0)	**Test Name :** SUBCONTRACT ANALYSIS - RSK				**Matrix:** Groundwater	
HS20061178-01	35AWW09_062320	23 Jun 2020 10:05			09 Jul 2020 10:18	1
HS20061178-02	03WW01_062320	23 Jun 2020 11:00			09 Jul 2020 10:18	1
HS20061178-03	35AWW08_062320	23 Jun 2020 12:05			09 Jul 2020 10:18	1
HS20061178-04	35AWW11_062320	23 Jun 2020 13:25			09 Jul 2020 10:18	1
Batch ID: R364759 (0)	**Test Name :** SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS				**Matrix:** Groundwater	
HS20061178-02	03WW01_062320	23 Jun 2020 11:00			09 Jul 2020 10:22	1
HS20061178-03	35AWW08_062320	23 Jun 2020 12:05			09 Jul 2020 10:22	1
HS20061178-04	35AWW11_062320	23 Jun 2020 13:25			09 Jul 2020 10:22	1

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R364906 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS20061178-01	35AWW09_062320	23 Jun 2020 10:05			13 Jul 2020 09:42	1
HS20061178-02	03WW01_062320	23 Jun 2020 11:00			13 Jul 2020 09:42	1
HS20061178-03	35AWW08_062320	23 Jun 2020 12:05			13 Jul 2020 09:42	1
HS20061178-04	35AWW11_062320	23 Jun 2020 13:25			13 Jul 2020 09:42	1

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: 154955 (0) **Instrument: ICPMS06** **Method: METALS BY ICPMS BY SW6020A**

MBLK Sample ID: **MBLK-154955** Units: **mg/L** Analysis Date: **02-Jul-2020 12:25**
Client ID: Run ID: **ICPMS06_364391** SeqNo: **5648603** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.000500	0.00500								U

LCS Sample ID: **LCS-154955** Units: **mg/L** Analysis Date: **02-Jul-2020 12:27**
Client ID: Run ID: **ICPMS06_364391** SeqNo: **5648604** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04816	0.00500	0.05	0	96.3	84 - 116				

MS Sample ID: **HS20061218-02MS** Units: **mg/L** Analysis Date: **02-Jul-2020 12:37**
Client ID: Run ID: **ICPMS06_364391** SeqNo: **5648607** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04966	0.00500	0.05	0.001189	96.9	84 - 116				

MSD Sample ID: **HS20061218-02MSD** Units: **mg/L** Analysis Date: **02-Jul-2020 12:39**
Client ID: Run ID: **ICPMS06_364391** SeqNo: **5648608** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04875	0.00500	0.05	0.001189	95.1	84 - 116	0.04966	1.85	20	

PDS Sample ID: **HS20061218-02PDS** Units: **mg/L** Analysis Date: **02-Jul-2020 12:41**
Client ID: Run ID: **ICPMS06_364391** SeqNo: **5648609** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1122	0.00500	0.1	0.001189	111	80 - 120				

SD Sample ID: **HS20061218-02SD** Units: **mg/L** Analysis Date: **02-Jul-2020 12:35**
Client ID: Run ID: **ICPMS06_364391** SeqNo: **5648606** PrepDate: **29-Jun-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.00250	0.0250					0.001189	0	10	U

The following samples were analyzed in this batch: HS20061178-01 HS20061178-02 HS20061178-03

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364080 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-200626** Units: **UG/L** Analysis Date: **26-Jun-2020 13:57**
Client ID: Run ID: **VOA6_364080** SeqNo: **5640386** 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-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	1.0	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
Bromomethane	1.0	1.0								U

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364080 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200626** Units: **UG/L** Analysis Date: **26-Jun-2020 13:57**
Client ID: Run ID: **VOA6_364080** SeqNo: **5640386** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	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	1.0	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	*45.16*	*1.0*	*50*	*0*	*90.3*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*47.9*	*1.0*	*50*	*0*	*95.8*	*85 - 114*				
Surr: Dibromofluoromethane	*46.98*	*1.0*	*50*	*0*	*94.0*	*80 - 119*				
Surr: Toluene-d8	*50.93*	*1.0*	*50*	*0*	*102*	*89 - 112*				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364080 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200626** Units: **UG/L** Analysis Date: **26-Jun-2020 13:09**
Client ID: Run ID: **VOA6_364080** SeqNo: **5640385** 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	20.62	1.0	20	0	103	78 - 124				
1,1,1-Trichloroethane	20.51	1.0	20	0	103	74 - 131				
1,1,2,2-Tetrachloroethane	21.5	1.0	20	0	107	71 - 121				
1,1,2-Trichloroethane	20.94	1.0	20	0	105	80 - 119				
1,1-Dichloroethane	19.96	1.0	20	0	99.8	77 - 125				
1,1-Dichloroethene	20.16	1.0	20	0	101	71 - 131				
1,1-Dichloropropene	19.74	1.0	20	0	98.7	78 - 125				
1,2,3-Trichlorobenzene	28.29	1.0	20	0	141	69 - 129				S
1,2,3-Trichloropropane	20.77	1.0	20	0	104	73 - 122				
1,2,4-Trichlorobenzene	27.16	1.0	20	0	136	69 - 130				S
1,2,4-Trimethylbenzene	20.02	1.0	20	0	100	76 - 124				
1,2-Dibromo-3-chloropropane	22.91	1.0	20	0	115	62 - 128				
1,2-Dibromoethane	21.07	1.0	20	0	105	77 - 121				
1,2-Dichlorobenzene	21.17	1.0	20	0	106	80 - 119				
1,2-Dichloroethane	20.76	1.0	20	0	104	73 - 128				
1,2-Dichloropropane	21.32	1.0	20	0	107	78 - 122				
1,3,5-Trimethylbenzene	20.06	1.0	20	0	100	75 - 124				
1,3-Dichlorobenzene	20.4	1.0	20	0	102	80 - 119				
1,3-Dichloropropane	20.91	1.0	20	0	105	80 - 119				
1,4-Dichlorobenzene	20.62	1.0	20	0	103	79 - 118				
2,2-Dichloropropane	20.85	1.0	20	0	104	60 - 139				
2-Butanone	39.78	2.0	40	0	99.4	56 - 143				
2-Chlorotoluene	19.91	1.0	20	0	99.6	79 - 122				
2-Hexanone	43.6	2.0	40	0	109	57 - 139				
4-Chlorotoluene	20.03	1.0	20	0	100	78 - 122				
4-Isopropyltoluene	19.43	1.0	20	0	97.1	77 - 127				
4-Methyl-2-pentanone	43.56	2.0	40	0	109	67 - 130				
Acetone	48.89	2.0	40	0	122	39 - 160				
Benzene	20.8	1.0	20	0	104	79 - 120				
Bromobenzene	20.36	1.0	20	0	102	80 - 120				
Bromochloromethane	20.02	1.0	20	0	100	78 - 123				
Bromodichloromethane	21.09	1.0	20	0	105	79 - 125				
Bromoform	21.31	1.0	20	0	107	66 - 130				
Bromomethane	20.25	1.0	20	0	101	53 - 141				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364080 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200626** Units: **UG/L** Analysis Date: **26-Jun-2020 13:09**
Client ID: Run ID: **VOA6_364080** SeqNo: **5640385** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	40.74	2.0	40	0	102	64 - 133				
Carbon tetrachloride	19.47	1.0	20	0	97.4	72 - 136				
Chlorobenzene	20.65	1.0	20	0	103	82 - 118				
Chloroethane	20.94	1.0	20	0	105	60 - 138				
Chloroform	20.36	1.0	20	0	102	79 - 124				
Chloromethane	19.95	1.0	20	0	99.8	50 - 139				
cis-1,2-Dichloroethene	20.49	1.0	20	0	102	78 - 123				
cis-1,3-Dichloropropene	21.03	1.0	20	0	105	75 - 124				
Dibromochloromethane	20.94	1.0	20	0	105	74 - 126				
Dibromomethane	21.13	1.0	20	0	106	79 - 123				
Dichlorodifluoromethane	18.76	1.0	20	0	93.8	32 - 152				
Ethylbenzene	20.3	1.0	20	0	101	79 - 121				
Hexachlorobutadiene	26.97	1.0	20	0	135	66 - 134				S
Isopropylbenzene	20.14	1.0	20	0	101	72 - 131				
m,p-Xylene	41.63	2.0	40	0	104	80 - 121				
Methylene chloride	19.93	2.0	20	0	99.7	74 - 124				
Naphthalene	25.75	1.0	20	0	129	61 - 128				S
n-Butylbenzene	19.68	1.0	20	0	98.4	75 - 128				
n-Propylbenzene	19.92	1.0	20	0	99.6	76 - 126				
o-Xylene	20.52	1.0	20	0	103	78 - 122				
sec-Butylbenzene	19.52	1.0	20	0	97.6	77 - 126				
Styrene	21.25	1.0	20	0	106	78 - 123				
tert-Butylbenzene	19.39	1.0	20	0	96.9	78 - 124				
Tetrachloroethene	20.21	1.0	20	0	101	74 - 129				
Toluene	20.59	1.0	20	0	103	80 - 121				
trans-1,2-Dichloroethene	21.3	1.0	20	0	106	75 - 124				
trans-1,3-Dichloropropene	21.37	1.0	20	0	107	73 - 127				
Trichloroethene	21.06	1.0	20	0	105	79 - 123				
Trichlorofluoromethane	21.27	1.0	20	0	106	65 - 141				
Vinyl chloride	18.9	1.0	20	0	94.5	58 - 137				
Surr: 1,2-Dichloroethane-d4	*48.11*	*1.0*	*50*	*0*	*96.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*46.89*	*1.0*	*50*	*0*	*93.8*	*85 - 114*				
Surr: Dibromofluoromethane	*49.3*	*1.0*	*50*	*0*	*98.6*	*80 - 119*				
Surr: Toluene-d8	*48.51*	*1.0*	*50*	*0*	*97.0*	*89 - 112*				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364080 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20061206-02MS** Units: **UG/L** Analysis Date: **26-Jun-2020 17:56**
Client ID: Run ID: **VOA6_364080** SeqNo: **5640396** 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	21.36	1.0	20	0	107	78 - 124				
1,1,1-Trichloroethane	21.44	1.0	20	0	107	74 - 131				
1,1,2,2-Tetrachloroethane	22.21	1.0	20	0	111	71 - 121				
1,1,2-Trichloroethane	21.56	1.0	20	0	108	80 - 119				
1,1-Dichloroethane	20.02	1.0	20	0	100	77 - 125				
1,1-Dichloroethene	20.48	1.0	20	0	102	71 - 131				
1,1-Dichloropropene	20.34	1.0	20	0	102	78 - 125				
1,2,3-Trichlorobenzene	17.55	1.0	20	0	87.7	69 - 129				
1,2,3-Trichloropropane	21.02	1.0	20	0	105	73 - 122				
1,2,4-Trichlorobenzene	18.32	1.0	20	0	91.6	69 - 130				
1,2,4-Trimethylbenzene	21.35	1.0	20	0	107	76 - 124				
1,2-Dibromo-3-chloropropane	22.35	1.0	20	0	112	62 - 128				
1,2-Dibromoethane	21.8	1.0	20	0	109	77 - 121				
1,2-Dichlorobenzene	21.56	1.0	20	0	108	80 - 119				
1,2-Dichloroethane	20.52	1.0	20	0	103	73 - 128				
1,2-Dichloropropane	20.74	1.0	20	0	104	78 - 122				
1,3,5-Trimethylbenzene	21.87	1.0	20	0	109	75 - 124				
1,3-Dichlorobenzene	21.31	1.0	20	0	107	80 - 119				
1,3-Dichloropropane	20.94	1.0	20	0	105	80 - 119				
1,4-Dichlorobenzene	21.08	1.0	20	0	105	79 - 118				
2,2-Dichloropropane	19.81	1.0	20	0	99.1	60 - 139				
2-Butanone	93.02	2.0	40	68.16	62.2	56 - 143				
2-Chlorotoluene	21.28	1.0	20	0	106	79 - 122				
2-Hexanone	44.02	2.0	40	0	110	57 - 139				
4-Chlorotoluene	21.22	1.0	20	0	106	78 - 122				
4-Isopropyltoluene	21.75	1.0	20	0	109	77 - 127				
4-Methyl-2-pentanone	44.14	2.0	40	0	110	67 - 130				
Acetone	45.03	2.0	40	6.281	96.9	39 - 160				
Benzene	20.73	1.0	20	0	104	79 - 120				
Bromobenzene	20.9	1.0	20	0	105	80 - 120				
Bromochloromethane	19.04	1.0	20	0	95.2	78 - 123				
Bromodichloromethane	20.9	1.0	20	0	105	79 - 125				
Bromoform	21.37	1.0	20	0	107	66 - 130				
Bromomethane	18.34	1.0	20	0	91.7	53 - 141				

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Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364080 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20061206-02MS** Units: **UG/L** Analysis Date: **26-Jun-2020 17:56**
Client ID: Run ID: **VOA6_364080** SeqNo: **5640396** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	40.19	2.0	40	0	100	64 - 133				
Carbon tetrachloride	20.25	1.0	20	0	101	72 - 136				
Chlorobenzene	20.87	1.0	20	0	104	82 - 118				
Chloroethane	19.41	1.0	20	0	97.1	60 - 138				
Chloroform	20.75	1.0	20	0	104	79 - 124				
Chloromethane	16.41	1.0	20	0	82.0	50 - 139				
cis-1,2-Dichloroethene	21.22	1.0	20	0	106	78 - 123				
cis-1,3-Dichloropropene	20.71	1.0	20	0	104	75 - 124				
Dibromochloromethane	21.47	1.0	20	0	107	74 - 126				
Dibromomethane	20.3	1.0	20	0	101	79 - 123				
Dichlorodifluoromethane	13.65	1.0	20	0	68.2	32 - 152				
Ethylbenzene	21.46	1.0	20	0	107	79 - 121				
Hexachlorobutadiene	19.91	1.0	20	0	99.5	66 - 134				
Isopropylbenzene	22.03	1.0	20	0	110	72 - 131				
m,p-Xylene	43.76	2.0	40	0	109	80 - 121				
Methylene chloride	19.24	2.0	20	0	96.2	74 - 124				
Naphthalene	19.92	1.0	20	0	99.6	61 - 128				
n-Butylbenzene	21.52	1.0	20	0	108	75 - 128				
n-Propylbenzene	21.72	1.0	20	0	109	76 - 126				
o-Xylene	21.19	1.0	20	0	106	78 - 122				
sec-Butylbenzene	21.91	1.0	20	0	110	77 - 126				
Styrene	21.67	1.0	20	0	108	78 - 123				
tert-Butylbenzene	22.07	1.0	20	0	110	78 - 124				
Tetrachloroethene	22.52	1.0	20	0	113	74 - 129				
Toluene	21.88	1.0	20	0	109	80 - 121				
trans-1,2-Dichloroethene	21.24	1.0	20	0	106	75 - 124				
trans-1,3-Dichloropropene	20.05	1.0	20	0	100	73 - 127				
Trichloroethene	23.11	1.0	20	1.465	108	79 - 123				
Trichlorofluoromethane	20.59	1.0	20	0	103	65 - 141				
Vinyl chloride	18.79	1.0	20	0	93.9	58 - 137				
Surr: 1,2-Dichloroethane-d4	*54.5*	*1.0*	*50*	*0*	*109*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*53.82*	*1.0*	*50*	*0*	*108*	*85 - 114*				
Surr: Dibromofluoromethane	*54.3*	*1.0*	*50*	*0*	*109*	*80 - 119*				
Surr: Toluene-d8	*56.24*	*1.0*	*50*	*0*	*112*	*89 - 112*				S

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364080 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS20061206-02MDS** Units: **UG/L** Analysis Date: **26-Jun-2020 18:19**
Client ID: Run ID: **VOA6_364080** SeqNo: **5640397** 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	21.46	1.0	20	0	107	78 - 124	21.36	0.483	20	
1,1,1-Trichloroethane	21.19	1.0	20	0	106	74 - 131	21.44	1.16	20	
1,1,2,2-Tetrachloroethane	21.93	1.0	20	0	110	71 - 121	22.21	1.31	20	
1,1,2-Trichloroethane	21.3	1.0	20	0	107	80 - 119	21.56	1.22	20	
1,1-Dichloroethane	19.39	1.0	20	0	97.0	77 - 125	20.02	3.2	20	
1,1-Dichloroethene	20.9	1.0	20	0	105	71 - 131	20.48	2.03	20	
1,1-Dichloropropene	20.85	1.0	20	0	104	78 - 125	20.34	2.46	20	
1,2,3-Trichlorobenzene	23.49	1.0	20	0	117	69 - 129	17.55	29	20	R
1,2,3-Trichloropropane	20.22	1.0	20	0	101	73 - 122	21.02	3.89	20	
1,2,4-Trichlorobenzene	21.45	1.0	20	0	107	69 - 130	18.32	15.7	20	
1,2,4-Trimethylbenzene	21.84	1.0	20	0	109	76 - 124	21.35	2.24	20	
1,2-Dibromo-3-chloropropane	21.26	1.0	20	0	106	62 - 128	22.35	5.01	20	
1,2-Dibromoethane	21.08	1.0	20	0	105	77 - 121	21.8	3.32	20	
1,2-Dichlorobenzene	21.36	1.0	20	0	107	80 - 119	21.56	0.941	20	
1,2-Dichloroethane	20.06	1.0	20	0	100	73 - 128	20.52	2.24	20	
1,2-Dichloropropane	20.96	1.0	20	0	105	78 - 122	20.74	1.04	20	
1,3,5-Trimethylbenzene	22.51	1.0	20	0	113	75 - 124	21.87	2.87	20	
1,3-Dichlorobenzene	21.43	1.0	20	0	107	80 - 119	21.31	0.526	20	
1,3-Dichloropropane	20.78	1.0	20	0	104	80 - 119	20.94	0.793	20	
1,4-Dichlorobenzene	21.25	1.0	20	0	106	79 - 118	21.08	0.819	20	
2,2-Dichloropropane	19.1	1.0	20	0	95.5	60 - 139	19.81	3.65	20	
2-Butanone	84.04	2.0	40	68.16	39.7	56 - 143	93.02	10.1	20	S
2-Chlorotoluene	21.26	1.0	20	0	106	79 - 122	21.28	0.102	20	
2-Hexanone	43.18	2.0	40	0	108	57 - 139	44.02	1.93	20	
4-Chlorotoluene	21.19	1.0	20	0	106	78 - 122	21.22	0.104	20	
4-Isopropyltoluene	22.72	1.0	20	0	114	77 - 127	21.75	4.39	20	
4-Methyl-2-pentanone	42.64	2.0	40	0	107	67 - 130	44.14	3.45	20	
Acetone	42.11	2.0	40	6.281	89.6	39 - 160	45.03	6.71	20	
Benzene	20.71	1.0	20	0	104	79 - 120	20.73	0.0882	20	
Bromobenzene	20.98	1.0	20	0	105	80 - 120	20.9	0.345	20	
Bromochloromethane	19.2	1.0	20	0	96.0	78 - 123	19.04	0.794	20	
Bromodichloromethane	20.73	1.0	20	0	104	79 - 125	20.9	0.842	20	
Bromoform	21.13	1.0	20	0	106	66 - 130	21.37	1.12	20	
Bromomethane	18.29	1.0	20	0	91.4	53 - 141	18.34	0.318	20	

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364080 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS20061206-02MDS** Units: **UG/L** Analysis Date: **26-Jun-2020 18:19**
Client ID: Run ID: **VOA6_364080** SeqNo: **5640397** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	39.84	2.0	40	0	99.6	64 - 133	40.19	0.873	20	
Carbon tetrachloride	21.26	1.0	20	0	106	72 - 136	20.25	4.87	20	
Chlorobenzene	21.17	1.0	20	0	106	82 - 118	20.87	1.43	20	
Chloroethane	19.28	1.0	20	0	96.4	60 - 138	19.41	0.711	20	
Chloroform	19.92	1.0	20	0	99.6	79 - 124	20.75	4.11	20	
Chloromethane	16.2	1.0	20	0	81.0	50 - 139	16.41	1.25	20	
cis-1,2-Dichloroethene	20.34	1.0	20	0	102	78 - 123	21.22	4.25	20	
cis-1,3-Dichloropropene	19.98	1.0	20	0	99.9	75 - 124	20.71	3.6	20	
Dibromochloromethane	20.94	1.0	20	0	105	74 - 126	21.47	2.5	20	
Dibromomethane	20.12	1.0	20	0	101	79 - 123	20.3	0.869	20	
Dichlorodifluoromethane	14.23	1.0	20	0	71.1	32 - 152	13.65	4.15	20	
Ethylbenzene	22.06	1.0	20	0	110	79 - 121	21.46	2.77	20	
Hexachlorobutadiene	21.99	1.0	20	0	110	66 - 134	19.91	9.92	20	
Isopropylbenzene	23.08	1.0	20	0	115	72 - 131	22.03	4.67	20	
m,p-Xylene	44.4	2.0	40	0	111	80 - 121	43.76	1.45	20	
Methylene chloride	18.47	2.0	20	0	92.3	74 - 124	19.24	4.09	20	
Naphthalene	24.21	1.0	20	0	121	61 - 128	19.92	19.5	20	
n-Butylbenzene	23.06	1.0	20	0	115	75 - 128	21.52	6.92	20	
n-Propylbenzene	22.81	1.0	20	0	114	76 - 126	21.72	4.9	20	
o-Xylene	21.29	1.0	20	0	106	78 - 122	21.19	0.473	20	
sec-Butylbenzene	23.55	1.0	20	0	118	77 - 126	21.91	7.23	20	
Styrene	21.75	1.0	20	0	109	78 - 123	21.67	0.387	20	
tert-Butylbenzene	23.13	1.0	20	0	116	78 - 124	22.07	4.7	20	
Tetrachloroethene	23.12	1.0	20	0	116	74 - 129	22.52	2.64	20	
Toluene	22.06	1.0	20	0	110	80 - 121	21.88	0.824	20	
trans-1,2-Dichloroethene	20.51	1.0	20	0	103	75 - 124	21.24	3.47	20	
trans-1,3-Dichloropropene	19.52	1.0	20	0	97.6	73 - 127	20.05	2.67	20	
Trichloroethene	23.51	1.0	20	1.465	110	79 - 123	23.11	1.72	20	
Trichlorofluoromethane	20.61	1.0	20	0	103	65 - 141	20.59	0.111	20	
Vinyl chloride	17.67	1.0	20	0	88.3	58 - 137	18.79	6.13	20	
Surr: 1,2-Dichloroethane-d4	*49.58*	*1.0*	*50*	*0*	*99.2*	*81 - 118*	*54.5*	*9.44*	*20*	
Surr: 4-Bromofluorobenzene	*53.37*	*1.0*	*50*	*0*	*107*	*85 - 114*	*53.82*	*0.839*	*20*	
Surr: Dibromofluoromethane	*51.38*	*1.0*	*50*	*0*	*103*	*80 - 119*	*54.3*	*5.52*	*20*	
Surr: Toluene-d8	*55.93*	*1.0*	*50*	*0*	*112*	*89 - 112*	*56.24*	*0.55*	*20*	

ALS Houston, US Date: 13-Jul-20

Client:	Bhate Environmental Associates, Inc.
Project:	LHAAP-58
WorkOrder:	HS20061178

QC BATCH REPORT

Batch ID:	**R364080 (0)**	**Instrument:**	**VOA6**	**Method:**	**VOLATILES ORGANICS BY METHOD 8260C**

The following samples were analyzed in this batch:	HS20061178-01	HS20061178-02	HS20061178-04	HS20061178-05

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364190 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200629** Units: **UG/L** Analysis Date: **29-Jun-2020 12:26**
Client ID: Run ID: **VOA6_364190** SeqNo: **5643344** 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-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	1.0	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
Bromomethane	1.0	1.0								U

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364190 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200629** Units: **UG/L** Analysis Date: **29-Jun-2020 12:26**
Client ID: Run ID: **VOA6_364190** SeqNo: **5643344** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	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	1.0	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	*43.09*	*1.0*	*50*	*0*	*86.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*46.7*	*1.0*	*50*	*0*	*93.4*	*85 - 114*				
Surr: Dibromofluoromethane	*44.82*	*1.0*	*50*	*0*	*89.6*	*80 - 119*				
Surr: Toluene-d8	*50.66*	*1.0*	*50*	*0*	*101*	*89 - 112*				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364190 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200629** Units: **UG/L** Analysis Date: **29-Jun-2020 11:38**
Client ID: Run ID: **VOA6_364190** SeqNo: **5643343** 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	1.0	20	0	95.0	78 - 124				
1,1,1-Trichloroethane	18.88	1.0	20	0	94.4	74 - 131				
1,1,2,2-Tetrachloroethane	19.6	1.0	20	0	98.0	71 - 121				
1,1,2-Trichloroethane	19.42	1.0	20	0	97.1	80 - 119				
1,1-Dichloroethane	17.71	1.0	20	0	88.5	77 - 125				
1,1-Dichloroethene	18.47	1.0	20	0	92.3	71 - 131				
1,1-Dichloropropene	18.31	1.0	20	0	91.6	78 - 125				
1,2,3-Trichlorobenzene	29.76	1.0	20	0	149	69 - 129				S
1,2,3-Trichloropropane	18.93	1.0	20	0	94.7	73 - 122				
1,2,4-Trichlorobenzene	26.32	1.0	20	0	132	69 - 130				S
1,2,4-Trimethylbenzene	18.72	1.0	20	0	93.6	76 - 124				
1,2-Dibromo-3-chloropropane	21.07	1.0	20	0	105	62 - 128				
1,2-Dibromoethane	19.55	1.0	20	0	97.8	77 - 121				
1,2-Dichlorobenzene	19.72	1.0	20	0	98.6	80 - 119				
1,2-Dichloroethane	18.72	1.0	20	0	93.6	73 - 128				
1,2-Dichloropropane	19.31	1.0	20	0	96.6	78 - 122				
1,3,5-Trimethylbenzene	18.8	1.0	20	0	94.0	75 - 124				
1,3-Dichlorobenzene	19.18	1.0	20	0	95.9	80 - 119				
1,3-Dichloropropane	19.14	1.0	20	0	95.7	80 - 119				
1,4-Dichlorobenzene	18.52	1.0	20	0	92.6	79 - 118				
2,2-Dichloropropane	18.43	1.0	20	0	92.2	60 - 139				
2-Butanone	34.9	2.0	40	0	87.2	56 - 143				
2-Chlorotoluene	18.39	1.0	20	0	91.9	79 - 122				
2-Hexanone	39.82	2.0	40	0	99.6	57 - 139				
4-Chlorotoluene	18.41	1.0	20	0	92.1	78 - 122				
4-Isopropyltoluene	18.6	1.0	20	0	93.0	77 - 127				
4-Methyl-2-pentanone	39.23	2.0	40	0	98.1	67 - 130				
Acetone	50.02	2.0	40	0	125	39 - 160				
Benzene	19.26	1.0	20	0	96.3	79 - 120				
Bromobenzene	18.36	1.0	20	0	91.8	80 - 120				
Bromochloromethane	17.91	1.0	20	0	89.5	78 - 123				
Bromodichloromethane	18.86	1.0	20	0	94.3	79 - 125				
Bromoform	19.96	1.0	20	0	99.8	66 - 130				
Bromomethane	18.03	1.0	20	0	90.1	53 - 141				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364190 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200629** Units: **UG/L** Analysis Date: **29-Jun-2020 11:38**
Client ID: Run ID: **VOA6_364190** SeqNo: **5643343** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	36.7	2.0	40	0	91.8	64 - 133				
Carbon tetrachloride	17.88	1.0	20	0	89.4	72 - 136				
Chlorobenzene	18.81	1.0	20	0	94.0	82 - 118				
Chloroethane	18.45	1.0	20	0	92.3	60 - 138				
Chloroform	18.55	1.0	20	0	92.7	79 - 124				
Chloromethane	16.93	1.0	20	0	84.6	50 - 139				
cis-1,2-Dichloroethene	18.51	1.0	20	0	92.6	78 - 123				
cis-1,3-Dichloropropene	19.34	1.0	20	0	96.7	75 - 124				
Dibromochloromethane	19.4	1.0	20	0	97.0	74 - 126				
Dibromomethane	18.92	1.0	20	0	94.6	79 - 123				
Dichlorodifluoromethane	17.34	1.0	20	0	86.7	32 - 152				
Ethylbenzene	18.83	1.0	20	0	94.1	79 - 121				
Hexachlorobutadiene	30.36	1.0	20	0	152	66 - 134				S
Isopropylbenzene	18.93	1.0	20	0	94.6	72 - 131				
m,p-Xylene	38.87	2.0	40	0	97.2	80 - 121				
Methylene chloride	17.91	2.0	20	0	89.6	74 - 124				
Naphthalene	25.67	1.0	20	0	128	61 - 128				S
n-Butylbenzene	19.03	1.0	20	0	95.1	75 - 128				
n-Propylbenzene	18.59	1.0	20	0	92.9	76 - 126				
o-Xylene	19.15	1.0	20	0	95.8	78 - 122				
sec-Butylbenzene	18.95	1.0	20	0	94.8	77 - 126				
Styrene	19.65	1.0	20	0	98.2	78 - 123				
tert-Butylbenzene	18.29	1.0	20	0	91.4	78 - 124				
Tetrachloroethene	19.61	1.0	20	0	98.1	74 - 129				
Toluene	19.47	1.0	20	0	97.4	80 - 121				
trans-1,2-Dichloroethene	19.54	1.0	20	0	97.7	75 - 124				
trans-1,3-Dichloropropene	19.29	1.0	20	0	96.5	73 - 127				
Trichloroethene	19.32	1.0	20	0	96.6	79 - 123				
Trichlorofluoromethane	18.67	1.0	20	0	93.3	65 - 141				
Vinyl chloride	17.75	1.0	20	0	88.7	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.44*	*1.0*	*50*	*0*	*88.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*45.3*	*1.0*	*50*	*0*	*90.6*	*85 - 114*				
Surr: Dibromofluoromethane	*45.67*	*1.0*	*50*	*0*	*91.3*	*80 - 119*				
Surr: Toluene-d8	*47.41*	*1.0*	*50*	*0*	*94.8*	*89 - 112*				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364190 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20061208-15MS** Units: **UG/L** Analysis Date: **29-Jun-2020 14:02**
Client ID: Run ID: **VOA6_364190** SeqNo: **5643346** 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	21.37	1.0	20	0	107	78 - 124				
1,1,1-Trichloroethane	19.18	1.0	20	0	95.9	74 - 131				
1,1,2,2-Tetrachloroethane	21.46	1.0	20	0	107	71 - 121				
1,1,2-Trichloroethane	20.57	1.0	20	0	103	80 - 119				
1,1-Dichloroethane	35.42	1.0	20	16.74	93.4	77 - 125				
1,1-Dichloroethene	60.21	1.0	20	35.55	123	71 - 131				
1,1-Dichloropropene	21.12	1.0	20	0	106	78 - 125				
1,2,3-Trichlorobenzene	21.69	1.0	20	0	108	69 - 129				
1,2,3-Trichloropropane	19.5	1.0	20	0	97.5	73 - 122				
1,2,4-Trichlorobenzene	21.6	1.0	20	0	108	69 - 130				
1,2,4-Trimethylbenzene	23.01	1.0	20	0	115	76 - 124				
1,2-Dibromo-3-chloropropane	19.7	1.0	20	0	98.5	62 - 128				
1,2-Dibromoethane	21.15	1.0	20	0	106	77 - 121				
1,2-Dichlorobenzene	22.17	1.0	20	0	111	80 - 119				
1,2-Dichloroethane	19.23	1.0	20	0	96.2	73 - 128				
1,2-Dichloropropane	20.12	1.0	20	0	101	78 - 122				
1,3,5-Trimethylbenzene	23.49	1.0	20	0	117	75 - 124				
1,3-Dichlorobenzene	22.68	1.0	20	0	113	80 - 119				
1,3-Dichloropropane	20.11	1.0	20	0	101	80 - 119				
1,4-Dichlorobenzene	22.03	1.0	20	0	110	79 - 118				
2,2-Dichloropropane	18.94	1.0	20	0	94.7	60 - 139				
2-Butanone	30.05	2.0	40	0	75.1	56 - 143				
2-Chlorotoluene	22.04	1.0	20	0	110	79 - 122				
2-Hexanone	40.59	2.0	40	0	101	57 - 139				
4-Chlorotoluene	22.07	1.0	20	0	110	78 - 122				
4-Isopropyltoluene	24.71	1.0	20	0	124	77 - 127				
4-Methyl-2-pentanone	39.89	2.0	40	0	99.7	67 - 130				
Acetone	38.29	2.0	40	6.049	80.6	39 - 160				
Benzene	20.38	1.0	20	0	102	79 - 120				
Bromobenzene	21.1	1.0	20	0	106	80 - 120				
Bromochloromethane	16.5	1.0	20	0	82.5	78 - 123				
Bromodichloromethane	19.76	1.0	20	0	98.8	79 - 125				
Bromoform	20.98	1.0	20	0	105	66 - 130				
Bromomethane	15.67	1.0	20	0	78.4	53 - 141				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364190 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20061208-15MS** Units: **UG/L** Analysis Date: **29-Jun-2020 14:02**
Client ID: Run ID: **VOA6_364190** SeqNo: **5643346** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	37.32	2.0	40	0	93.3	64 - 133				
Carbon tetrachloride	21.33	1.0	20	0	107	72 - 136				
Chlorobenzene	21.2	1.0	20	0	106	82 - 118				
Chloroethane	21.55	1.0	20	0	108	60 - 138				
Chloroform	17.54	1.0	20	0	87.7	79 - 124				
Chloromethane	13.98	1.0	20	0	69.9	50 - 139				
cis-1,2-Dichloroethene	21.76	1.0	20	3.49	91.3	78 - 123				
cis-1,3-Dichloropropene	20.1	1.0	20	0	101	75 - 124				
Dibromochloromethane	20.93	1.0	20	0	105	74 - 126				
Dibromomethane	19.35	1.0	20	0	96.8	79 - 123				
Dichlorodifluoromethane	13.47	1.0	20	0	67.4	32 - 152				
Ethylbenzene	22.56	1.0	20	0	113	79 - 121				
Hexachlorobutadiene	26.44	1.0	20	0	132	66 - 134				
Isopropylbenzene	24.04	1.0	20	0	120	72 - 131				
m,p-Xylene	46.5	2.0	40	0	116	80 - 121				
Methylene chloride	15.79	2.0	20	0	79.0	74 - 124				
Naphthalene	21.08	1.0	20	0	105	61 - 128				
n-Butylbenzene	25.21	1.0	20	0	126	75 - 128				
n-Propylbenzene	24.08	1.0	20	0	120	76 - 126				
o-Xylene	22.66	1.0	20	0	113	78 - 122				
sec-Butylbenzene	24.98	1.0	20	0	125	77 - 126				
Styrene	22.07	1.0	20	0	110	78 - 123				
tert-Butylbenzene	24.14	1.0	20	0	121	78 - 124				
Tetrachloroethene	24.53	1.0	20	0	123	74 - 129				
Toluene	22.15	1.0	20	0	111	80 - 121				
trans-1,2-Dichloroethene	19.05	1.0	20	0	95.3	75 - 124				
trans-1,3-Dichloropropene	19.47	1.0	20	0	97.3	73 - 127				
Trichloroethene	25.04	1.0	20	1.378	118	79 - 123				
Trichlorofluoromethane	19.5	1.0	20	0	97.5	65 - 141				
Vinyl chloride	18.6	1.0	20	2.431	80.8	58 - 137				
Surr: 1,2-Dichloroethane-d4	*38.66*	*1.0*	*50*	*0*	*77.3*	*81 - 118*				S
Surr: 4-Bromofluorobenzene	*48.2*	*1.0*	*50*	*0*	*96.4*	*85 - 114*				
Surr: Dibromofluoromethane	*42.99*	*1.0*	*50*	*0*	*86.0*	*80 - 119*				
Surr: Toluene-d8	*54.83*	*1.0*	*50*	*0*	*110*	*89 - 112*				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364190 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS20061208-15MSD** Units: **UG/L** Analysis Date: **29-Jun-2020 14:26**
Client ID: Run ID: **VOA6_364190** SeqNo: **5643347** 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	20.62	1.0	20	0	103	78 - 124	21.37	3.6	20	
1,1,1-Trichloroethane	18.88	1.0	20	0	94.4	74 - 131	19.18	1.61	20	
1,1,2,2-Tetrachloroethane	20.74	1.0	20	0	104	71 - 121	21.46	3.39	20	
1,1,2-Trichloroethane	19.97	1.0	20	0	99.8	80 - 119	20.57	3	20	
1,1-Dichloroethane	34.34	1.0	20	16.74	88.0	77 - 125	35.42	3.11	20	
1,1-Dichloroethene	59.63	1.0	20	35.55	120	71 - 131	60.21	0.965	20	
1,1-Dichloropropene	20.45	1.0	20	0	102	78 - 125	21.12	3.23	20	
1,2,3-Trichlorobenzene	26.03	1.0	20	0	130	69 - 129	21.69	18.2	20	S
1,2,3-Trichloropropane	19.46	1.0	20	0	97.3	73 - 122	19.5	0.229	20	
1,2,4-Trichlorobenzene	23.64	1.0	20	0	118	69 - 130	21.6	9.04	20	
1,2,4-Trimethylbenzene	21.1	1.0	20	0	105	76 - 124	23.01	8.67	20	
1,2-Dibromo-3-chloropropane	22.01	1.0	20	0	110	62 - 128	19.7	11.1	20	
1,2-Dibromoethane	20.4	1.0	20	0	102	77 - 121	21.15	3.58	20	
1,2-Dichlorobenzene	21.09	1.0	20	0	105	80 - 119	22.17	5.03	20	
1,2-Dichloroethane	18.42	1.0	20	0	92.1	73 - 128	19.23	4.32	20	
1,2-Dichloropropane	19.19	1.0	20	0	95.9	78 - 122	20.12	4.77	20	
1,3,5-Trimethylbenzene	21.82	1.0	20	0	109	75 - 124	23.49	7.35	20	
1,3-Dichlorobenzene	20.99	1.0	20	0	105	80 - 119	22.68	7.7	20	
1,3-Dichloropropane	19.58	1.0	20	0	97.9	80 - 119	20.11	2.68	20	
1,4-Dichlorobenzene	20.45	1.0	20	0	102	79 - 118	22.03	7.42	20	
2,2-Dichloropropane	18.17	1.0	20	0	90.8	60 - 139	18.94	4.16	20	
2-Butanone	30.77	2.0	40	0	76.9	56 - 143	30.05	2.35	20	
2-Chlorotoluene	20.63	1.0	20	0	103	79 - 122	22.04	6.64	20	
2-Hexanone	40.29	2.0	40	0	101	57 - 139	40.59	0.744	20	
4-Chlorotoluene	20.65	1.0	20	0	103	78 - 122	22.07	6.64	20	
4-Isopropyltoluene	22.64	1.0	20	0	113	77 - 127	24.71	8.76	20	
4-Methyl-2-pentanone	40.53	2.0	40	0	101	67 - 130	39.89	1.58	20	
Acetone	37.44	2.0	40	6.049	78.5	39 - 160	38.29	2.24	20	
Benzene	19.88	1.0	20	0	99.4	79 - 120	20.38	2.45	20	
Bromobenzene	19.95	1.0	20	0	99.7	80 - 120	21.1	5.63	20	
Bromochloromethane	15.82	1.0	20	0	79.1	78 - 123	16.5	4.21	20	
Bromodichloromethane	19.1	1.0	20	0	95.5	79 - 125	19.76	3.38	20	
Bromoform	19.74	1.0	20	0	98.7	66 - 130	20.98	6.09	20	
Bromomethane	15.44	1.0	20	0	77.2	53 - 141	15.67	1.47	20	

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364190 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS20061208-15MSD** Units: **UG/L** Analysis Date: **29-Jun-2020 14:26**
Client ID: Run ID: **VOA6_364190** SeqNo: **5643347** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	36.99	2.0	40	0	92.5	64 - 133	37.32	0.901	20	
Carbon tetrachloride	21.17	1.0	20	0	106	72 - 136	21.33	0.752	20	
Chlorobenzene	20.46	1.0	20	0	102	82 - 118	21.2	3.54	20	
Chloroethane	22.48	1.0	20	0	112	60 - 138	21.55	4.21	20	
Chloroform	16.85	1.0	20	0	84.2	79 - 124	17.54	4.02	20	
Chloromethane	13.52	1.0	20	0	67.6	50 - 139	13.98	3.33	20	
cis-1,2-Dichloroethene	21.08	1.0	20	3.49	88.0	78 - 123	21.76	3.14	20	
cis-1,3-Dichloropropene	19.41	1.0	20	0	97.1	75 - 124	20.1	3.49	20	
Dibromochloromethane	19.81	1.0	20	0	99.1	74 - 126	20.93	5.49	20	
Dibromomethane	18.61	1.0	20	0	93.1	79 - 123	19.35	3.91	20	
Dichlorodifluoromethane	13.61	1.0	20	0	68.0	32 - 152	13.47	1.01	20	
Ethylbenzene	21.36	1.0	20	0	107	79 - 121	22.56	5.44	20	
Hexachlorobutadiene	27.08	1.0	20	0	135	66 - 134	26.44	2.39	20	S
Isopropylbenzene	21.93	1.0	20	0	110	72 - 131	24.04	9.16	20	
m,p-Xylene	43.64	2.0	40	0	109	80 - 121	46.5	6.36	20	
Methylene chloride	15.07	2.0	20	0	75.4	74 - 124	15.79	4.68	20	
Naphthalene	24.03	1.0	20	0	120	61 - 128	21.08	13.1	20	
n-Butylbenzene	23.35	1.0	20	0	117	75 - 128	25.21	7.69	20	
n-Propylbenzene	21.91	1.0	20	0	110	76 - 126	24.08	9.42	20	
o-Xylene	20.96	1.0	20	0	105	78 - 122	22.66	7.8	20	
sec-Butylbenzene	22.72	1.0	20	0	114	77 - 126	24.98	9.46	20	
Styrene	20.94	1.0	20	0	105	78 - 123	22.07	5.25	20	
tert-Butylbenzene	22.2	1.0	20	0	111	78 - 124	24.14	8.38	20	
Tetrachloroethene	23.14	1.0	20	0	116	74 - 129	24.53	5.84	20	
Toluene	21.5	1.0	20	0	108	80 - 121	22.15	2.94	20	
trans-1,2-Dichloroethene	18.4	1.0	20	0	92.0	75 - 124	19.05	3.49	20	
trans-1,3-Dichloropropene	19.06	1.0	20	0	95.3	73 - 127	19.47	2.09	20	
Trichloroethene	23.32	1.0	20	1.378	110	79 - 123	25.04	7.11	20	
Trichlorofluoromethane	19.84	1.0	20	0	99.2	65 - 141	19.5	1.73	20	
Vinyl chloride	18.52	1.0	20	2.431	80.4	58 - 137	18.6	0.443	20	
Surr: 1,2-Dichloroethane-d4	*38.28*	*1.0*	*50*	*0*	*76.6*	*81 - 118*	*38.66*	*0.981*	*20*	S
Surr: 4-Bromofluorobenzene	*48.96*	*1.0*	*50*	*0*	*97.9*	*85 - 114*	*48.2*	*1.56*	*20*	
Surr: Dibromofluoromethane	*42.57*	*1.0*	*50*	*0*	*85.1*	*80 - 119*	*42.99*	*0.989*	*20*	
Surr: Toluene-d8	*54.3*	*1.0*	*50*	*0*	*109*	*89 - 112*	*54.83*	*0.981*	*20*	

ALS Houston, US Date: 13-Jul-20

Client:	Bhate Environmental Associates, Inc.
Project:	LHAAP-58
WorkOrder:	HS20061178

QC BATCH REPORT

Batch ID:	**R364190 (0)**	**Instrument:**	**VOA6**	**Method:**	**VOLATILES ORGANICS BY METHOD 8260C**

The following samples were analyzed in this batch: HS20061178-03

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364313 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **WBLKW1-062420** Units: **mg/L** Analysis Date: **24-Jun-2020 11:19**
Client ID: Run ID: **ICS-Integrion_364313** SeqNo: **5646076** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	0.100	0.100								U
Nitrogen, Nitrite (As N)	0.100	0.100								U
Sulfate	0.2308	0.500								J

LCS Sample ID: **WLCSW1-062420** Units: **mg/L** Analysis Date: **24-Jun-2020 11:37**
Client ID: Run ID: **ICS-Integrion_364313** SeqNo: **5646077** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	3.947	0.100	4	0	98.7	80 - 120				
Nitrogen, Nitrite (As N)	4.35	0.100	4	0	109	80 - 120				
Sulfate	19.6	0.500	20	0	98.0	80 - 120				

MS Sample ID: **HS20061149-01MS** Units: **mg/L** Analysis Date: **25-Jun-2020 02:33**
Client ID: Run ID: **ICS-Integrion_364313** SeqNo: **5646105** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	2.507	0.100	2	0.5108	99.8	80 - 120				
Nitrogen, Nitrite (As N)	2.271	0.100	2	0	114	80 - 120				
Sulfate	11.02	0.500	10	1.388	96.4	80 - 120				

MSD Sample ID: **HS20061149-01MSD** Units: **mg/L** Analysis Date: **25-Jun-2020 02:51**
Client ID: Run ID: **ICS-Integrion_364313** SeqNo: **5646106** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Nitrate (As N)	2.47	0.100	2	0.5108	98.0	80 - 120	2.507	1.5	20	
Nitrogen, Nitrite (As N)	2.245	0.100	2	0	112	80 - 120	2.271	1.15	20	
Sulfate	10.85	0.500	10	1.388	94.6	80 - 120	11.02	1.6	20	

The following samples were analyzed in this batch: HS20061178-01 HS20061178-02 HS20061178-03 HS20061178-04

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061178

QC BATCH REPORT

Batch ID: R364738 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK-070820** Units: **mg/L** Analysis Date: **08-Jul-2020 00:29**
Client ID: Run ID: **ICS-Integrion_364738** SeqNo: **5655203** 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	0.225	0.500								J

LCS Sample ID: **LCS-070820** Units: **mg/L** Analysis Date: **08-Jul-2020 01:23**
Client ID: Run ID: **ICS-Integrion_364738** SeqNo: **5655206** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.83	0.500	20	0	99.2	80 - 120				
Sulfate	19.61	0.500	20	0	98.0	80 - 120				

MS Sample ID: **HS20061283-02MS** Units: **mg/L** Analysis Date: **08-Jul-2020 07:25**
Client ID: Run ID: **ICS-Integrion_364738** SeqNo: **5655221** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	49.3	0.500	10	39.16	101	80 - 120				
Sulfate	33.07	0.500	10	23.77	93.0	80 - 120				

MSD Sample ID: **HS20061283-02MSD** Units: **mg/L** Analysis Date: **08-Jul-2020 07:43**
Client ID: Run ID: **ICS-Integrion_364738** SeqNo: **5655222** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	48.93	0.500	10	39.16	97.7	80 - 120	49.3	0.753	20	
Sulfate	32.91	0.500	10	23.77	91.5	80 - 120	33.07	0.475	20	

The following samples were analyzed in this batch: HS20061178-01 HS20061178-02 HS20061178-03 HS20061178-04

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: **HS20061178**

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

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2019-2020	31-Jul-2020
North Carolina	624-2020	31-Dec-2020
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

ALS Houston, US Date: 13-Jul-20

Sample Receipt Checklist

Work Order ID: HS20061178 **Date/Time Received:** 24-Jun-2020 09:30

Client Name: Bhate Environmental **Received by:** Jared R. Makan

Completed By: /S/ Paresh M. Giga (eSignature) 24-Jun-2020 16:30 (Date/Time) **Reviewed by:** (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	IR25
Cooler(s)/Kit(s):	44254	
Date/Time sample(s) sent to storage:	6/24/2020 16:50	

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:	Jared R. Makan		

Login Notes: 35AWW08_062320 Metals pH >2 (5).
Preserved with 0.5ml HNO3
6/24/2020 15:45 Final pH (1)

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

bhate ENVIRONMENTAL CONSERVATION ENERGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	VOC	MEE	TOC	Carbon Dioxide	Anions	Alkalinity				Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
							Sample Analysis Requested [5]										Quality Assurance Samples [6]			
35AWW09_062320	23JUN2020	1005	-	N		WG	12	X	X	X	X	X	X							
03WW01_062320	23JUN2020	1100	-	N		WG	12	X	X	X	X	X	X							
35AWW08_062320	23JUN2020	1205	-	N		WG	12	X	X	X	X	X	X							
35AWW11_062320	23JUN2020	1325	-	N		WG	11	X	X	X	X	X								
TRIP BLANK	23JUN2020		-	TB		W	2	X												
			-																	
			-																	
			-																	
			-																	
			-																	
			-																	

HS20061178
Bhate Environmental Associates, Inc.
LHAAP-58

COMMENTS: Cooler 44254 1225
Temp 1.1°C CFOU

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/23/20	1430	1. B. Mmmm	6/24/20	09:30
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

Fed ____ Ex ____ Airbill ____ Number:

Analytical Lab: ALS 10450 Stanciff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

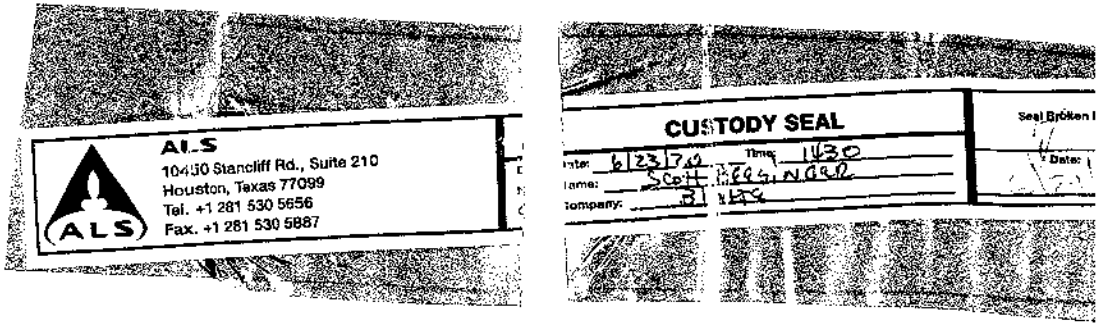
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

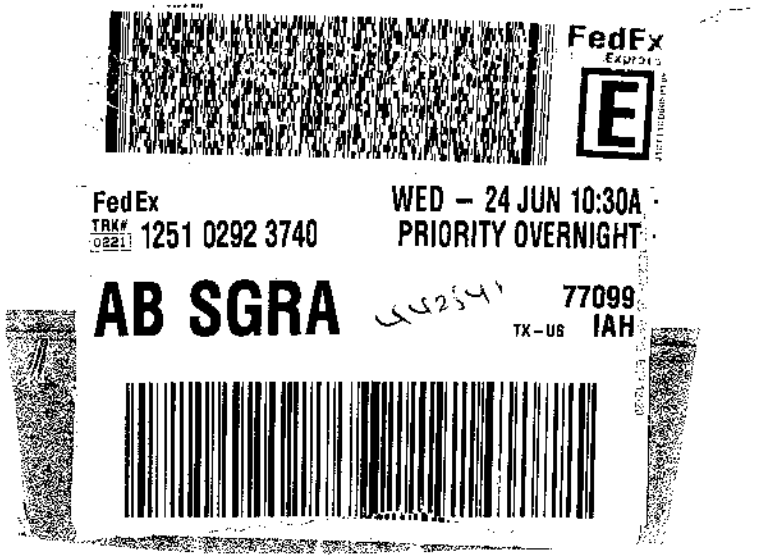
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control)


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
CUSTODY SEAL
Seal Broken
Date: 6/23/10
Time: 1630
Name: Scott
Company: BJ


FedEx
Express
FedEx
TRK# 0221 1251 0292 3740
WED – 24 JUN 10:30A
PRIORITY OVERNIGHT
AB SGRA
77099
TX-US IAH

July 08, 2020 Service Request No:R2005353

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

Laboratory Results for: LHAAP / Site 58

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory June 24, 2020
For your reference, these analyses have been assigned our service request number **R2005353.**

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7471. You may also contact me via email at Brady.Kalkman@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Brady Kalkman
Project Manager

ADDRESS 1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
PHONE +1 585 288 5380 | FAX +1 585 288 8475
ALS Group USA, Corp.
dba ALS Environmental

ALS Environmental
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ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

1565 Jefferson Rd, Building 300, Rochester, NY 14623 | 585-288-5380 | www.alsglobal.com

Client: ALS Environmental - US
Project: LHAAP / Site 58
Sample Matrix: Water

Service Request: R2005353
Date Received: 06/24/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Three water samples were received for analysis at ALS Environmental on 06/24/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivoa GC:

No significant anomalies were noted with this analysis.

Approved by _____ Date 07/08/2020

SAMPLE DETECTION SUMMARY

CLIENT ID: 35AWW08_062320			Lab ID: R2005353-002			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Acetic Acid	6.1		0.56	4.0	mg/L	Organic Acids
Lactic Acid	1.8	J	0.14	2.0	mg/L	Organic Acids

CLIENT ID: 35AWW11_062320			Lab ID: R2005353-003			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Acetic Acid	0.65	J	0.56	4.0	mg/L	Organic Acids

Sample Receipt Information

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client: ALS Environmental - US
Project: LHAAP / Site 58

Service Request:R2005353

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
R2005353-001	03WW01_062320	6/23/2020	1100
R2005353-002	35AWW08_062320	6/23/2020	1205
R2005353-003	35AWW11_062320	6/23/2020	1325

bhate ENVIRONMENTAL CONSTRUCTION UNLIMITED

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

UMS Number: ____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Sample Analysis Requested (5): Number of containers	Volatile Fatty Acids										Quality Assurance Samples (6): Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
03WW01-062320	23Jun2020	1100	-		N	WG	1	X													
35AWW08-062320	23Jun2020	1205	-		N	WG	1	X													
35AWW11-062320	23Jun2020	1325	-		N	WG	1	X													
			-																		
			-																		
			-																		
			-																		
			-																		
			-																		

COMMENTS: ____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/23/20	1430	1. [signature]	6/24/2020	0910
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.: ____

Method of Shipment: ____

Fed Ex ____ Airbill Number: ____

Analytical Lab: ALS 10450 Stanclift Rd. Suite 210 Houston TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD= Matrix Spike Duplicate, AB = Ambient Bl

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment I

R2005353 5
ALS Laboratory Group
LHAAP / Site 58

Cooler Receipt and Preservation Check Form

R2005353 5
ALS Laboratory Group
LHAAP / Site 68

Project/Client Shaw Folder Number

Cooler received on 6/24/2020 by: @

COURIER: ALS UPS (FEDEX) VELOCITY CLIENT

1	Were **Custody seals** on outside of cooler?	(Y) N	5a	**Perchlorate** samples have required headspace?	Y N (NA)
2	**Custody papers** properly completed (ink, signed)?	(Y) N	5b	Did VOA vials, Alk,or Sulfide have sig* **bubbles**?	Y N (NA)
3	Did all bottles arrive in good **condition** (unbroken)?	(Y) N	6	Where did the bottles originate?	(ALS/ROC) CLIENT
4	Circle: (**Wet Ice**) **Dry Ice** **Gel packs** present?	(Y) N	7	Soil VOA received as: Bulk Encore 5035set	(NA)

3. Temperature Readings Date: 6/24/2020 Time: 0953 ID: IR#7 (IR#10) From: (Temp Blank) Sample Bottle

Observed Temp (°C)	4.6						
Within 0-6°C?	(Y) N	Y N	Y N	Y N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed (described below) Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R002 by @ on 6/24/2020 at 1000
5035 samples placed in storage location: _____ by _____ on _____ at _____ within 48 hours of sampling? Y N

Cooler Breakdown/Preservation Check**: Date: 6/24/2020 Time: 1635 by: JN

9.	Were all bottle labels complete (*i.e.* analysis, preservation, etc.)?	(YES)	NO	
10.	Did all bottle labels and tags agree with custody papers?	(YES)	NO	
11.	Were correct containers used for the tests indicated?	(YES)	NO	
12.	Were 5035 vials acceptable (no extra labels, not leaking)?	YES	NO	(N/A)
13.	Air Samples: Cassettes / Tubes Intact with MS? Canisters Pressurized		Tedlar® Bags Inflated	(N/A)

pH	Lot of test paper	Reagent	Preserved? Yes	Preserved? No	Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
≥12		NaOH								
≤2		HNO_3								
≤2		H_2SO_4								
<4		$NaHSO_4$								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add $Na_2S_2O_3$ (625, 608, CN), ascorbic (phenol).					
		$Na_2S_2O_3$								
		ZnAcetate	-	-			**VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).			
		HCl	**	**						

Bottle lot numbers: 041370-15mC
Explain all Discrepancies/ Other Comments:

HPROD	BULK
HTR	FLDT
SUB	HGFB
ALS	LL3541

Labels secondary reviewed by: JN
PC Secondary Review: _____

*significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

ALS Group USA, Corp.
dba ALS Environmental

Internal Chain of Custody Report

Client: ALS Laboratory Group **Service Request:** R2005353
Project: LHAAP / Site 58

Bottle ID	Methods	Date	Time	Sample Location / User	Disposed On
R2005353-001.01					
	Organic Acids				
		6/24/2020	1639	SMO / DWARD	
		6/24/2020	1646	R-002 / DWARD	
		6/30/2020	1550	In Lab / AFELSER	
		6/30/2020	1648	R-002 / AFELSER	
R2005353-002.01					
	Organic Acids				
		6/24/2020	1639	SMO / DWARD	
		6/24/2020	1646	R-002 / DWARD	
		6/30/2020	1550	In Lab / AFELSER	
		6/30/2020	1648	R-002 / AFELSER	
R2005353-003.01					
	Organic Acids				
		6/24/2020	1639	SMO / DWARD	
		6/24/2020	1646	R-002 / DWARD	
		6/30/2020	1550	In Lab / AFELSER	
		6/30/2020	1648	R-002 / AFELSER	

Miscellaneous Forms

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

ALS Environmental

REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the ñNotesò column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an ñimmediateò hold time criteria.

Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (Ó100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

Rochester Lab ID # for State Certifications[1]

Connecticut ID # PH0556	Maine ID #NY0032	Pennsylvania ID# 68-786
Delaware Approved	New Hampshire ID # 2941	Rhode Island ID # 158
DoD ELAP #65817	New York ID # 10145	Virginia #460167
Florida ID # E87674	North Carolina #676	

[1] Analyses were performed according to our laboratoryôs NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental

ALS Laboratory Group

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client:	ALS Environmental - US	**Service Request:**	R2005353
Project:	LHAAP / Site 58/		

Sample Name:	03WW01_062320	**Date Collected:**	06/23/20
Lab Code:	R2005353-001	**Date Received:**	06/24/20
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name:	35AWW08_062320	**Date Collected:**	06/23/20
Lab Code:	R2005353-002	**Date Received:**	06/24/20
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name:	35AWW11_062320	**Date Collected:**	06/23/20
Lab Code:	R2005353-003	**Date Received:**	06/24/20
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	

Sample Results

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
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Semivolatile Organic Compounds by GC

ALS Environmental—Rochester Laboratory
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ALS Group USA, Corp.
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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005353
Project:	LHAAP / Site 58	**Date Collected:**	06/23/20 11:00
Sample Matrix:	Water	**Date Received:**	06/24/20 09:40
Sample Name:	03WW01_062320	**Units:**	mg/L
Lab Code:	R2005353-001	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.20	0.10	0.016	1	07/02/20 03:32	
Acetic Acid	ND	U	4.0	2.0	0.56	1	07/02/20 03:32	
Butanoic Acid (Butyric Acid)	ND	U	2.0	1.0	0.32	1	07/02/20 03:32	
Lactic Acid	ND	U	2.0	1.0	0.14	1	07/02/20 03:32	
Propionic Acid	ND	U	2.0	1.0	0.19	1	07/02/20 03:32	

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005353
Project:	LHAAP / Site 58	**Date Collected:**	06/23/20 12:05
Sample Matrix:	Water	**Date Received:**	06/24/20 09:40
Sample Name:	35AWW08_062320	**Units:**	mg/L
Lab Code:	R2005353-002	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.20	0.10	0.016	1	07/02/20 04:38	
Acetic Acid	**6.1**		4.0	2.0	0.56	1	07/02/20 04:38	
Butanoic Acid (Butyric Acid)	ND	U	2.0	1.0	0.32	1	07/02/20 04:38	
Lactic Acid	**1.8**	**J**	2.0	1.0	0.14	1	07/02/20 04:38	
Propionic Acid	ND	U	2.0	1.0	0.19	1	07/02/20 04:38	

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005353
Project:	LHAAP / Site 58	**Date Collected:**	06/23/20 13:25
Sample Matrix:	Water	**Date Received:**	06/24/20 09:40
Sample Name:	35AWW11_062320	**Units:**	mg/L
Lab Code:	R2005353-003	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.20	0.10	0.016	1	07/02/20 05:41	
Acetic Acid	**0.65**	**J**	4.0	2.0	0.56	1	07/02/20 05:41	
Butanoic Acid (Butyric Acid)	ND	U	2.0	1.0	0.32	1	07/02/20 05:41	
Lactic Acid	ND	U	2.0	1.0	0.14	1	07/02/20 05:41	
Propionic Acid	ND	U	2.0	1.0	0.19	1	07/02/20 05:41	

QC Summary Forms

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QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	R2005353
Project:	LHAAP / Site 58	**Date Collected:**	N/A
Sample Matrix:	Water	**Date Received:**	N/A
		Date Analyzed:	07/2/20

Duplicate Matrix Spike Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Sample Name:	Batch QC	**Units:**	mg/L
Lab Code:	R2005464-001	**Basis:**	NA
Analysis Method:	Organic Acids		

		Matrix Spike RQ2007136-07			Duplicate Matrix Spike RQ2007136-08					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	ND U	1.52	2.00	76	1.43	2.00	72 *	73-122	6	30
Acetic Acid	ND U	19.8	20.1	99	18.4	20.1	92	80-130	8	30
Butanoic Acid (Butyric Acid)	ND U	20.1	20.1	100	17.8	20.1	89	86-128	12	30
Lactic Acid	ND U	19.0	20.0	95	17.7	20.0	89	81-114	7	30
Propionic Acid	ND U	20.5	20.0	102	18.6	20.0	93	63-153	10	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

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QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58
Sample Matrix: Water

Service Request: R2005353
Date Analyzed: 07/01/20 14:56

Method Blank Summary

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Sample Name: Method Blank
Lab Code: RQ2007136-02

Instrument ID:R-HPLC-05
File ID:I:\ACQUDATA\hplc05\data\070120\A0005449.D\

Analysis Method: Organic Acids
Analysis Lot:686010

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	RQ2007136-03	I:\ACQUDATA\hplc05\data\070120\A0005450.D\	07/01/20 16:02
Duplicate Lab Control Sample	RQ2007136-04	I:\ACQUDATA\hplc05\data\070120\A0005451.D\	07/01/20 17:05
03WW01_062320	R2005353-001	I:\ACQUDATA\hplc05\data\070120\A0005461.D\	07/02/20 03:32
35AWW08_062320	R2005353-002	I:\ACQUDATA\hplc05\data\070120\A0005462.D\	07/02/20 04:38
35AWW11_062320	R2005353-003	I:\ACQUDATA\hplc05\data\070120\A0005463.D\	07/02/20 05:41
Batch QC	R2005464-001	I:\ACQUDATA\hplc05\data\070120\A0005464.D\	07/02/20 06:44
Batch QCMS	RQ2007136-07	I:\ACQUDATA\hplc05\data\070120\A0005465.D\	07/02/20 07:44
Batch QCDMS	RQ2007136-08	I:\ACQUDATA\hplc05\data\070120\A0005467.D\	07/02/20 09:50

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005353
Project:	LHAAP / Site 58	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	mg/L
Lab Code:	RQ2007136-02	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.20	0.10	0.016	1	07/01/20 14:56	
Acetic Acid	ND	U	4.0	2.0	0.56	1	07/01/20 14:56	
Butanoic Acid (Butyric Acid)	ND	U	2.0	1.0	0.32	1	07/01/20 14:56	
Lactic Acid	ND	U	2.0	1.0	0.14	1	07/01/20 14:56	
Propionic Acid	ND	U	2.0	1.0	0.19	1	07/01/20 14:56	

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QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58
Sample Matrix: Water

Service Request: R2005353
Date Analyzed: 07/01/20 16:02

Lab Control Sample Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Sample Name: Lab Control Sample
Lab Code: RQ2007136-03

Instrument ID:R-HPLC-05
File ID:I:\ACQUDATA\hplc05\data\070120\A0005450.D\

Analysis Method: Organic Acids
Analysis Lot:686010

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	RQ2007136-02	I:\ACQUDATA\hplc05\data\070120\A0005449.D\	07/01/20 14:56
Duplicate Lab Control Sample	RQ2007136-04	I:\ACQUDATA\hplc05\data\070120\A0005451.D\	07/01/20 17:05
03WW01_062320	R2005353-001	I:\ACQUDATA\hplc05\data\070120\A0005461.D\	07/02/20 03:32
35AWW08_062320	R2005353-002	I:\ACQUDATA\hplc05\data\070120\A0005462.D\	07/02/20 04:38
35AWW11_062320	R2005353-003	I:\ACQUDATA\hplc05\data\070120\A0005463.D\	07/02/20 05:41
Batch QC	R2005464-001	I:\ACQUDATA\hplc05\data\070120\A0005464.D\	07/02/20 06:44
Batch QCMS	RQ2007136-07	I:\ACQUDATA\hplc05\data\070120\A0005465.D\	07/02/20 07:44
Batch QCDMS	RQ2007136-08	I:\ACQUDATA\hplc05\data\070120\A0005467.D\	07/02/20 09:50

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QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58
Sample Matrix: Water

Service Request: R2005353
Date Analyzed: 07/01/20

Duplicate Lab Control Sample Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Units:mg/L
Basis:NA

		Lab Control Sample			Duplicate Lab Control Sample					
		RQ2007136-03			RQ2007136-04					
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	Organic Acids	1.95	2.00	98	1.74	2.00	87	73-122	11	30
Acetic Acid	Organic Acids	24.8	20.1	123	22.1	20.1	110	80-130	11	30
Butanoic Acid (Butyric Acid)	Organic Acids	23.5	20.1	117	21.2	20.1	106	86-128	10	30
Lactic Acid	Organic Acids	22.9	20.0	114	21.0	20.0	105	81-114	9	30
Propionic Acid	Organic Acids	25.3	20.0	126	22.7	20.0	113	63-153	11	30

Raw Data

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005353
Project:	LHAAP / Site 58	**Date Collected:**	06/23/20 11:00
Sample Matrix:	Water	**Date Received:**	06/24/20 09:40
Sample Name:	03WW01_062320	**Units:**	mg/L
Lab Code:	R2005353-001	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.20	0.10	0.016	1	07/02/20 03:32	
Acetic Acid	ND	U	4.0	2.0	0.56	1	07/02/20 03:32	
Butanoic Acid (Butyric Acid)	ND	U	2.0	1.0	0.32	1	07/02/20 03:32	
Lactic Acid	ND	U	2.0	1.0	0.14	1	07/02/20 03:32	
Propionic Acid	ND	U	2.0	1.0	0.19	1	07/02/20 03:32	

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005353
Project:	LHAAP / Site 58	**Date Collected:**	06/23/20 12:05
Sample Matrix:	Water	**Date Received:**	06/24/20 09:40
Sample Name:	35AWW08_062320	**Units:**	mg/L
Lab Code:	R2005353-002	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.20	0.10	0.016	1	07/02/20 04:38	
Acetic Acid	**6.1**		4.0	2.0	0.56	1	07/02/20 04:38	
Butanoic Acid (Butyric Acid)	ND	U	2.0	1.0	0.32	1	07/02/20 04:38	
Lactic Acid	**1.8**	**J**	2.0	1.0	0.14	1	07/02/20 04:38	
Propionic Acid	ND	U	2.0	1.0	0.19	1	07/02/20 04:38	

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005353
Project:	LHAAP / Site 58	**Date Collected:**	06/23/20 13:25
Sample Matrix:	Water	**Date Received:**	06/24/20 09:40
Sample Name:	35AWW11_062320	**Units:**	mg/L
Lab Code:	R2005353-003	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.20	0.10	0.016	1	07/02/20 05:41	
Acetic Acid	**0.65**	**J**	4.0	2.0	0.56	1	07/02/20 05:41	
Butanoic Acid (Butyric Acid)	ND	U	2.0	1.0	0.32	1	07/02/20 05:41	
Lactic Acid	ND	U	2.0	1.0	0.14	1	07/02/20 05:41	
Propionic Acid	ND	U	2.0	1.0	0.19	1	07/02/20 05:41	

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005461.D
Signal(s) : dad1C.ch
Acq On : ~~30-Dec-2000, 02:47:58~~ 02-Jul-2020, 03:32
Operator : A.Felser
Sample : R2005353-001
Misc :
ALS Vial : 12 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	0.000	0	N.D.	ppm	
2) T	Pyruvic acid	0.000	0	N.D.	ppm	
3) T	Lactic Acid	0.000	0	N.D.	ppm	d
4) T	Acetic Acid	0.000	0	N.D.	ppm	d
5) T	Propionic Acid	0.000	0	N.D.	ppm	d
6) T	Butyric Acid	0.000	0	N.D.	ppm	

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

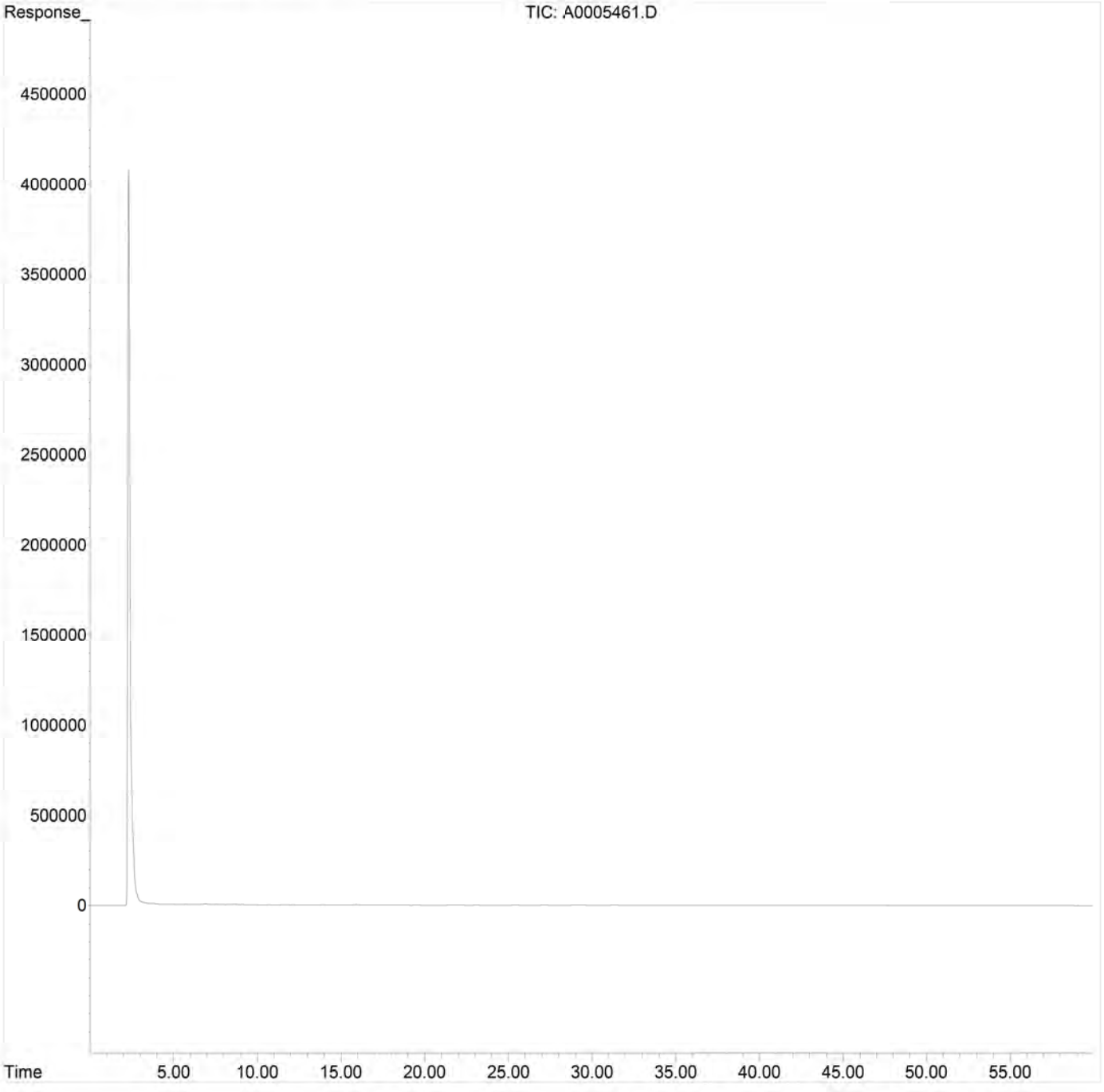
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005461.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:47:58
Operator : A.Felser
Sample : R2005353-001
Misc :
ALS Vial : 12 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

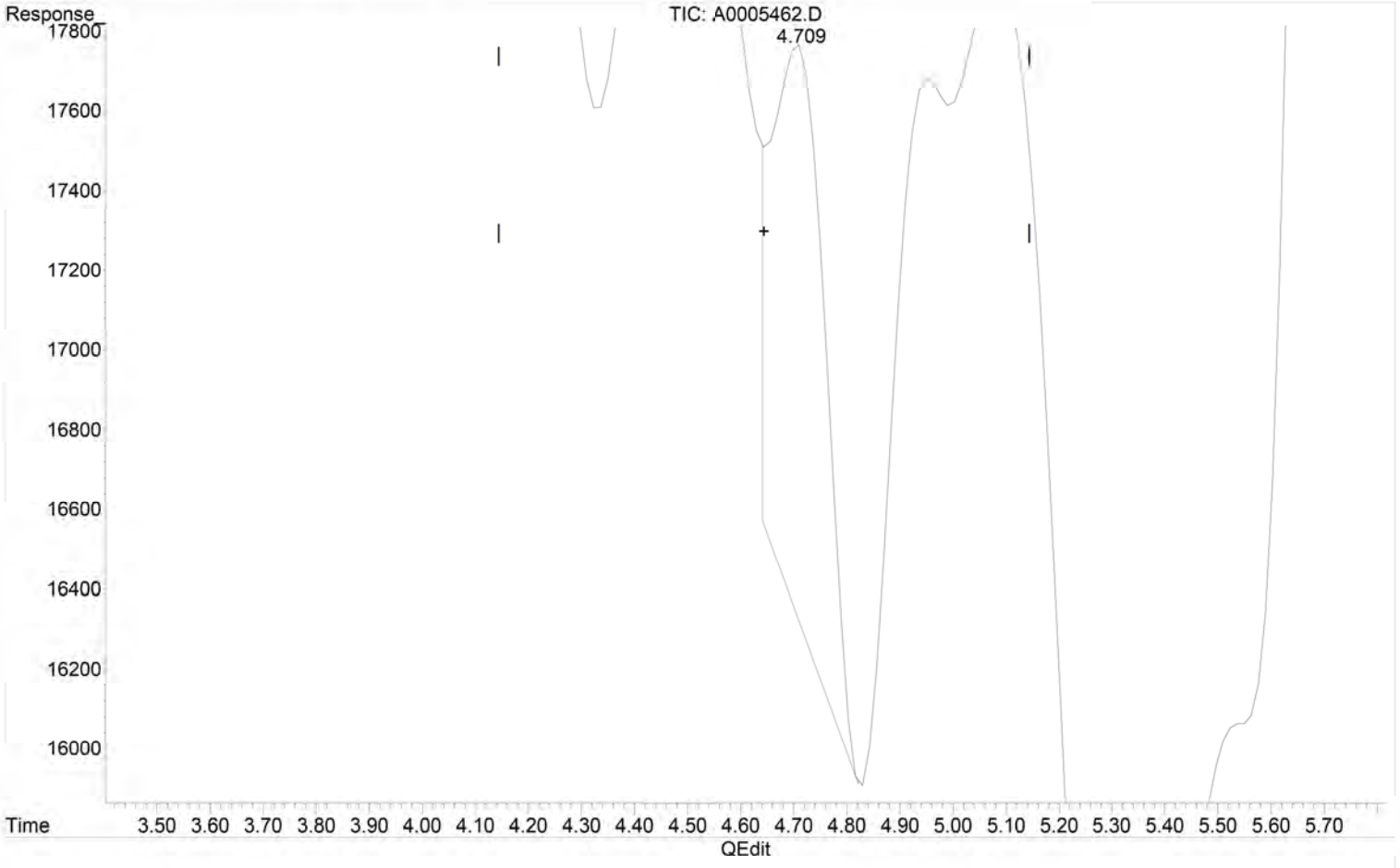


Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005462.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 04:38:45
Operator : A.Felser
Sample : R2005353-002
Misc :
ALS Vial : 13 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:12 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.709min 1.756 ppm m

response 99041

Manual Integration:

After

Poor integration.

07/02/20

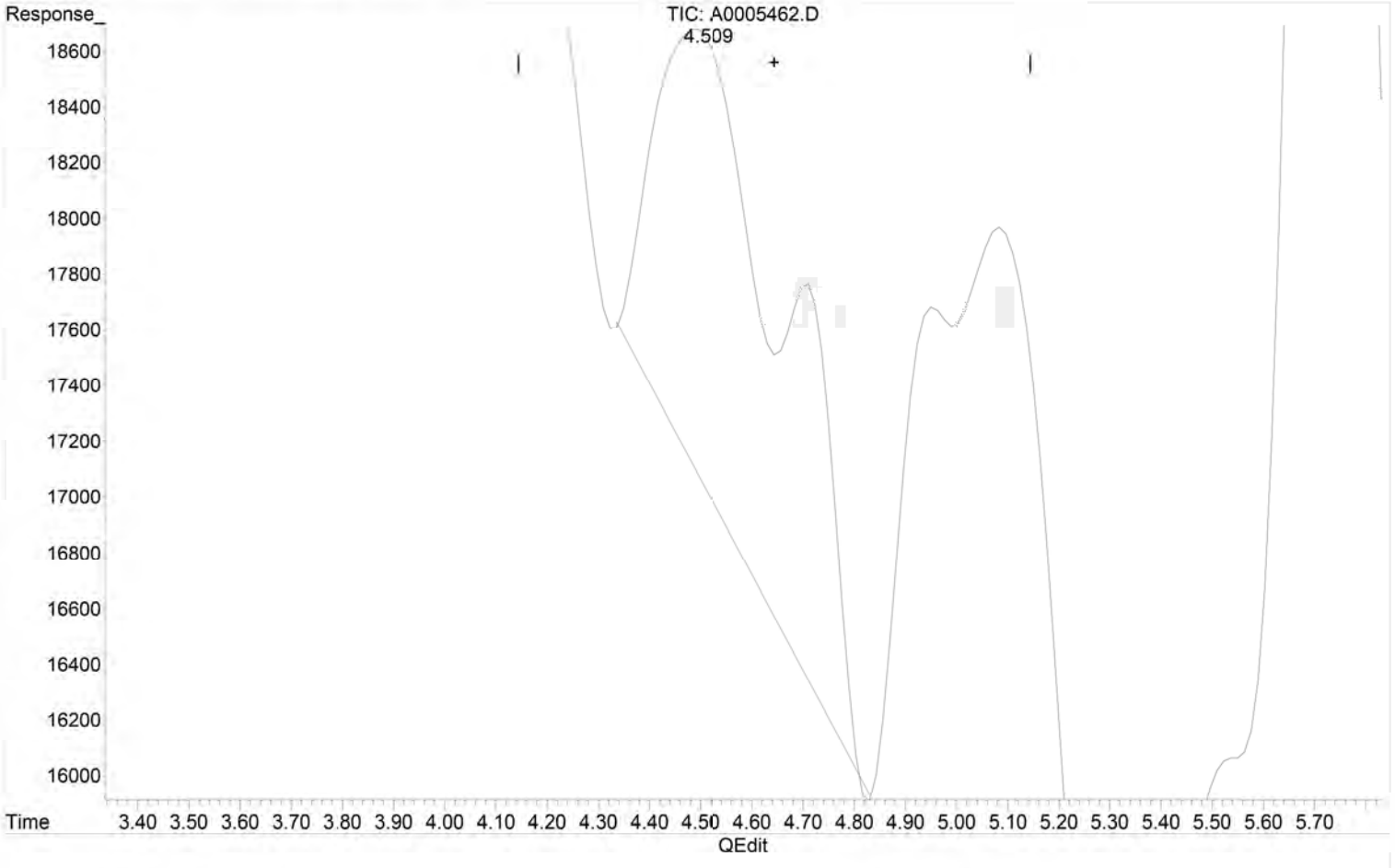
(+) = Expected Retention Time

Quantitation Report (Qedit) 1st

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005462.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 04:38:45
Operator : A.Felser
Sample : R2005353-002
Misc :
ALS Vial : 13 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:12 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.492min 5.435 ppm

response 306641

Manual Integration:

Before

07/02/20

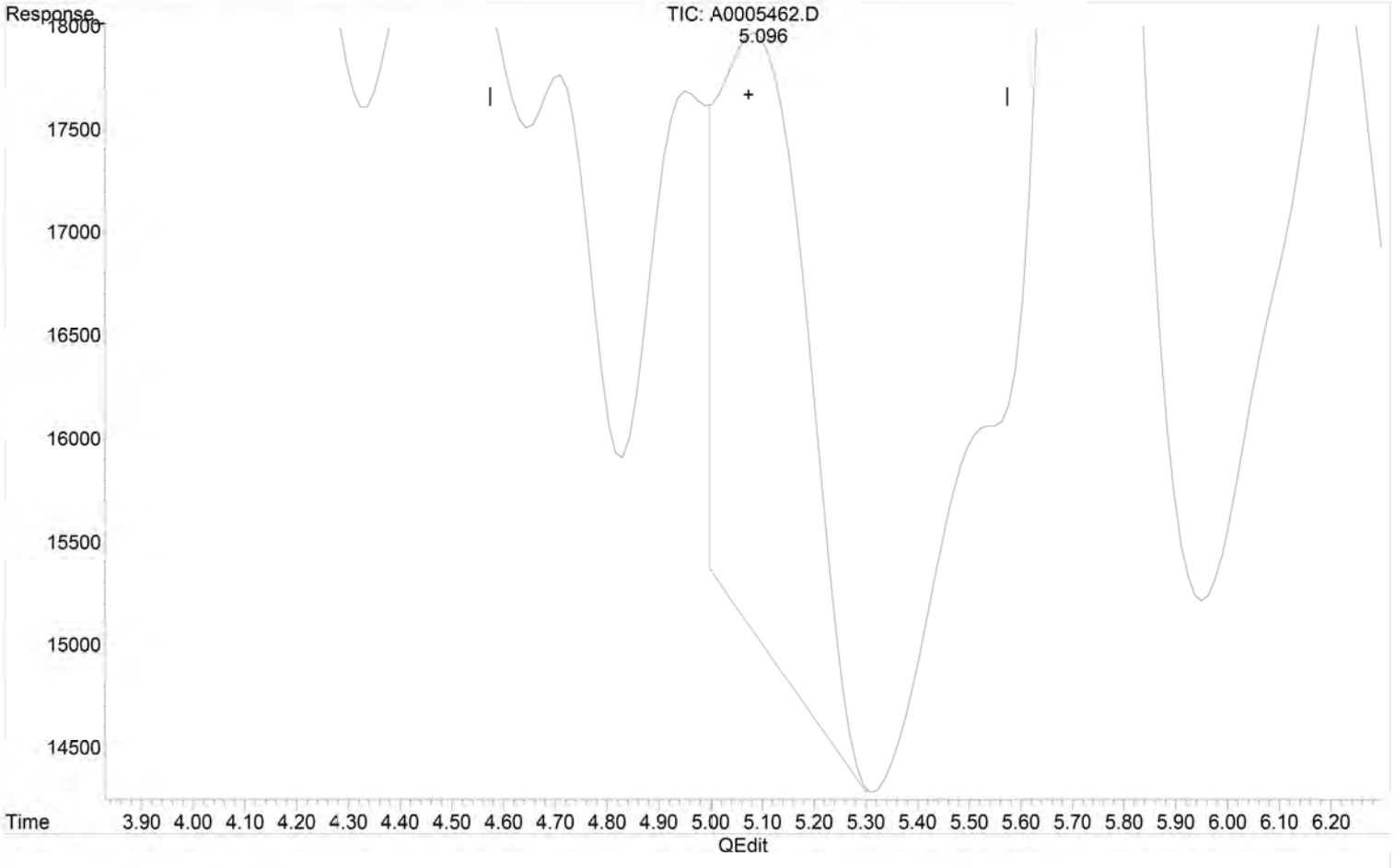
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005462.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 04:38:45
Operator : A.Felser
Sample : R2005353-002
Misc :
ALS Vial : 13 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:12 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

5.096min 6.113 ppm m

response 342597

Manual Integration:

After

Poor integration.

07/02/20

(+) = Expected Retention Time

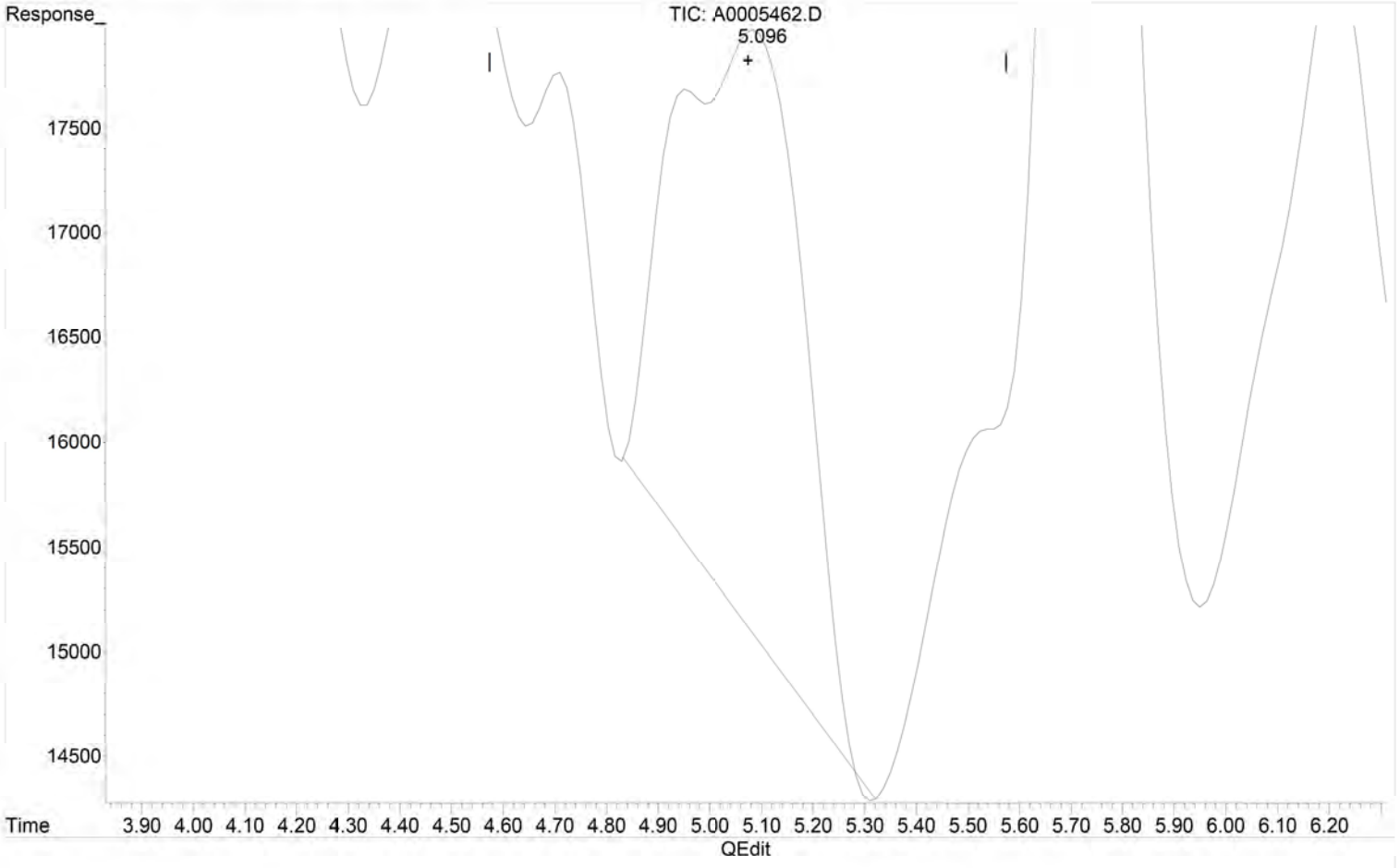
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005462.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 04:38:45
Operator : A.Felser
Sample : R2005353-002
Misc :
ALS Vial : 13 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:12 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

5.085min 8.675 ppm

response 486217

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005462.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 04:38:45
Operator : A.Felser
Sample : R2005353-002
Misc :
ALS Vial : 13 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:12 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.318	226428	2.429	ppm	
2) T	Pyruvic acid	0.000	0	N.D.	ppm	d
3) T	Lactic Acid	4.709	99041	1.756	ppm	m
4) T	Acetic Acid	5.096	342597	6.113	ppm	m
5) T	Propionic Acid	0.000	0	N.D.	ppm	d
6) T	Butyric Acid	0.000	0	N.D.	ppm	

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

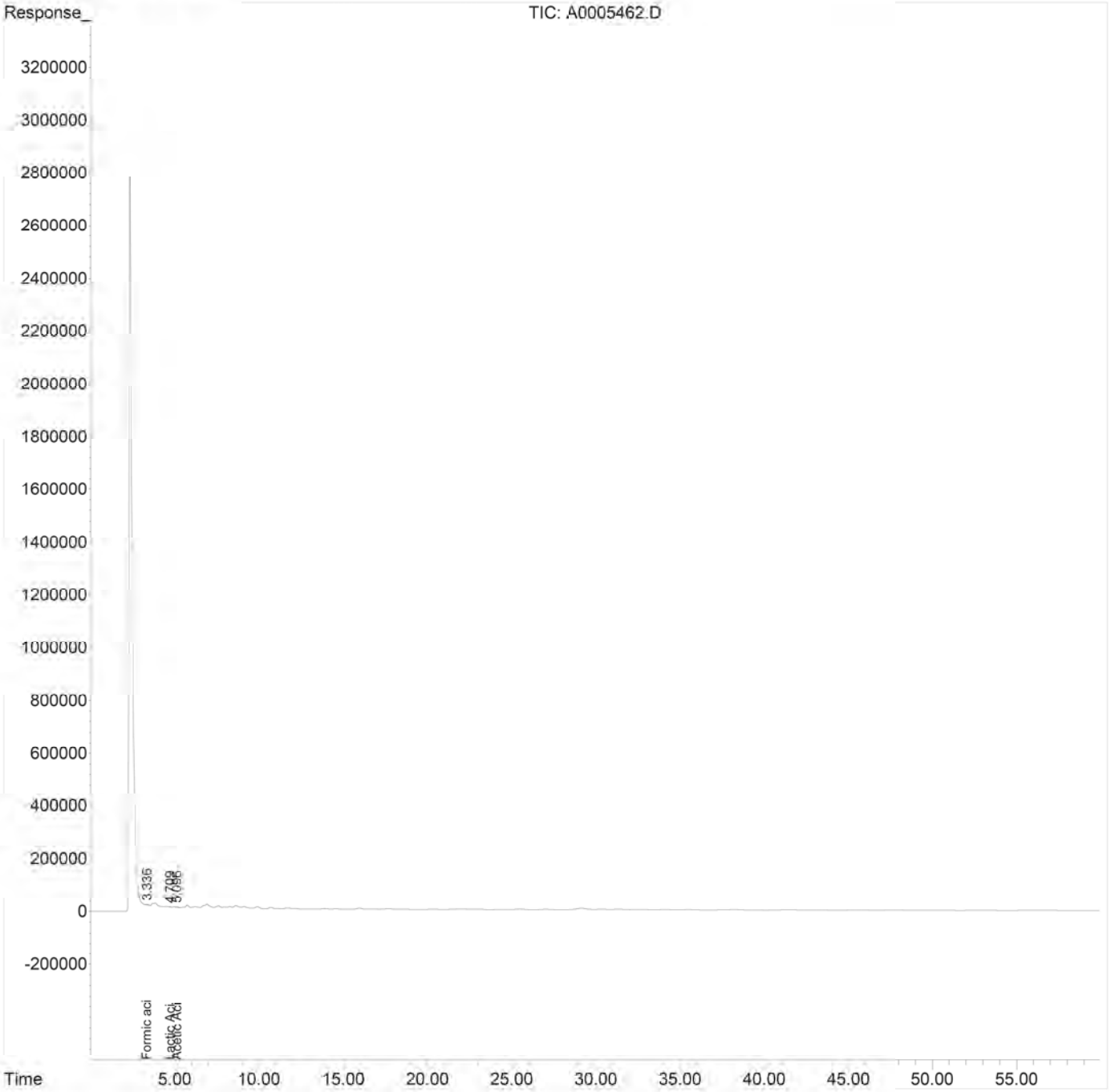
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005462.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 04:38:45
Operator : A.Felser
Sample : R2005353-002
Misc :
ALS Vial : 13 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:12 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



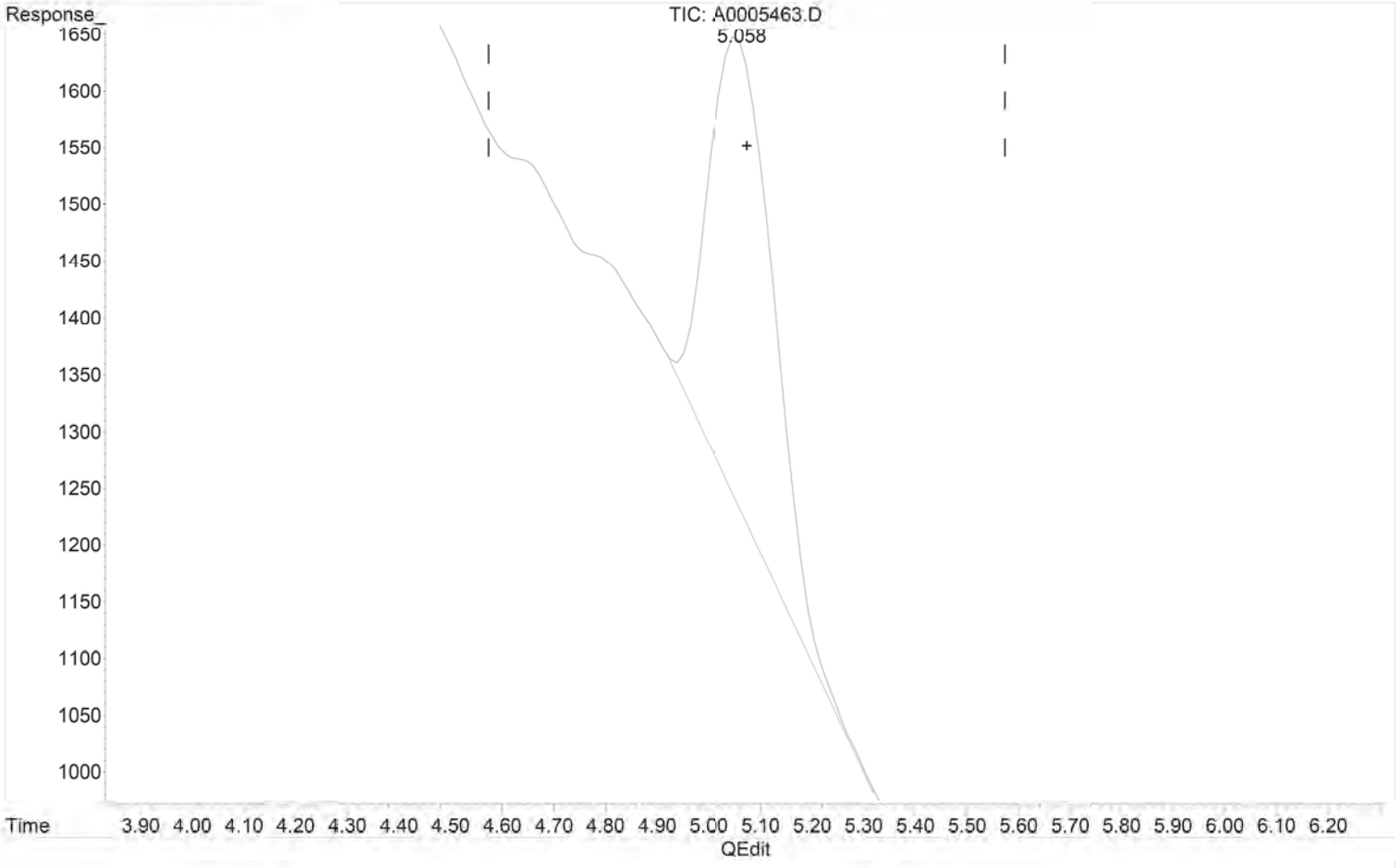
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005463.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 05:41:40
Operator : A.Felser
Sample : R2005353-003
Misc :
ALS Vial : 14 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:14 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
5.058min 0.649 ppm m
response 36361

Manual Integration:
After
Poor integration.
07/02/20

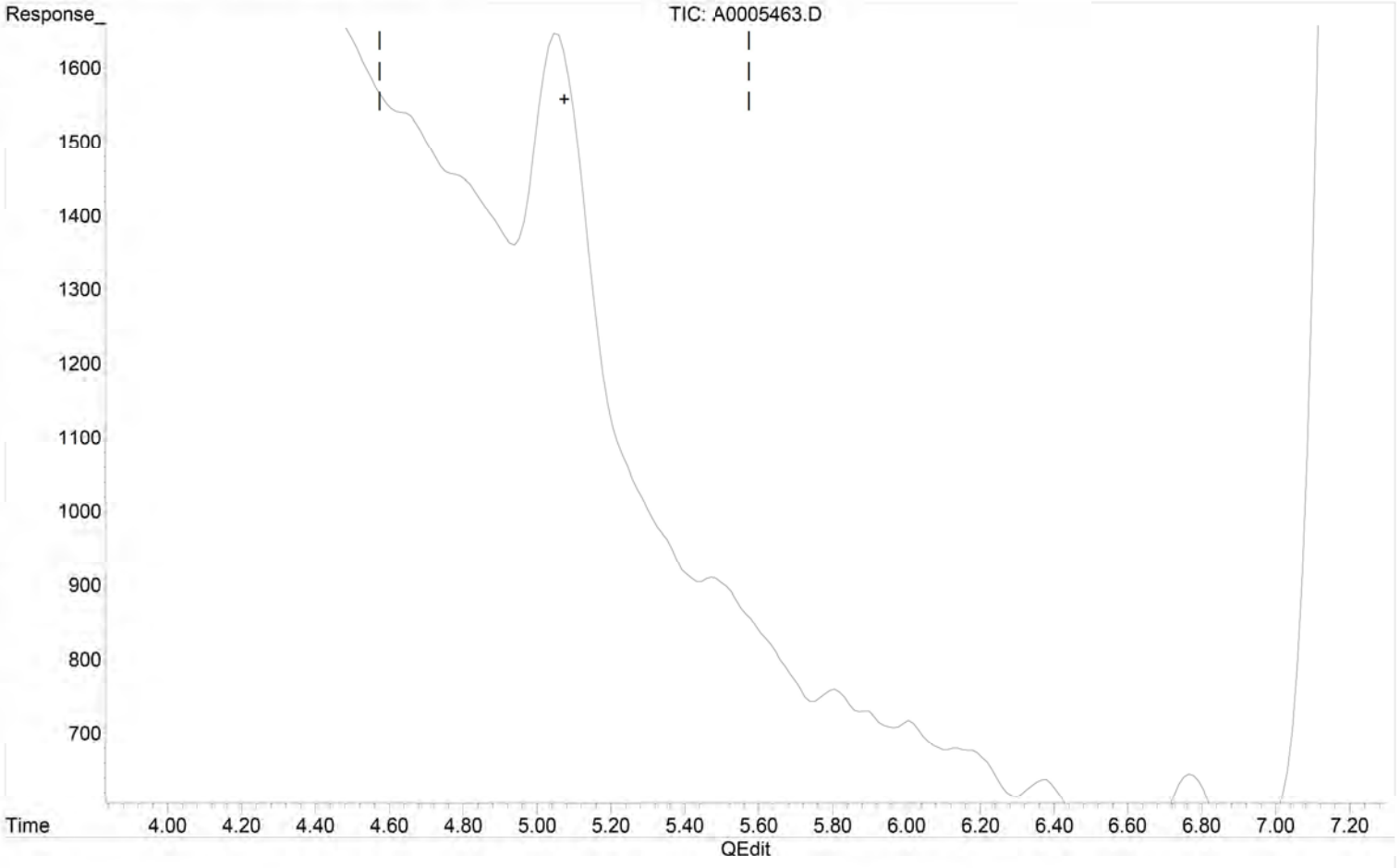
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005463.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 05:41:40
Operator : A.Felser
Sample : R2005353-003
Misc :
ALS Vial : 14 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:14 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

5.056min -0.828 ppm

response -46385

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005463.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 05:41:40
Operator : A.Felser
Sample : R2005353-003
Misc :
ALS Vial : 14 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:14 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	0.000	0	N.D.	ppm	
2) T	Pyruvic acid	0.000	0	N.D.	ppm	
3) T	Lactic Acid	0.000	0	N.D.	ppm	
4) T	Acetic Acid	5.058	36361	0.649	ppm	m
5) T	Propionic Acid	0.000	0	N.D.	ppm	
6) T	Butyric Acid	0.000	0	N.D.	ppm	

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

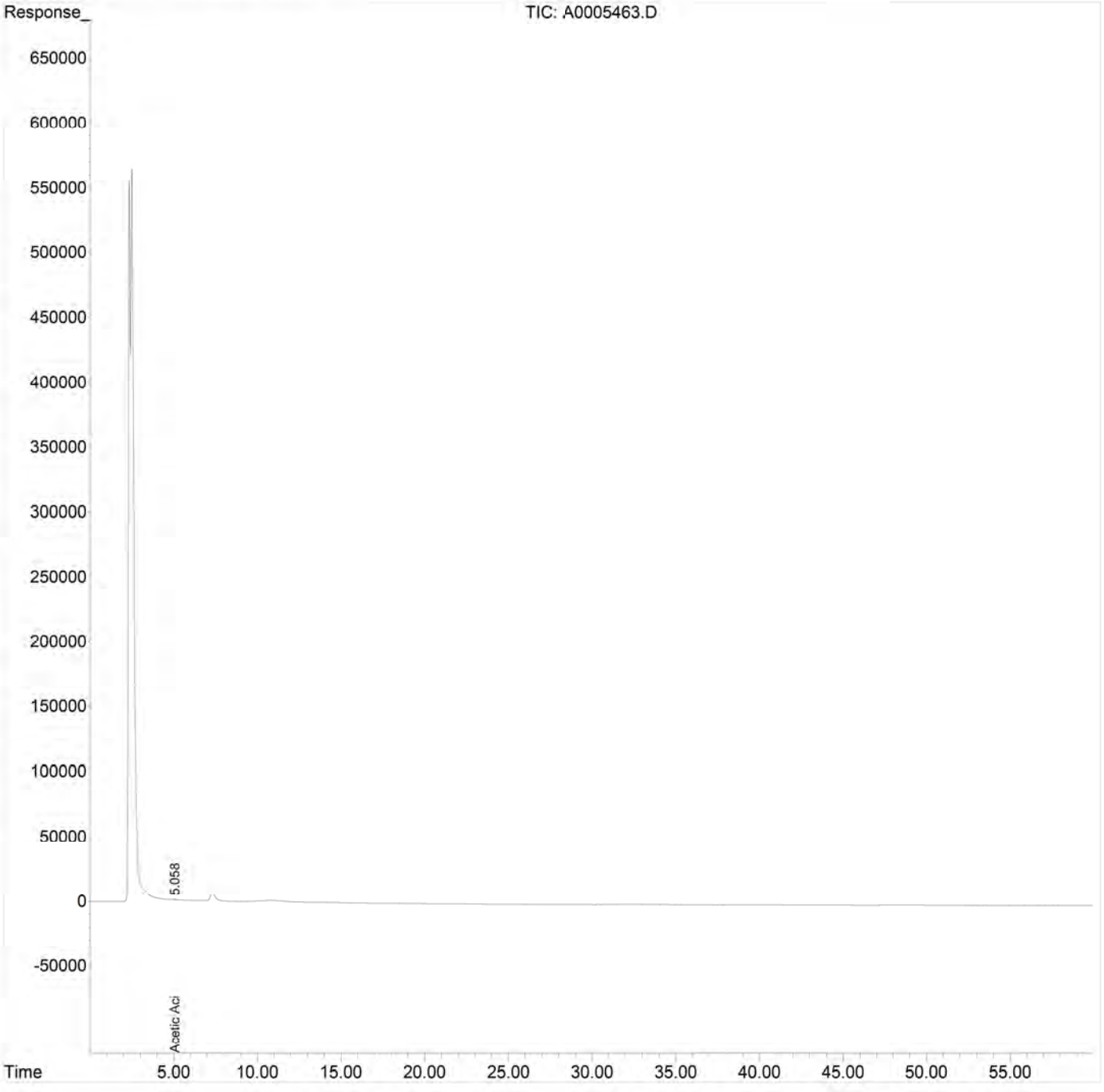
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005463.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 05:41:40
Operator : A.Felser
Sample : R2005353-003
Misc :
ALS Vial : 14 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:14 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005464.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 06:44:40
Operator : A.Felser
Sample : R2005464-001
Misc :
ALS Vial : 15 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) t	Formic acid	0.000	0	N.D.	ppm
2) T	Pyruvic acid	0.000	0	N.D.	ppm
3) T	Lactic Acid	0.000	0	N.D.	ppm
4) T	Acetic Acid	0.000	0	N.D.	ppm
5) T	Propionic Acid	0.000	0	N.D.	ppm
6) T	Butyric Acid	0.000	0	N.D.	ppm

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

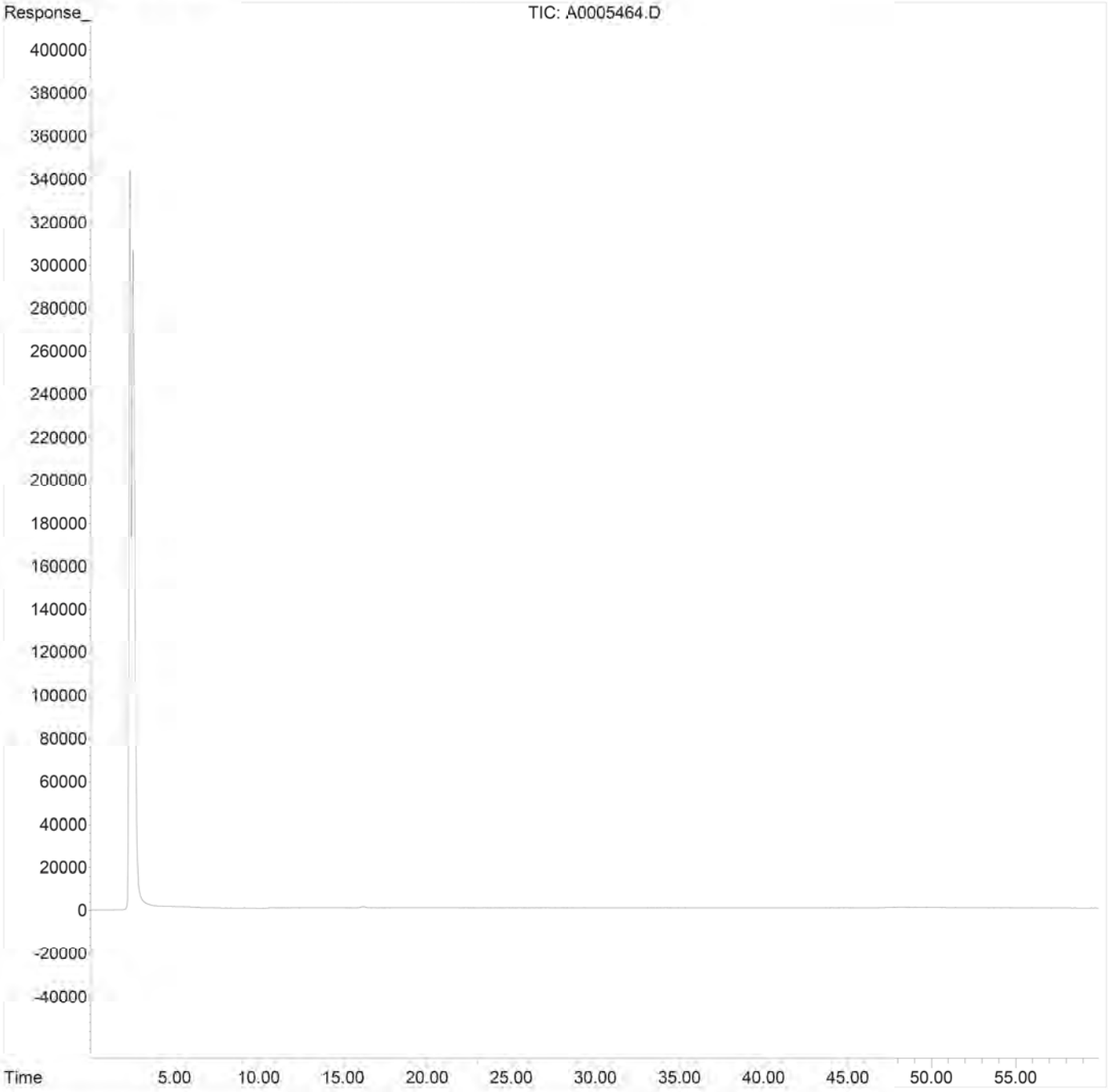
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005464.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 06:44:40
Operator : A.Felser
Sample : R2005464-001
Misc :
ALS Vial : 15 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005449.D
Signal(s) : dad1C.ch
Acq On : ~~31 Dec 2000, 02:48:24~~ 01-Jul-2020, 14:56
Operator : A.Felser
Sample : MB
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) t	Formic acid	0.000	0	N.D.	ppm
2) T	Pyruvic acid	0.000	0	N.D.	ppm
3) T	Lactic Acid	0.000	0	N.D.	ppm
4) T	Acetic Acid	0.000	0	N.D.	ppm
5) T	Propionic Acid	0.000	0	N.D.	ppm
6) T	Butyric Acid	0.000	0	N.D.	ppm

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

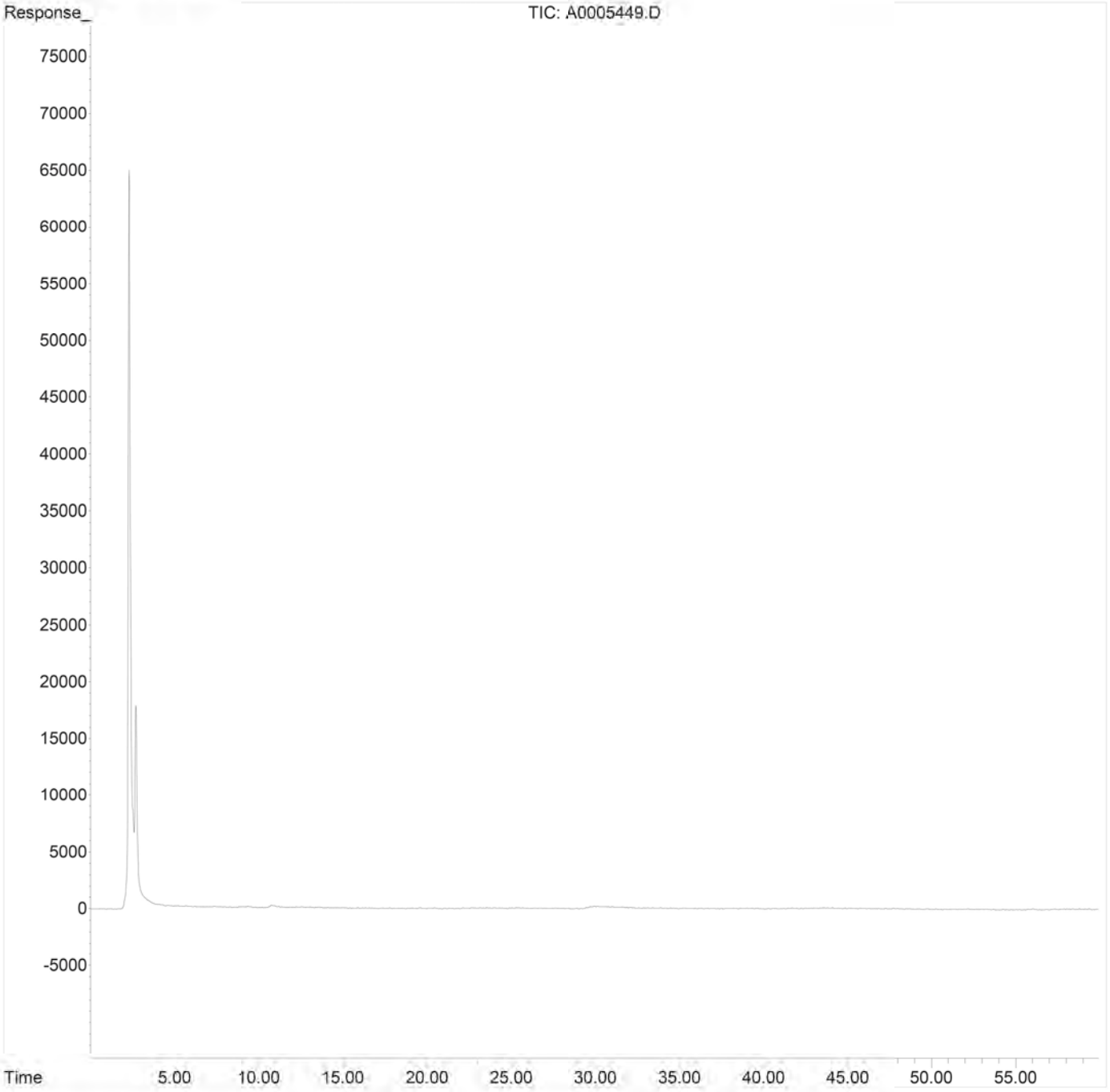
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005449.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:48:24
Operator : A.Felser
Sample : MB
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



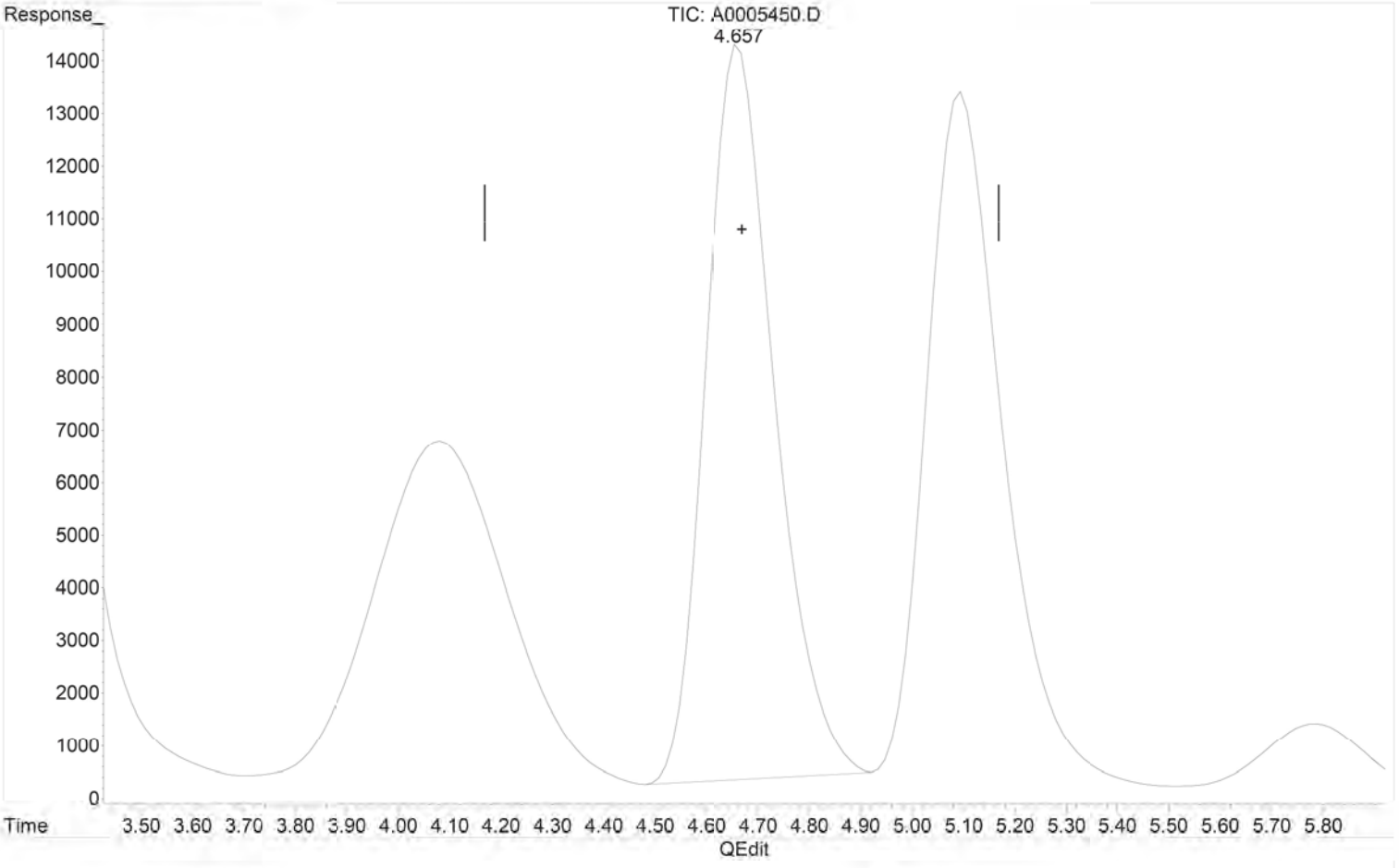
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005450.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 16:02:18
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:31 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.657min 22.937 ppm m

response 1294019

Manual Integration:

After

Poor integration.

07/06/20

(+) = Expected Retention Time

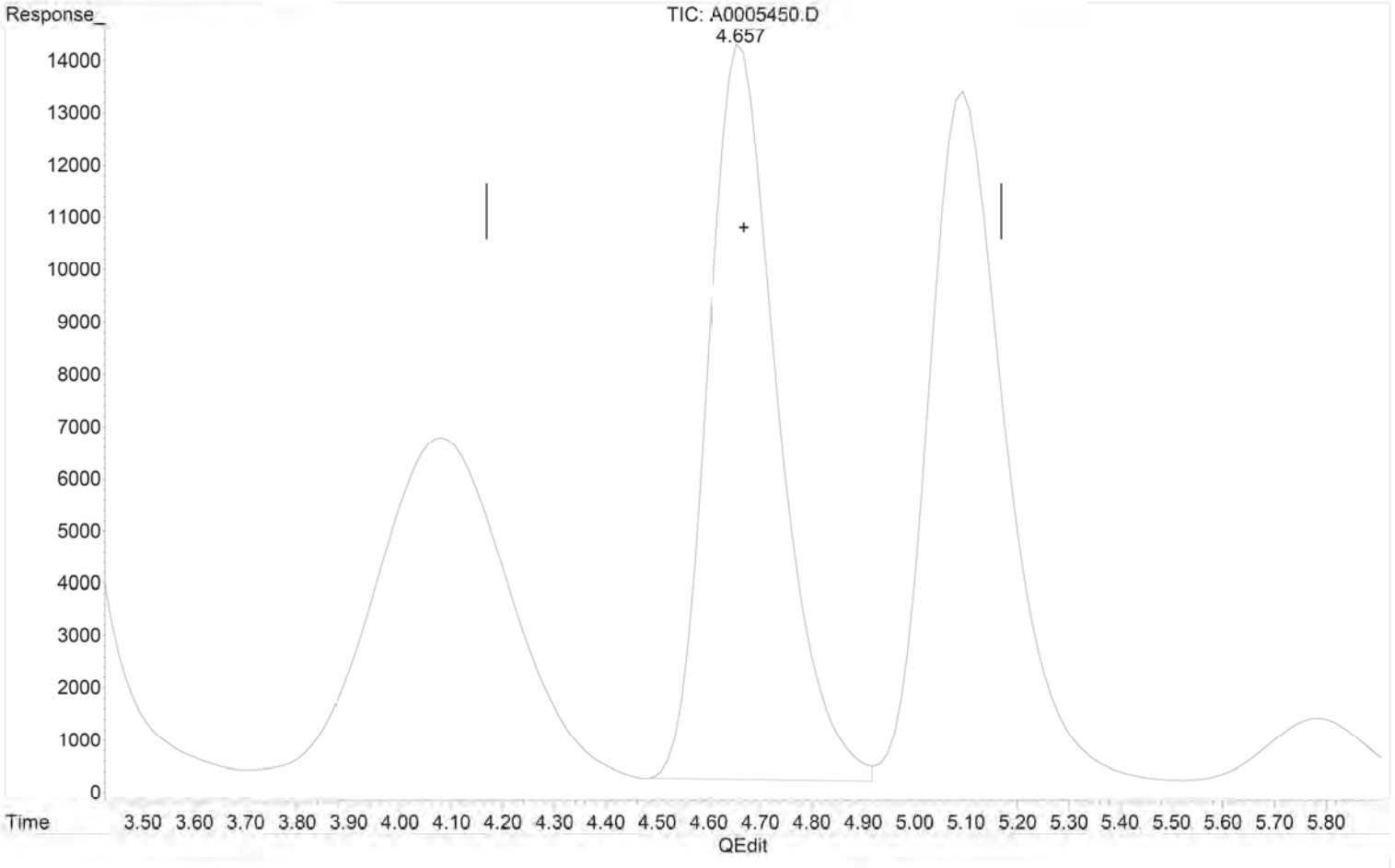
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005450.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 16:02:18
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:31 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.664min 23.528 ppm

response 1327346

Manual Integration:

Before

07/06/20

(+) = Expected Retention Time

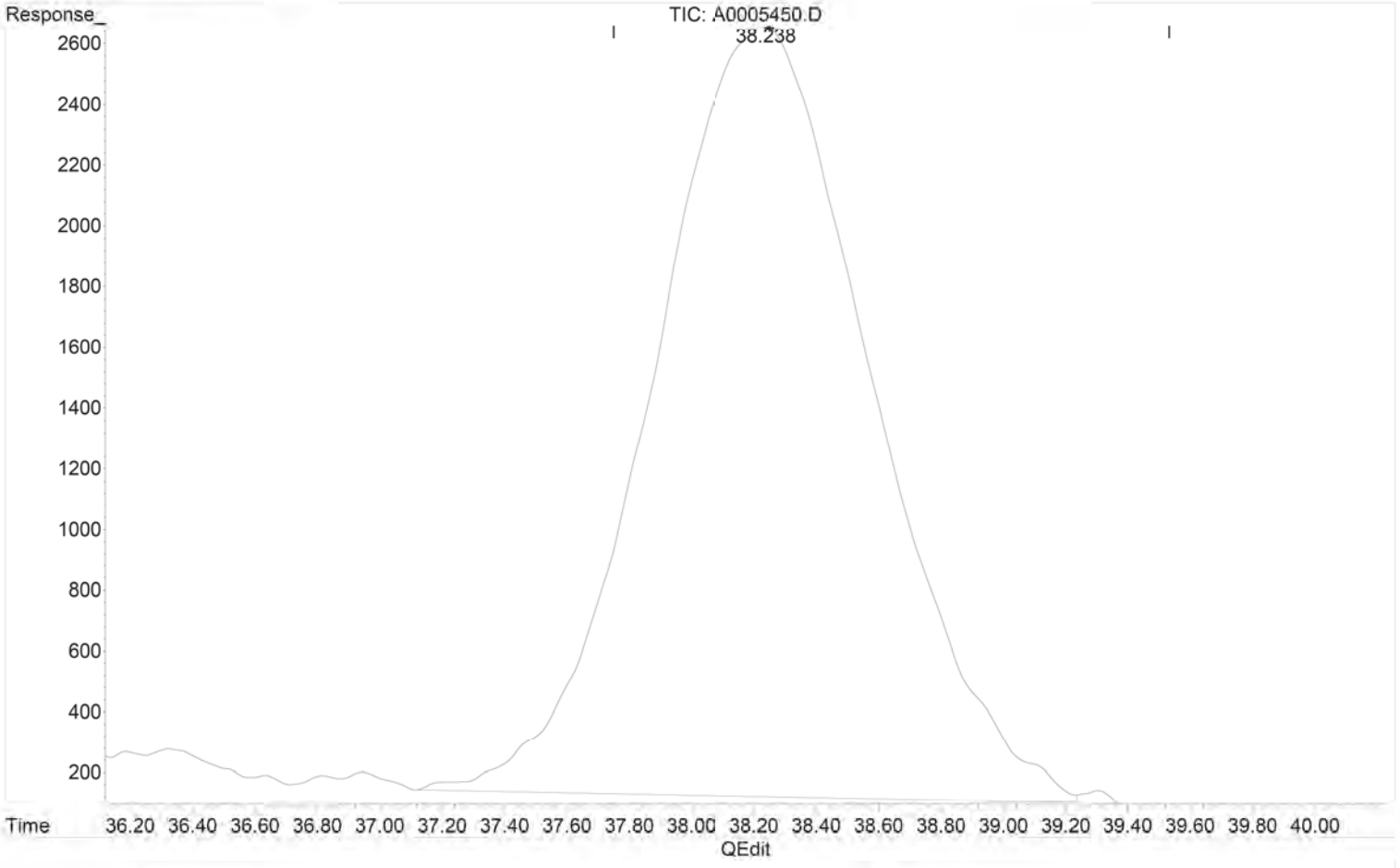
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005450.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 16:02:18
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:31 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

38.238min 23.480 ppm m

response 1234140

Manual Integration:

After

Poor integration.

07/02/20

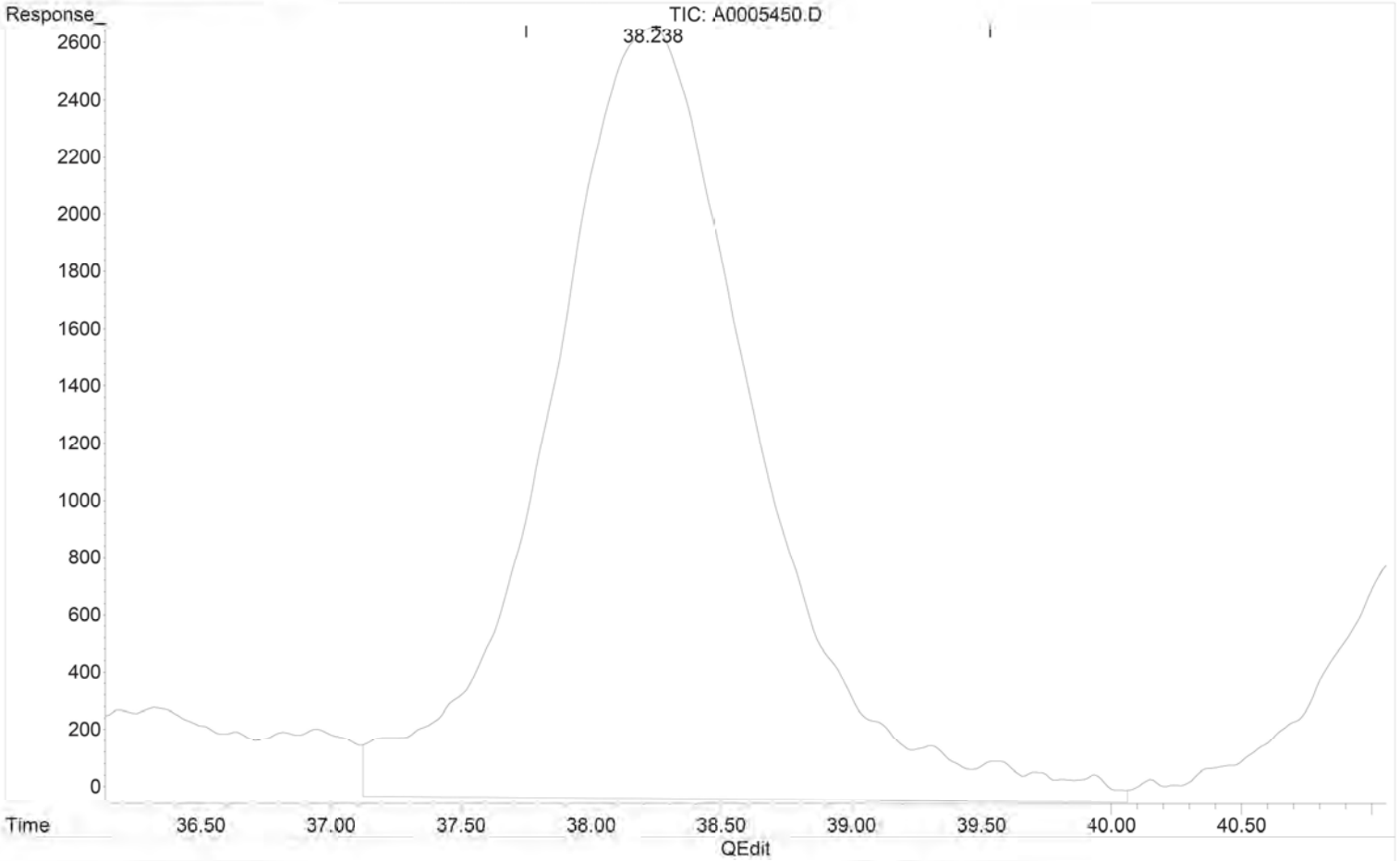
(+) = Expected Retention Time

Quantitation Report (Qedit) 1st

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005450.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 16:02:18
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:31 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

38.230min 28.477 ppm

response 1496779

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005450.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 16:02:18
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:31 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.289	2115098	22.686	ppm	
2) T	Pyruvic acid	4.084	1152581	1.948	ppm	
3) T	Lactic Acid	4.657	1294019	22.937	ppm	m
4) T	Acetic Acid	5.097	1387411	24.754	ppm	
5) T	Propionic Acid	12.474	1373396	25.266	ppm	
6) T	Butyric Acid	38.238	1234140	23.480	ppm	m

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

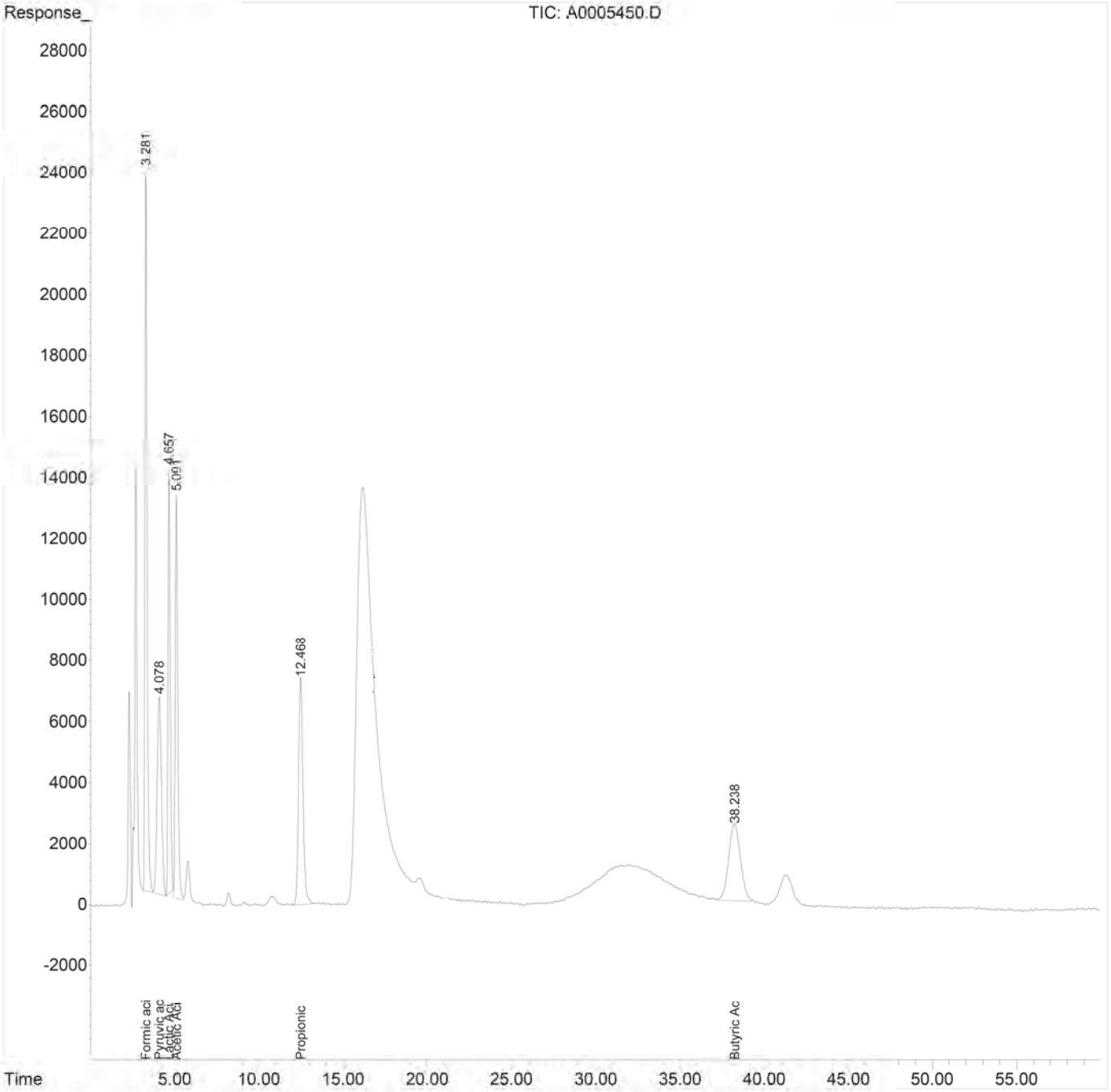
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005450.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 16:02:18
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:31 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

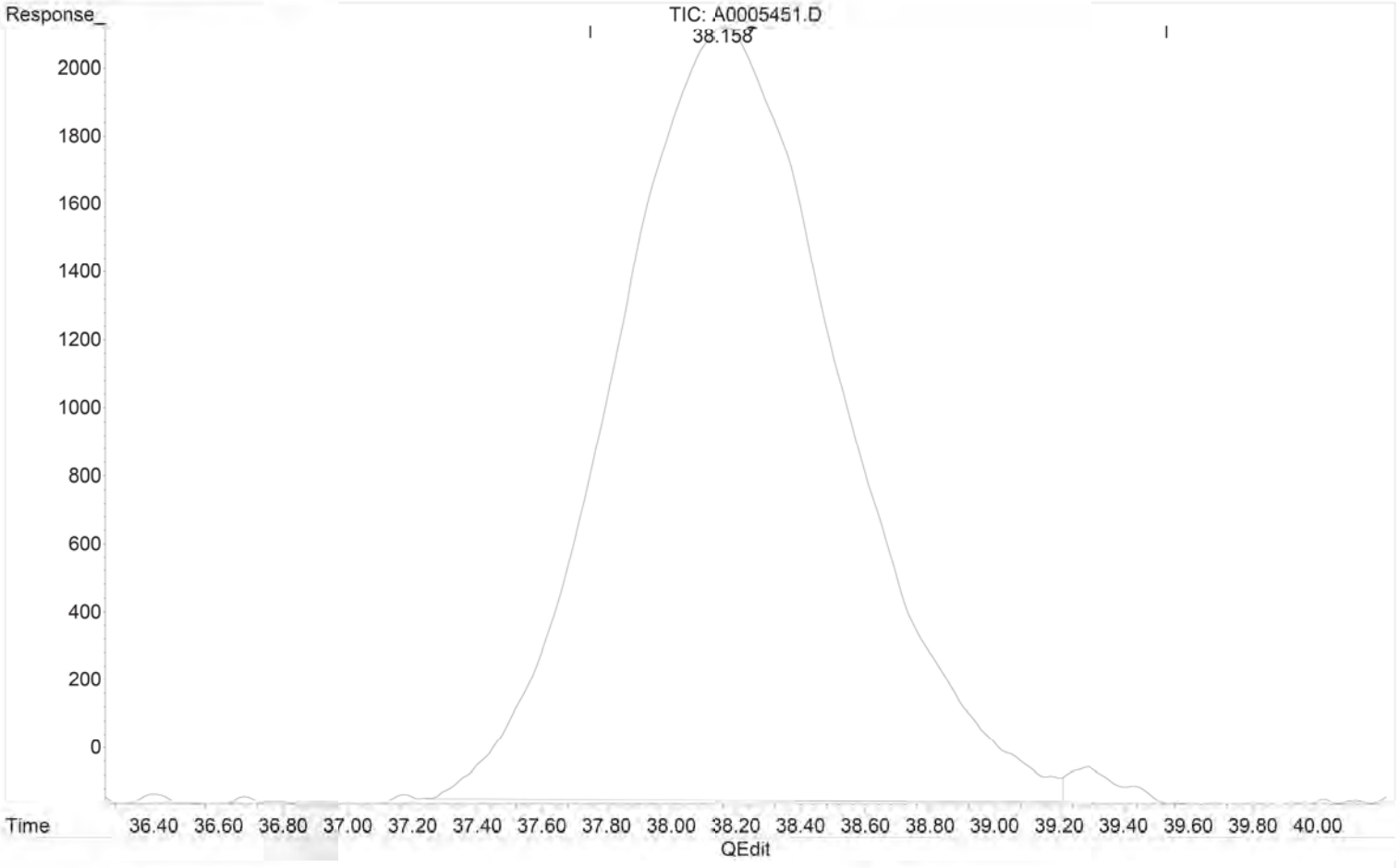


Quantitation Report (Qedit) 1st

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005451.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 17:05:25
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:33 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

38.158min 21.205 ppm m

response 1114586

Manual Integration:

After

Poor integration.

07/02/20

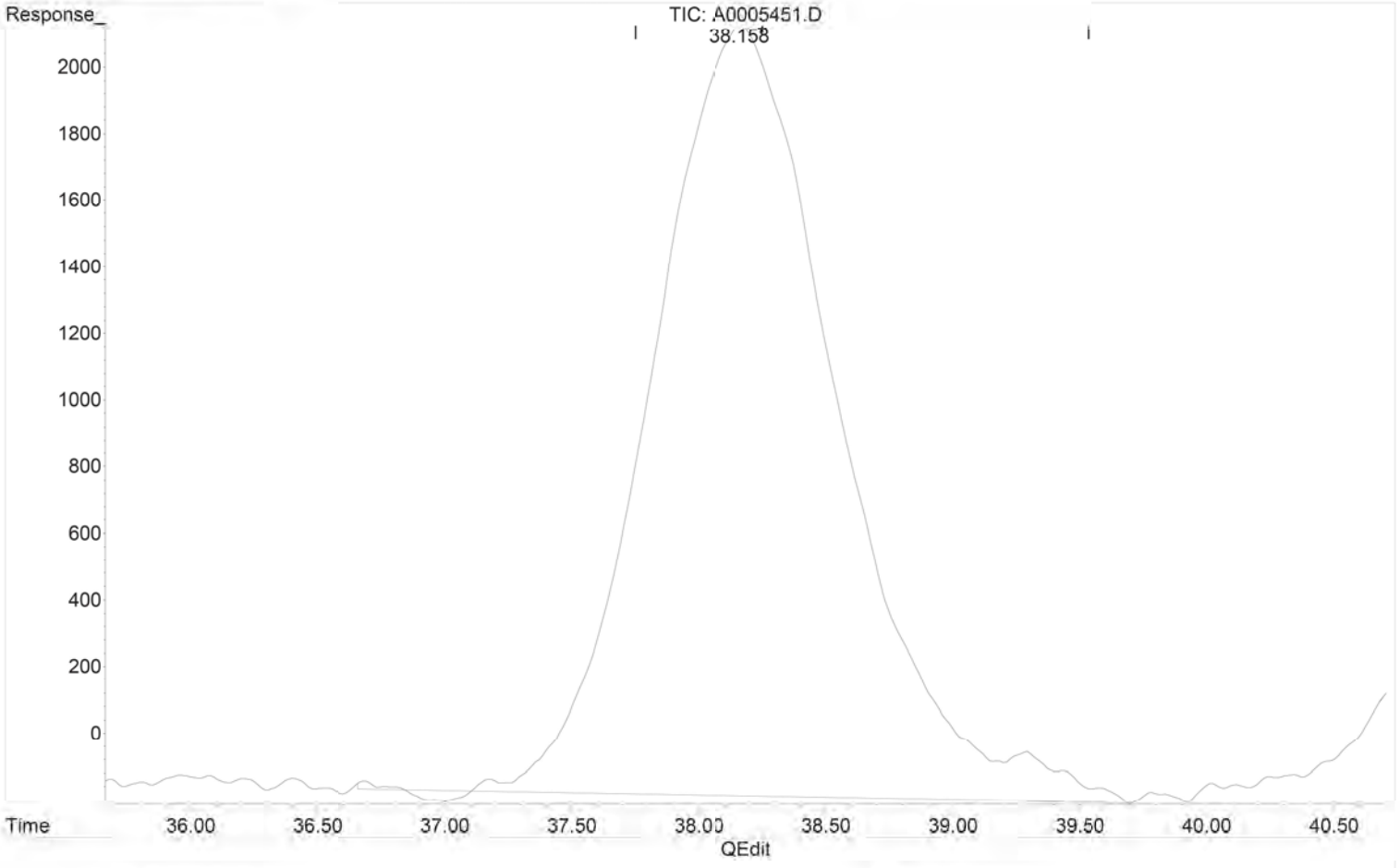
(+) = Expected Retention Time

Quantitation Report (Qedit) 1st

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005451.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 17:05:25
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:33 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

38.165min 22.339 ppm

response 1174190

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005451.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 17:05:25
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:33 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.289	1896917	20.346	ppm	
2) T	Pyruvic acid	4.085	1031900	1.744	ppm	
3) T	Lactic Acid	4.663	1185702	21.017	ppm	
4) T	Acetic Acid	5.097	1237397	22.077	ppm	
5) T	Propionic Acid	12.463	1235919	22.737	ppm	
6) T	Butyric Acid	38.158	1114586	21.205	ppm	m

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

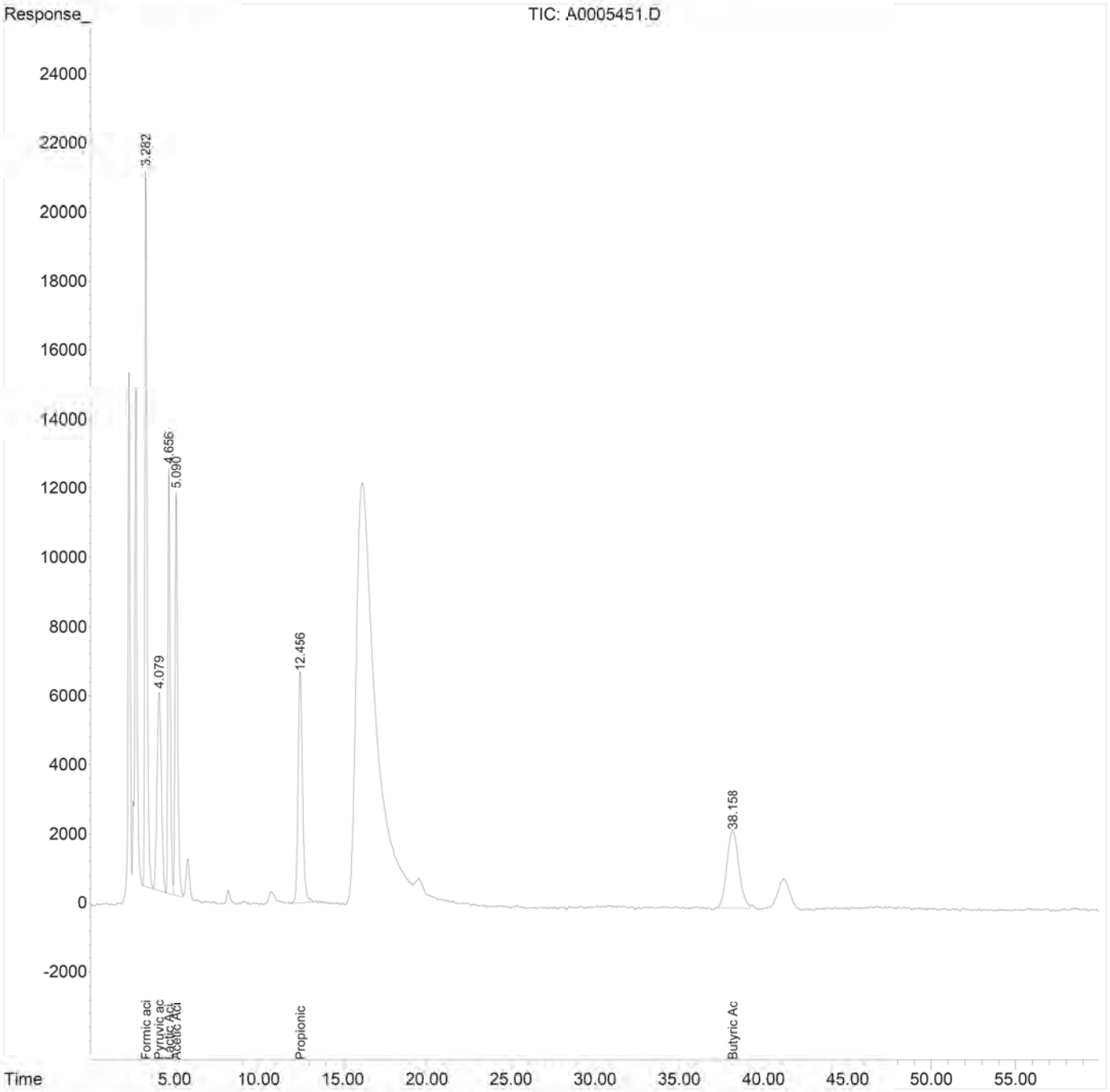
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005451.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 17:05:25
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:33 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



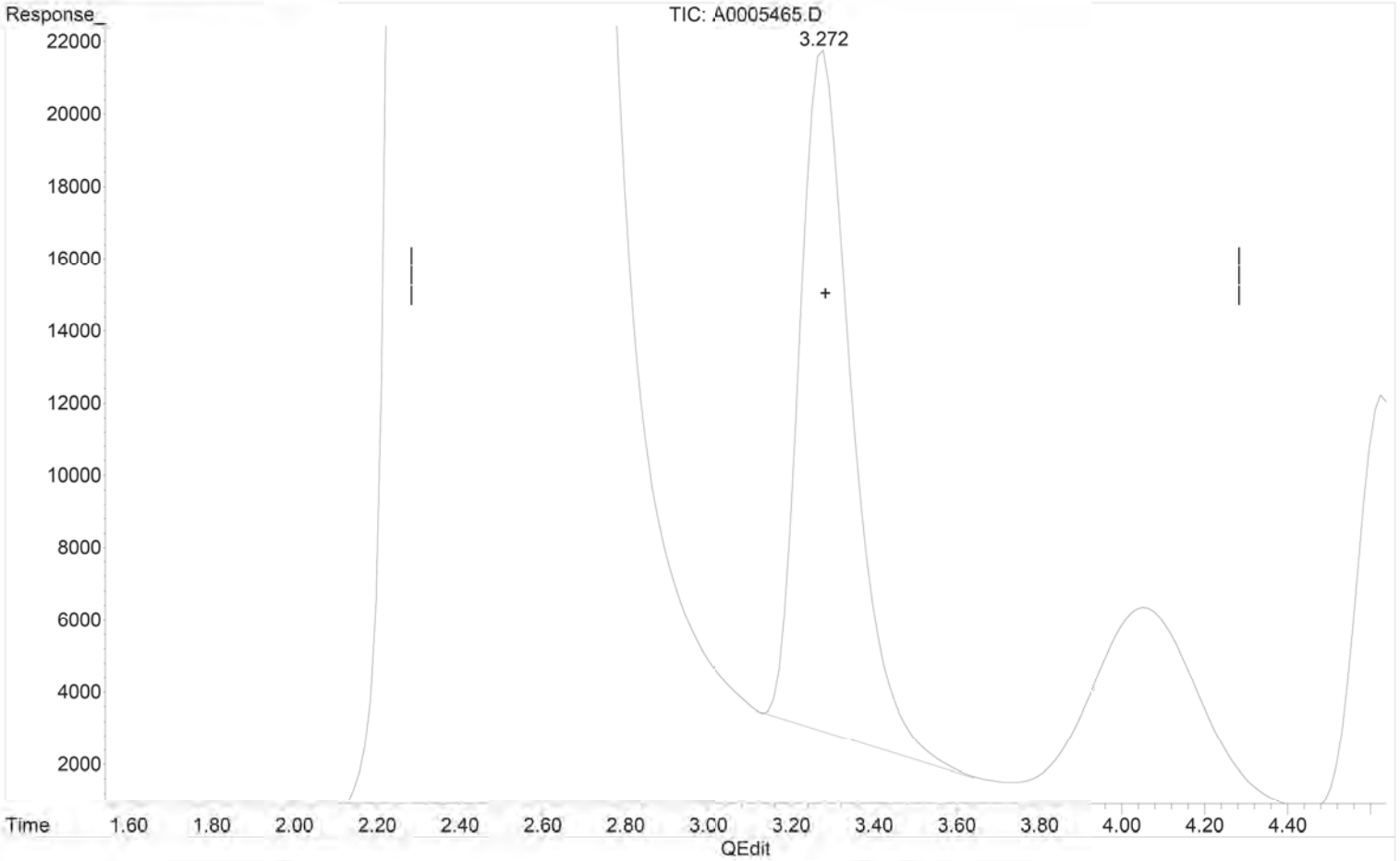
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005465.D
Signal(s) : dad1C.ch
Acq On : 29-Dec-2000, 23:47:48
Operator : A.Felser
Sample : R2005464-001MS
Misc :
ALS Vial : 16 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

3.272min 17.714 ppm m

response 1651539

Manual Integration:

After

Poor integration.

07/02/20

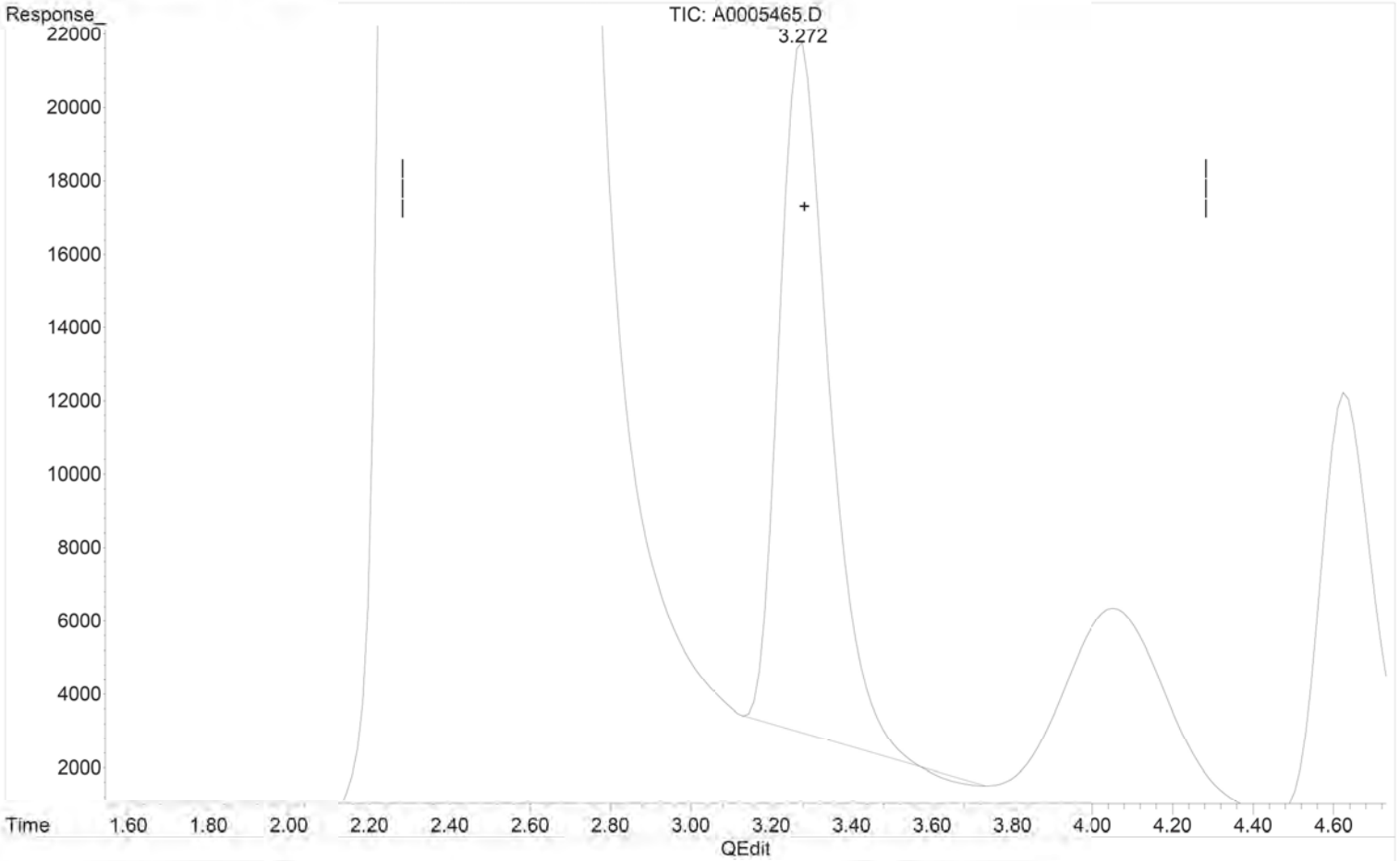
(+) = Expected Retention Time

Quantitation Report (Qedit) 1st

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005465.D
Signal(s) : dad1C.ch
Acq On : 29-Dec-2000, 23:47:48
Operator : A.Felser
Sample : R2005464-001MS
Misc :
ALS Vial : 16 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

3.280min 17.465 ppm

response 1628331

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

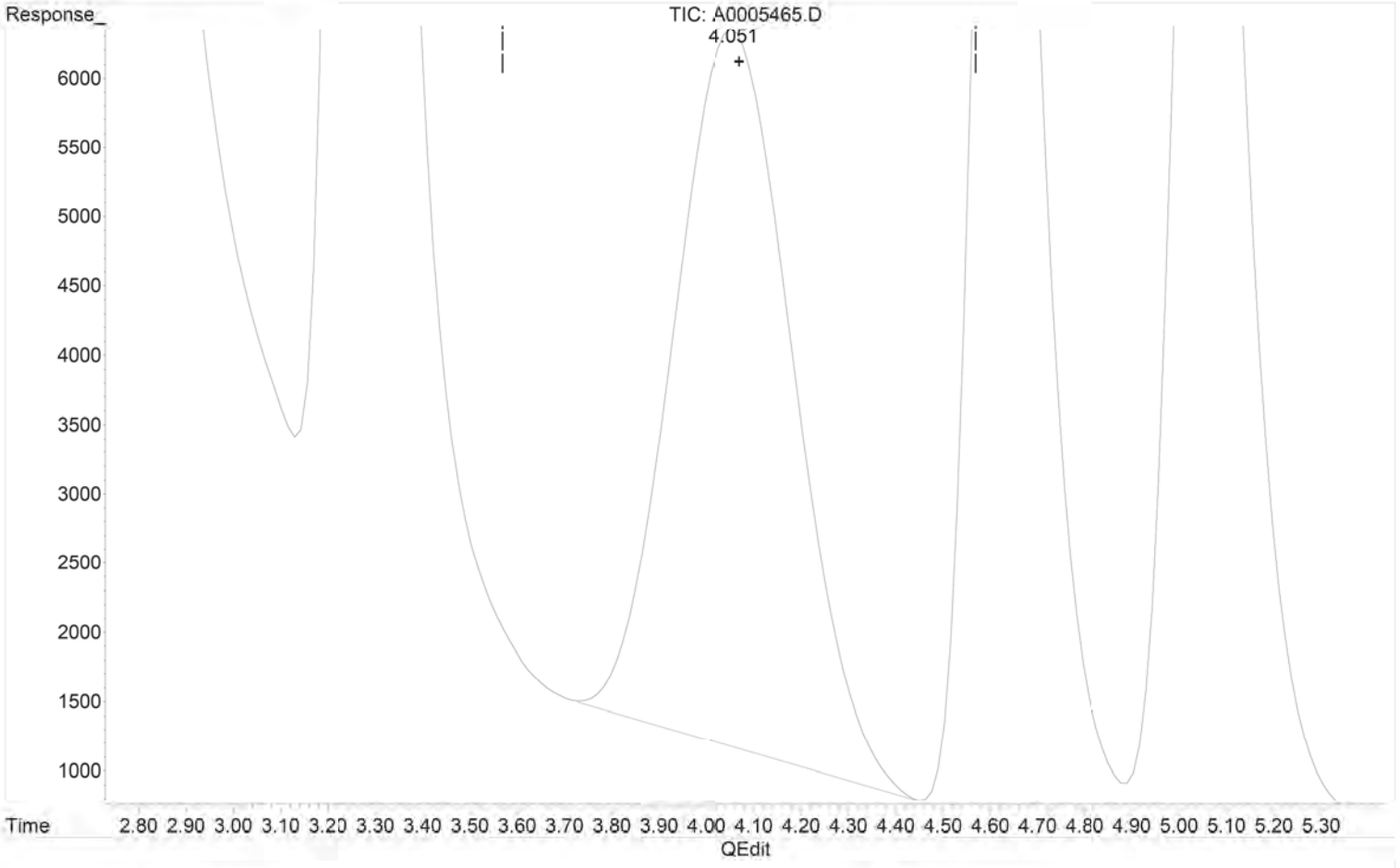
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005465.D
Signal(s) : dad1C.ch
Acq On : 29-Dec-2000, 23:47:48
Operator : A.Felser
Sample : R2005464-001MS
Misc :
ALS Vial : 16 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

4.051min 1.519 ppm m

response 898843

Manual Integration:

After

Poor integration.

07/02/20

(+) = Expected Retention Time

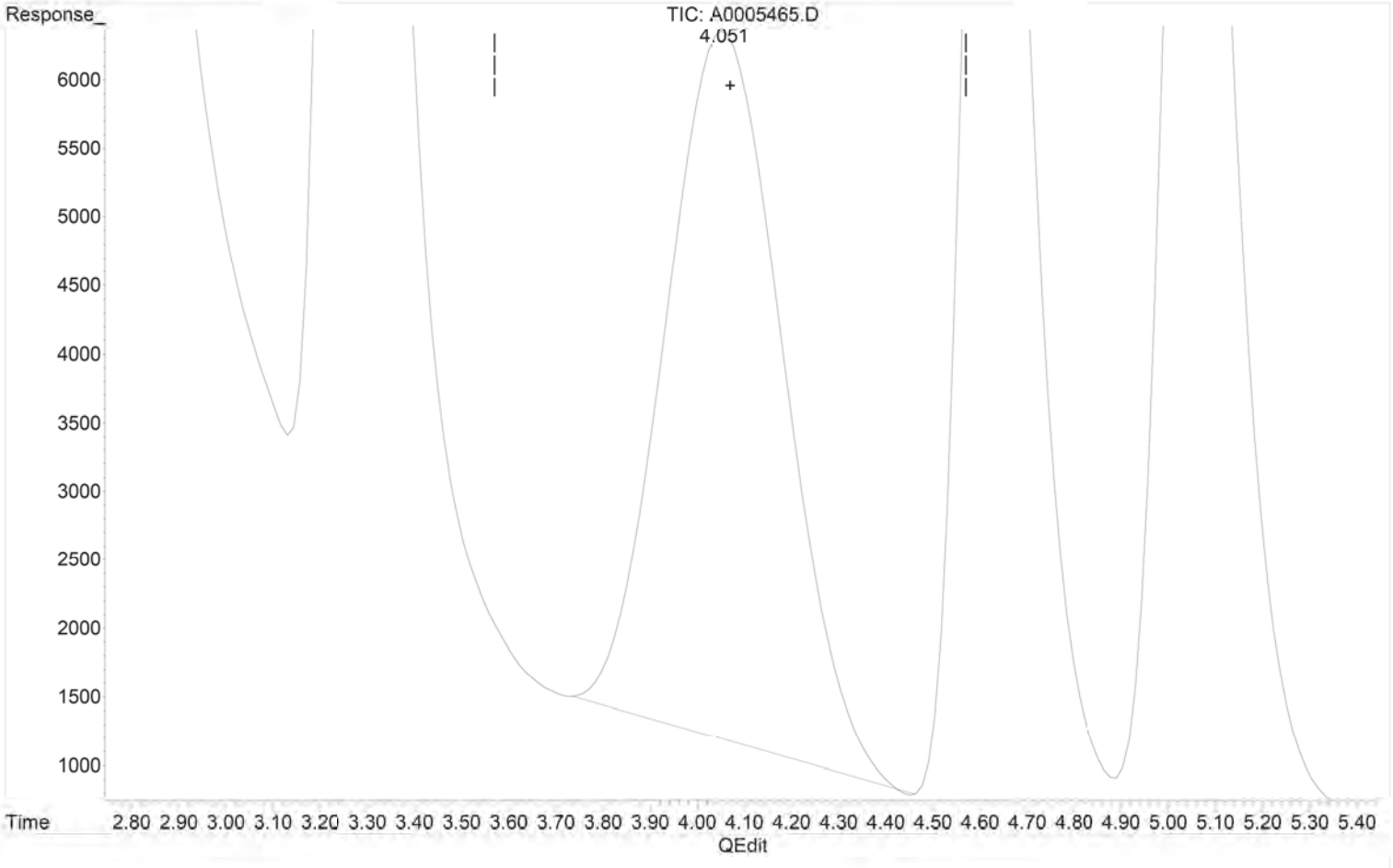
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005465.D
Signal(s) : dad1C.ch
Acq On : 29-Dec-2000, 23:47:48
Operator : A.Felser
Sample : R2005464-001MS
Misc :
ALS Vial : 16 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

4.057min 1.510 ppm

response 893225

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005465.D
Signal(s) : dad1C.ch
Acq On : ~~29-Dec-2000, 23:47:48~~ 02-Jul-2020, 07:44
Operator : A.Felser
Sample : R2005464-001MS
Misc :
ALS Vial : 16 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.272	1651539	17.714	ppm	m
2) T	Pyruvic acid	4.051	898843	1.519	ppm	m
3) T	Lactic Acid	4.633	1073735	19.032	ppm	
4) T	Acetic Acid	5.062	1111098	19.824	ppm	
5) T	Propionic Acid	12.298	1116418	20.538	ppm	
6) T	Butyric Acid	37.433	1058060	20.130	ppm	

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

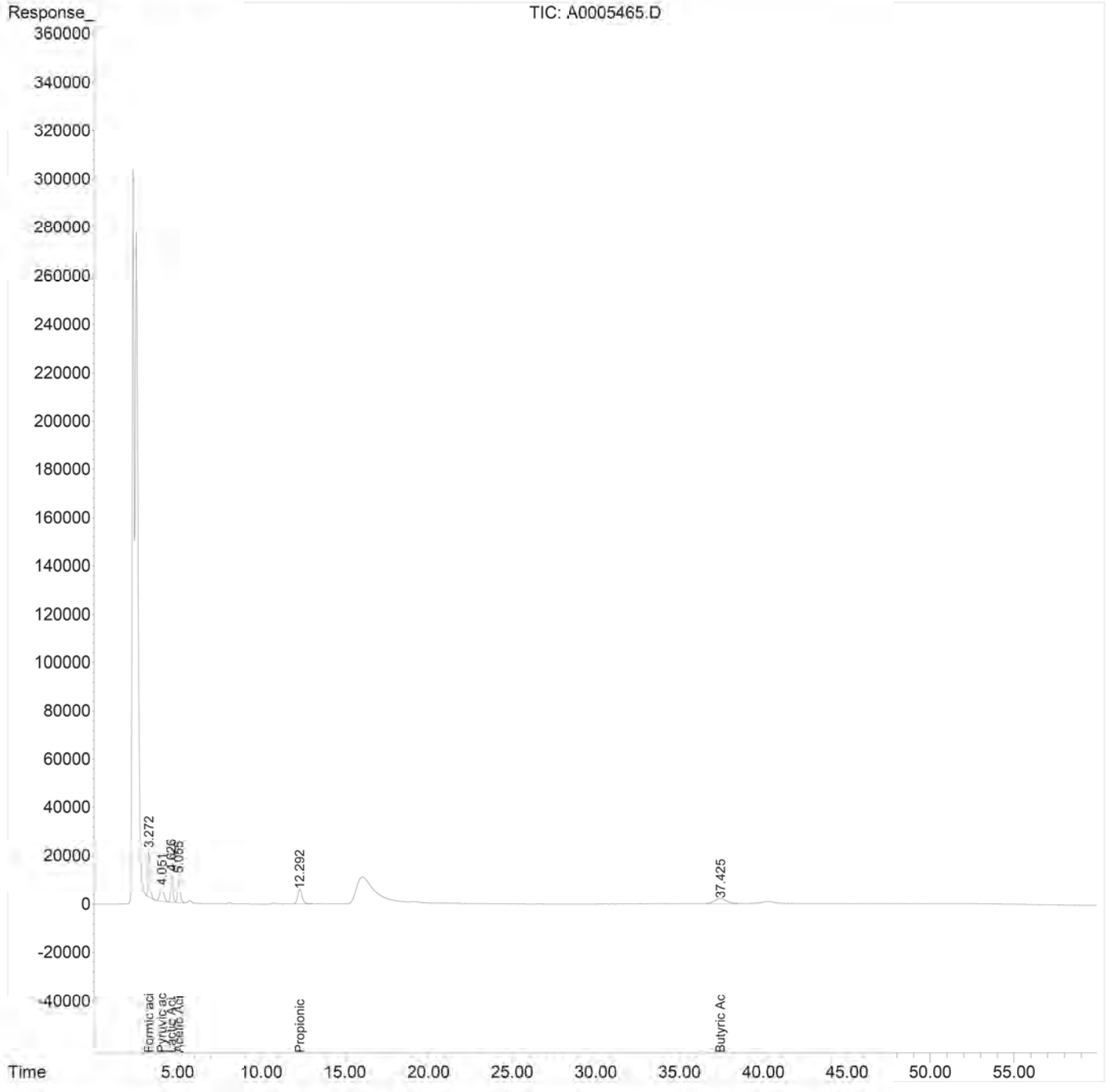
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005465.D
Signal(s) : dad1C.ch
Acq On : 29-Dec-2000, 23:47:48
Operator : A.Felser
Sample : R2005464-001MS
Misc :
ALS Vial : 16 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

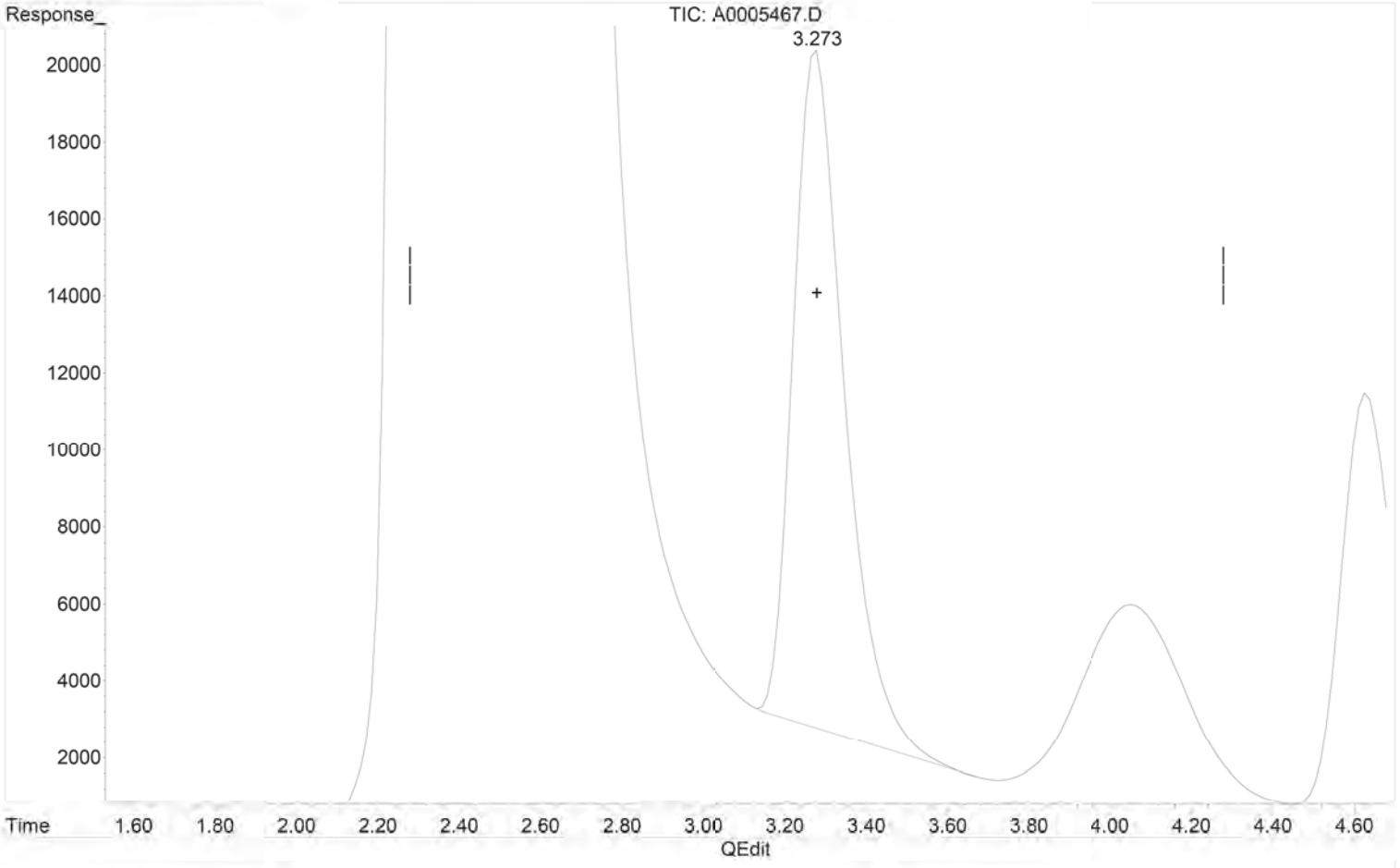


Quantitation Report (Qedit) 1st

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

3.273min 16.526 ppm m

response 1540796

Manual Integration

After

Poor integration.

07/02/20

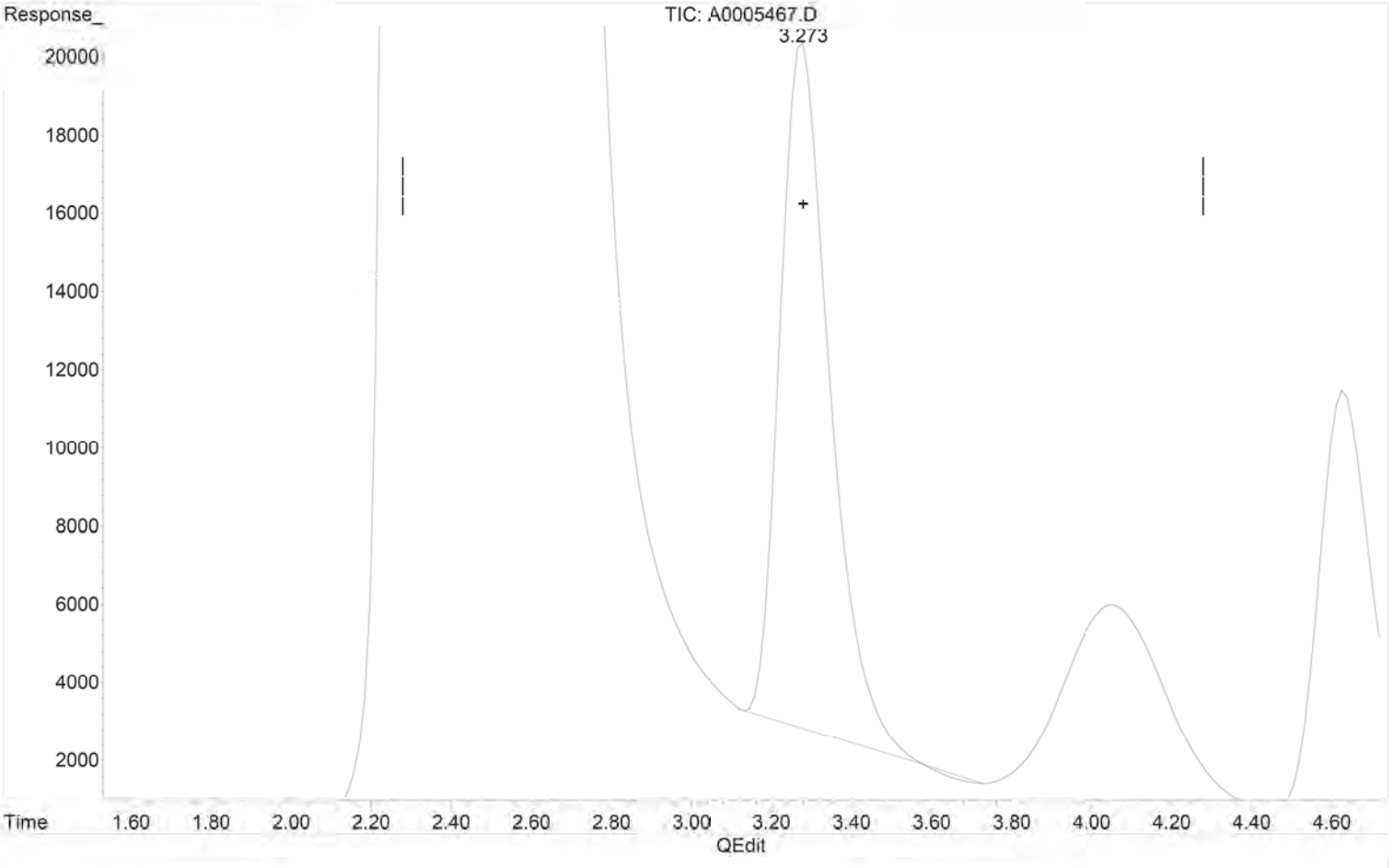
(+) = Expected Retention Time

Quantitation Report (Qedit) 1st

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

3.280min 16.370 ppm

response 1526176

Manual Integration

Before

07/02/20

(+) = Expected Retention Time

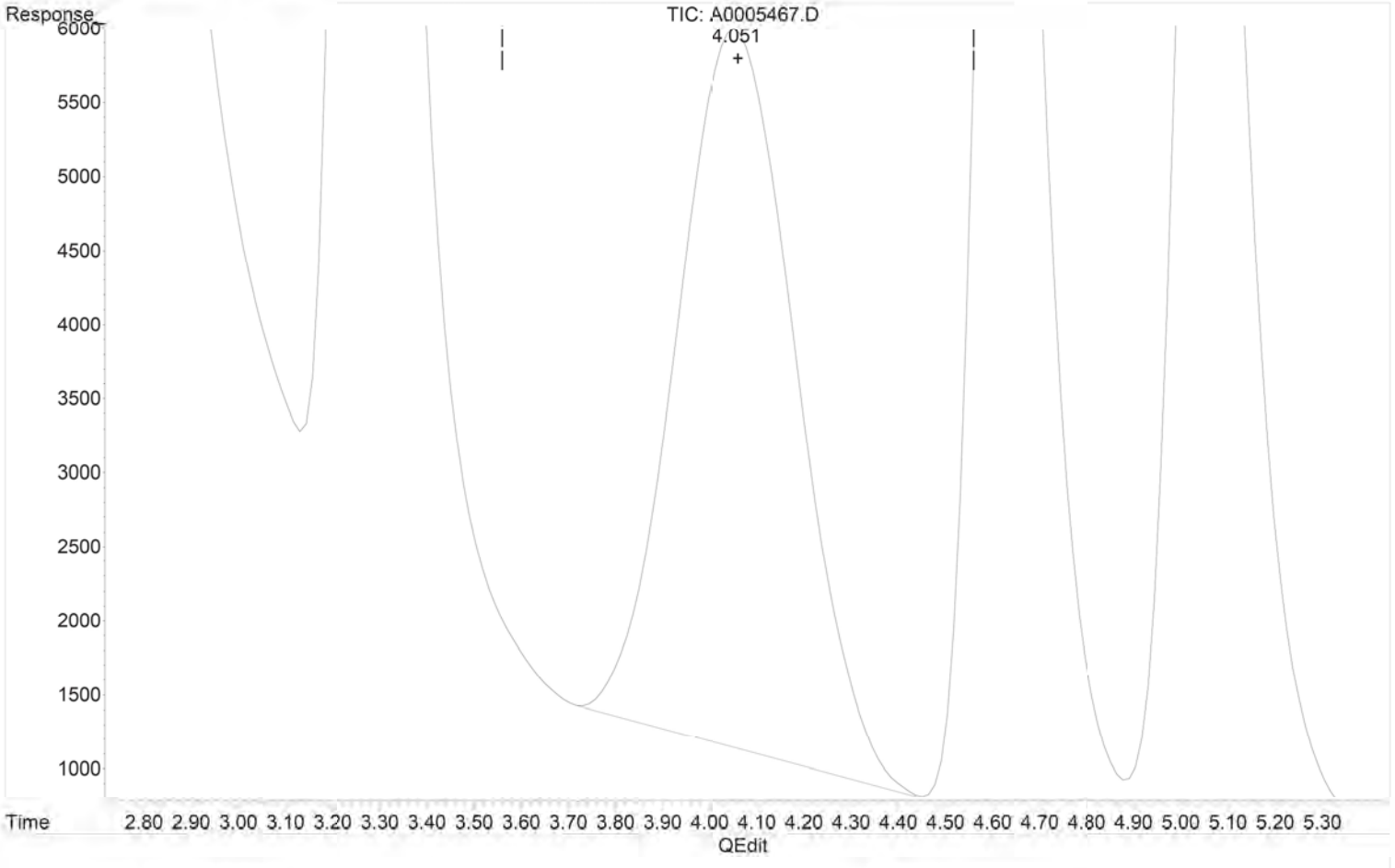
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

4.051min 1.433 ppm m

response 847838

Manual Integration:

After

Poor integration.

07/02/20

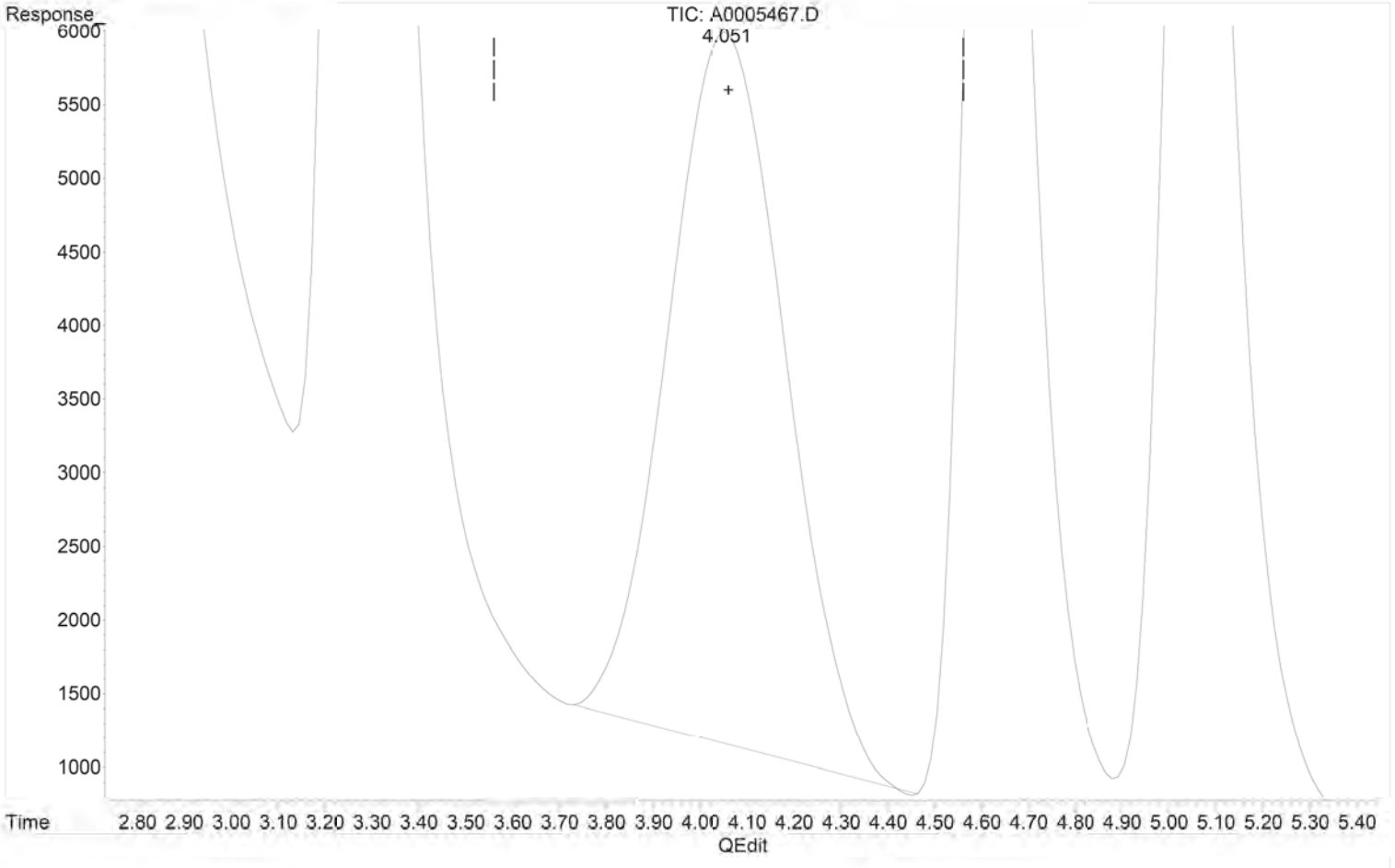
(+) = Expected Retention Time

Quantitation Report (Qedit) 1st

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

4.056min 1.422 ppm

response 840986

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

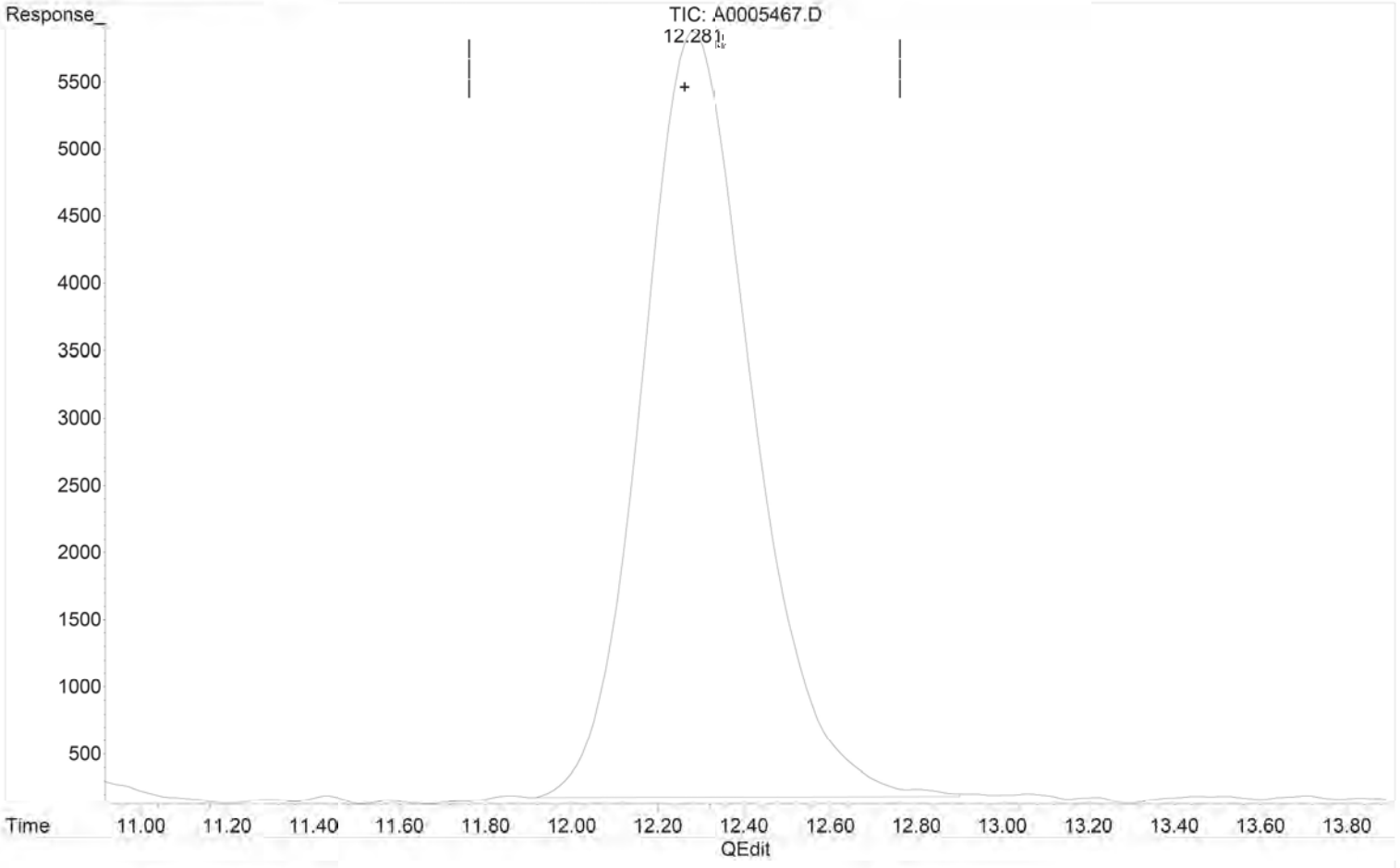
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
12.281min 18.610 ppm m
response 1011590

Manual Integration:
After
Poor integration.
07/02/20

(+) = Expected Retention Time
MA031220.M Thu Jul 02 16:48:03 2020

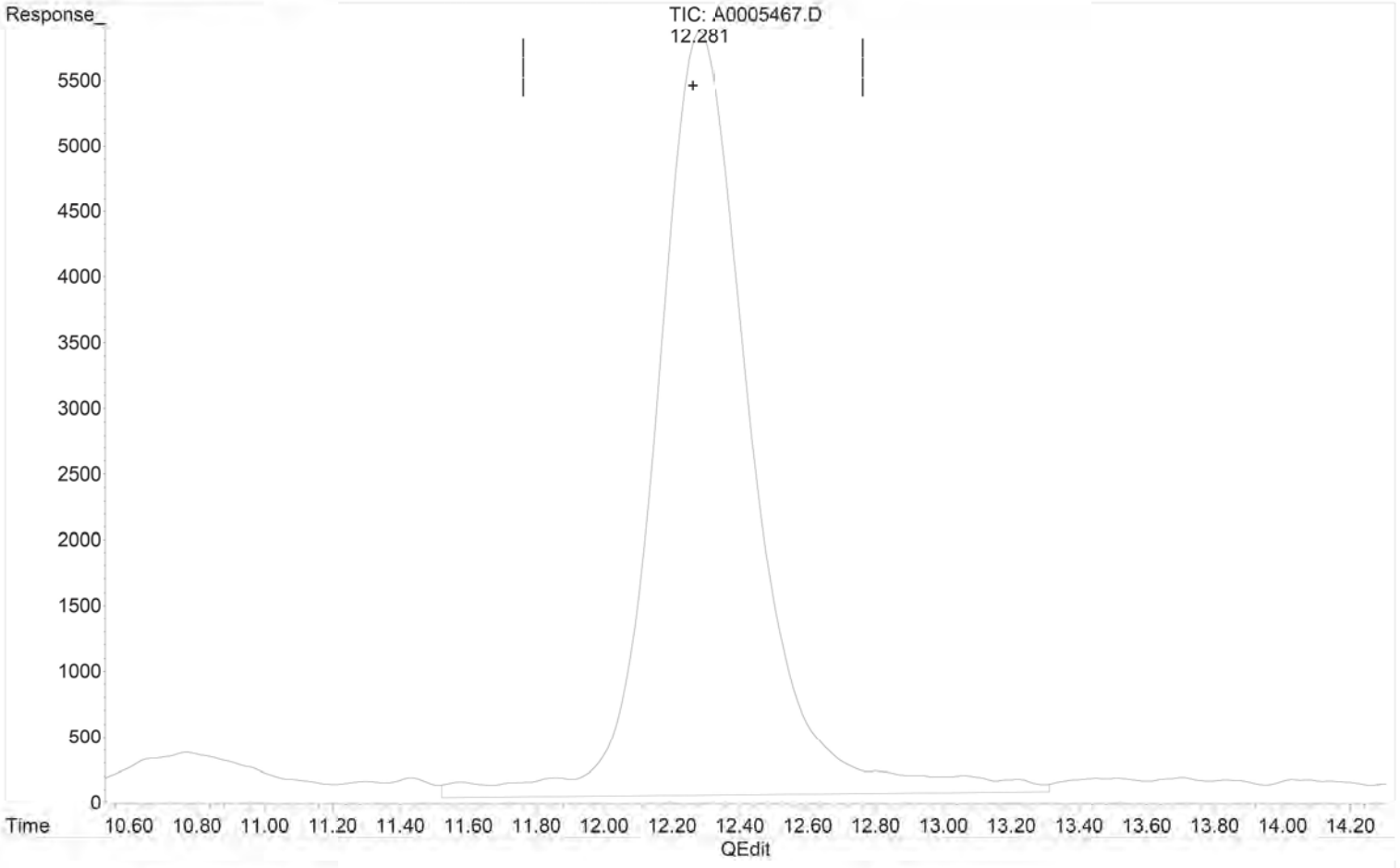
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

12.287min 20.889 ppm

response 1135459

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

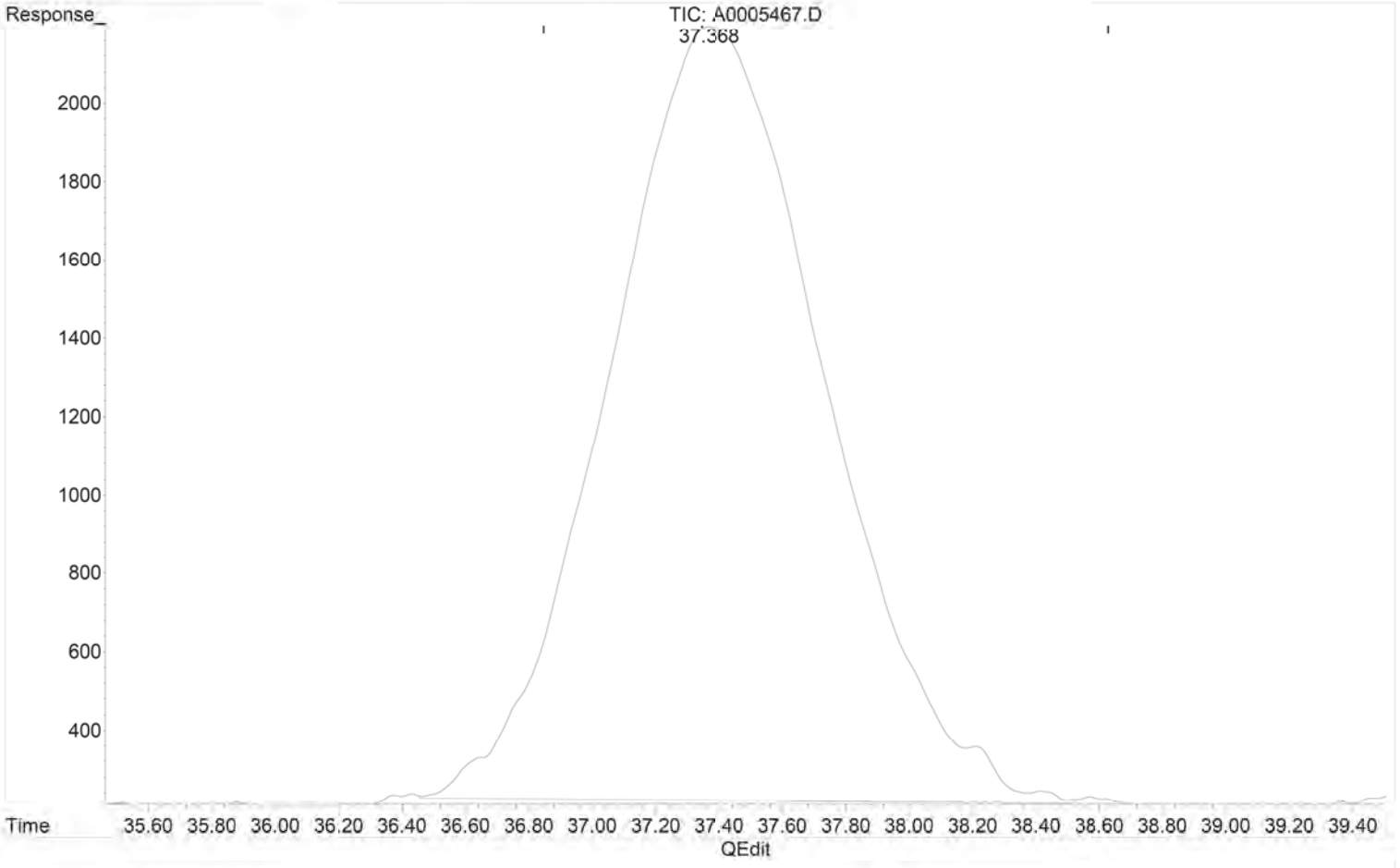
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.368min 17.788 ppm m

response 934955

Manual Integration:

After

Poor integration.

07/02/20

(+) = Expected Retention Time

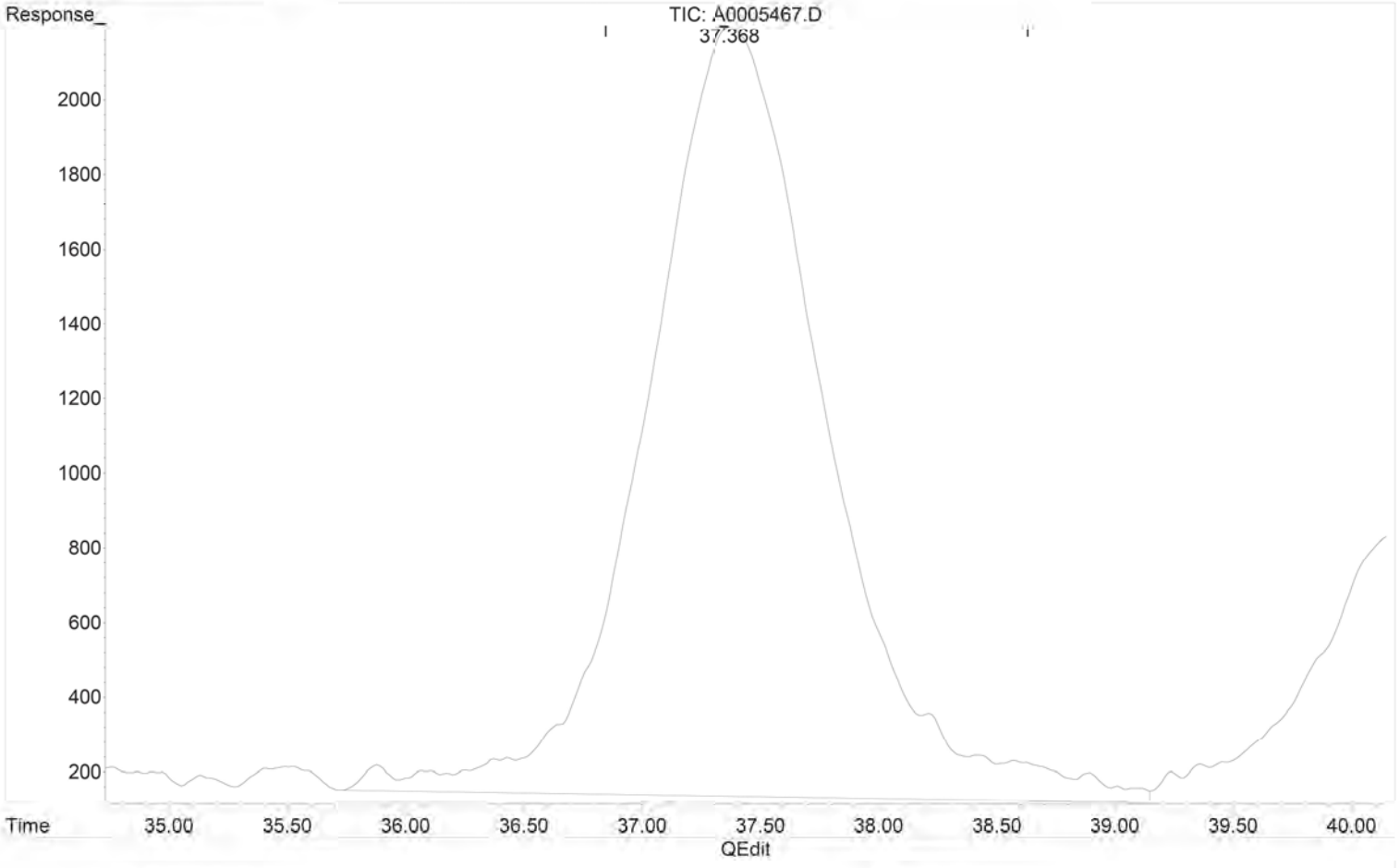
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.380min 20.725 ppm

response 1089360

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : ~~30-Dec-2000, 16:48:42~~ 02-Jul-2020, 09:50
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.273	1540796	16.526	ppm	m
2) T	Pyruvic acid	4.051	847838	1.433	ppm	m
3) T	Lactic Acid	4.633	1001154	17.746	ppm	
4) T	Acetic Acid	5.062	1029809	18.374	ppm	
5) T	Propionic Acid	12.281	1011590	18.610	ppm	m
6) T	Butyric Acid	37.368	934955	17.788	ppm	m

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

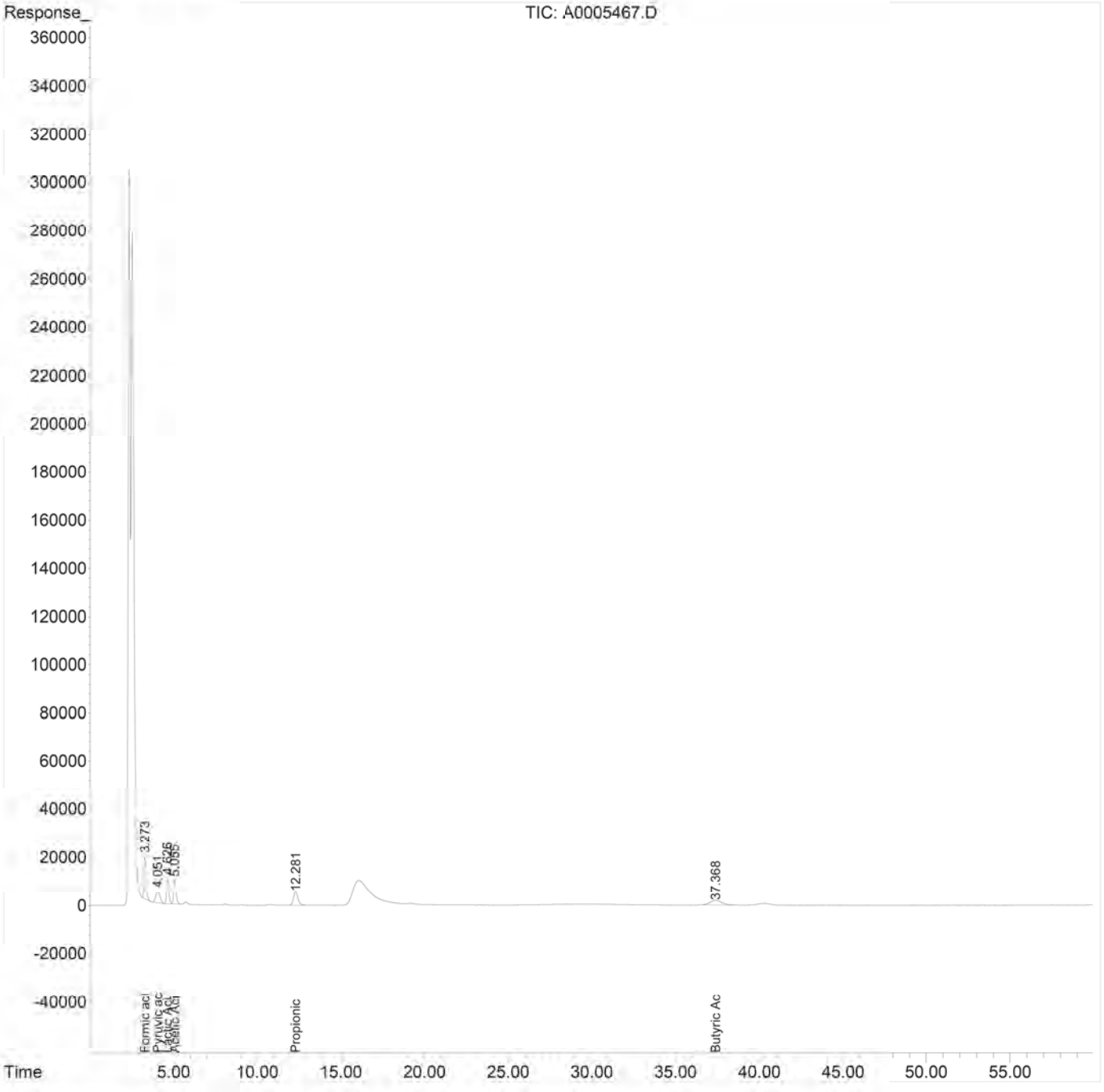
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



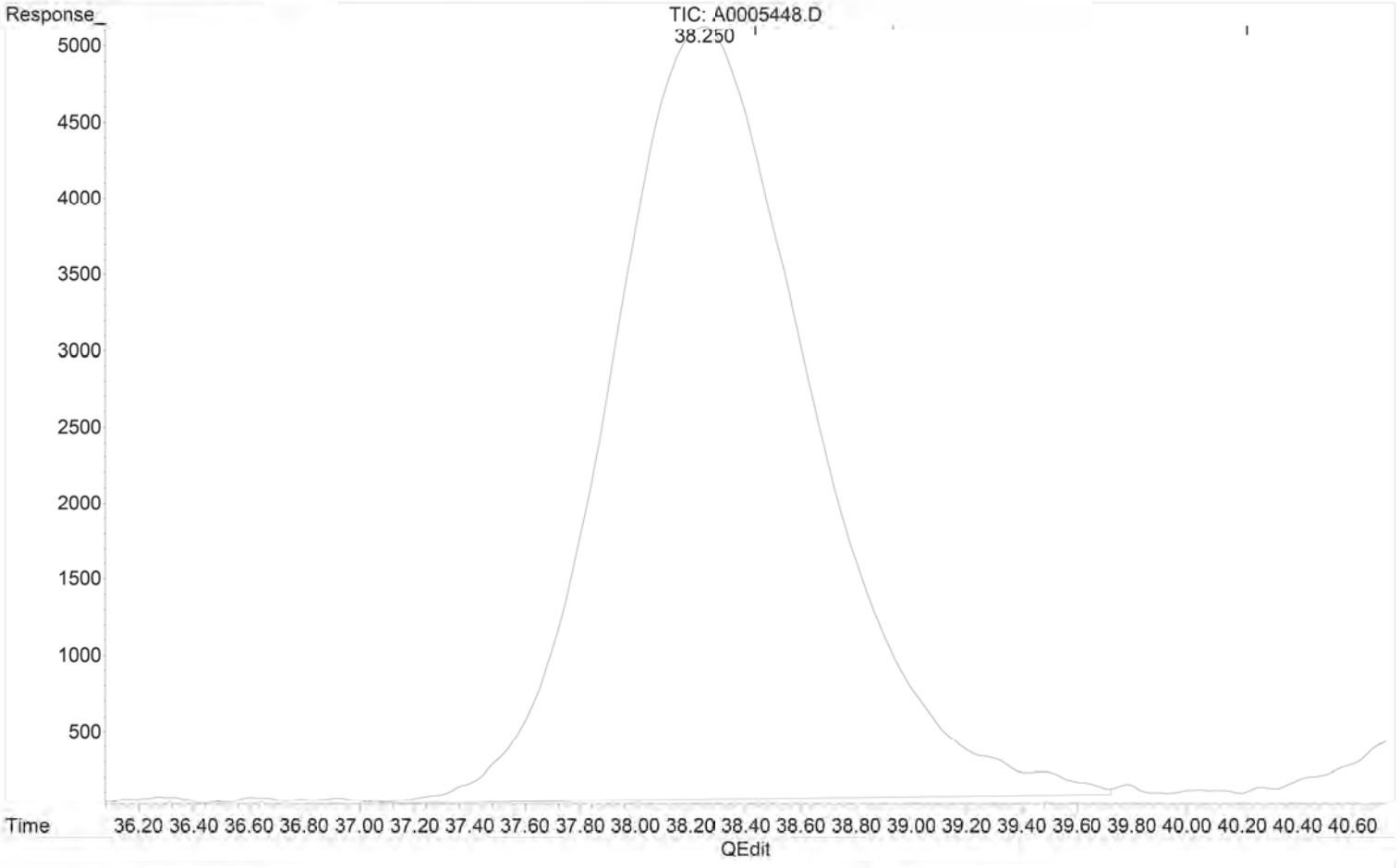
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005448.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 13:56:19
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:02:43 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Wed Jul 01 11:45:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

38.250min 48.980 ppm m

response 2574498

Manual Integration!

After

Peak not found.

07/02/20

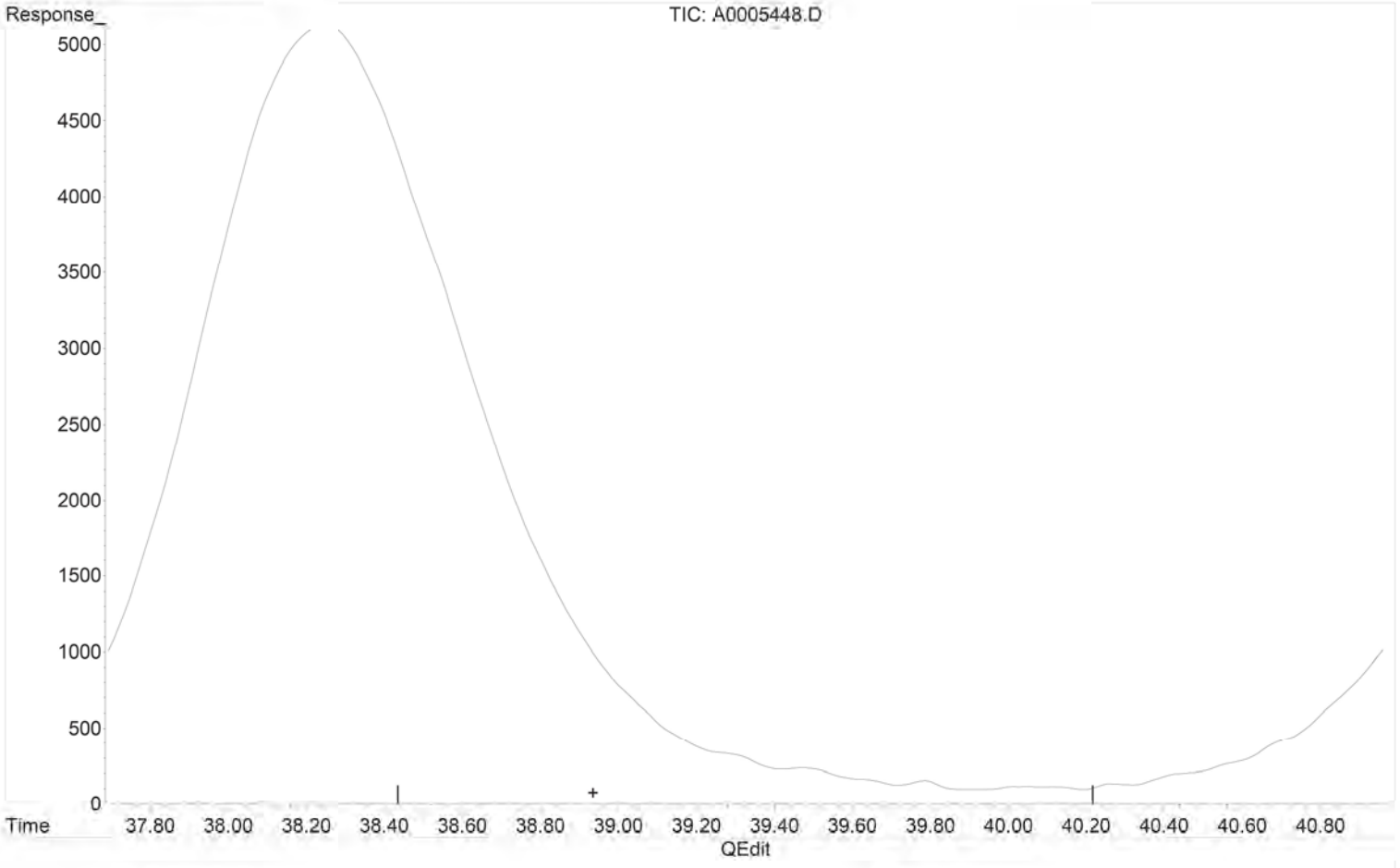
(+) = Expected Retention Time

Quantitation Report (Qedit) 1st

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005448.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 13:56:19
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:02:43 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Wed Jul 01 11:45:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

38.935min 0.000 ppm

response 0

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

1st AF 07/06/20
2nd BA 07/06/20

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005448.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 13:56:19
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:02:43 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Wed Jul 01 11:45:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.232	87.923 E3	5.7	93	0.00
2 T	Pyruvic acid	591.568	618.910 E3	-4.6	105	0.00
3 T	Lactic Acid	56.417	53.048 E3	6.0	94	0.00
4 T	Acetic Acid	56.048	55.724 E3	0.6	99	0.00
5 T	Propionic Acid	54.357	53.918 E3	0.8	96	0.00
6 T	Butyric Acid	52.562	51.490 E3	2.0	97	0.00

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005448.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 13:56:19
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:02:43 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Wed Jul 01 11:45:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.289	4396140	47.153	ppm	
2) T	Pyruvic acid	4.087	3094550	5.231	ppm	
3) T	Lactic Acid	4.668	2652410	47.015	ppm	
4) T	Acetic Acid	5.103	2786198	49.711	ppm	
5) T	Propionic Acid	12.491	2695880	49.595	ppm	
6) T	Butyric Acid	38.250f	2574498	48.980	ppm	m

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

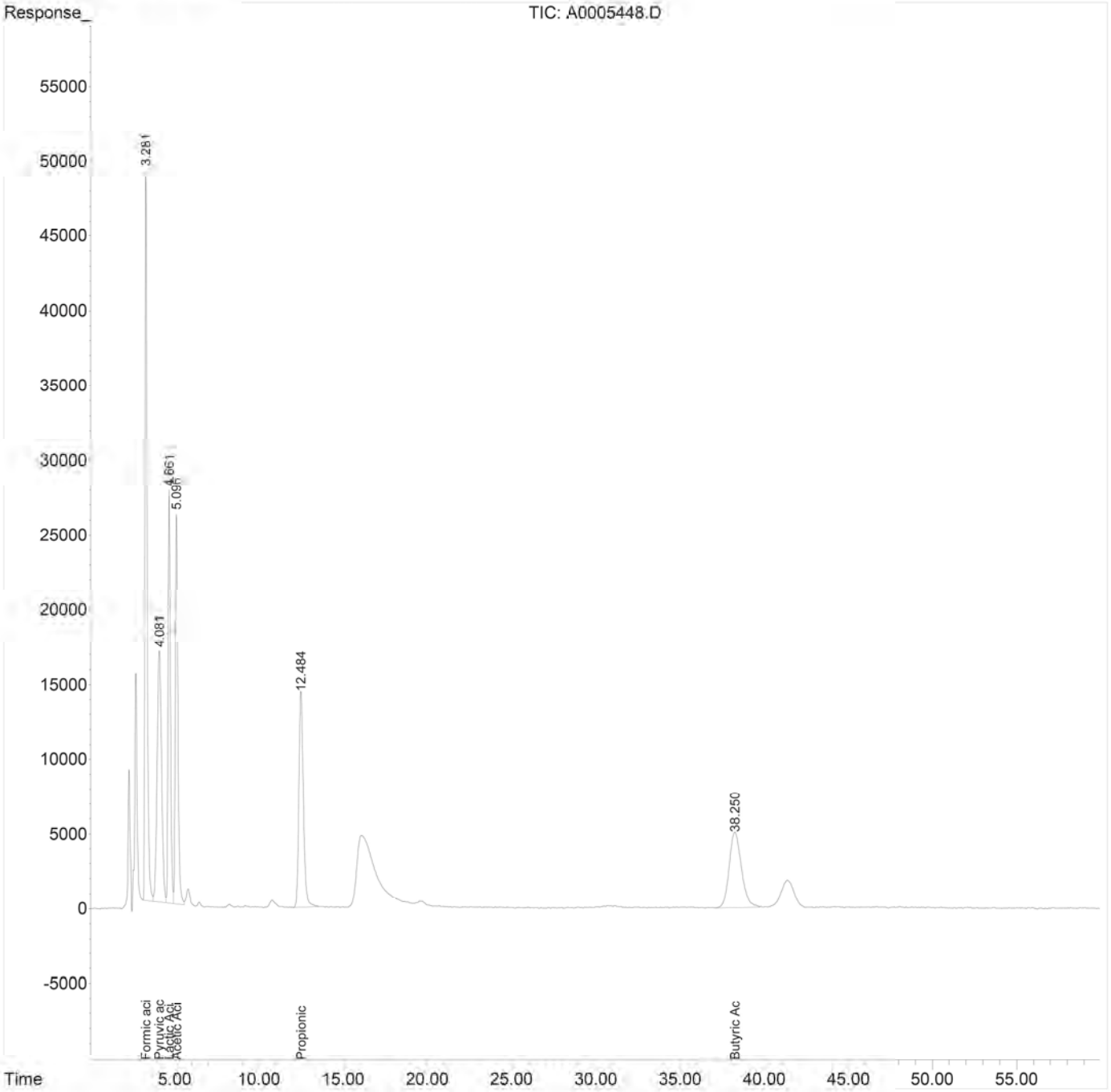
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005448.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 13:56:19
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:02:43 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Wed Jul 01 11:45:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



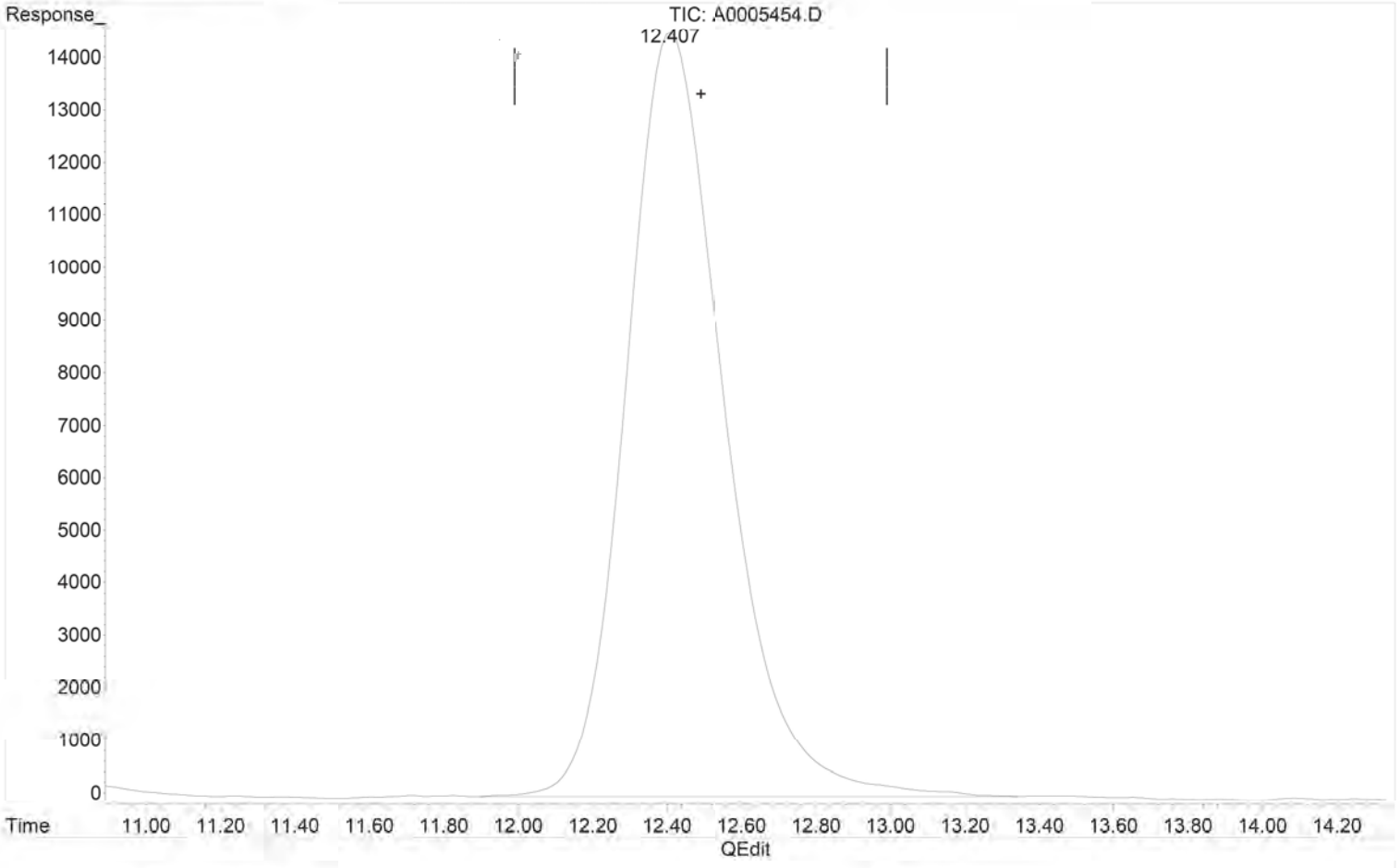
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005454.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:48:28
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:39 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

12.407min 49.189 ppm m

response 2673803

Manual Integration:

After

Poor integration.

07/02/20

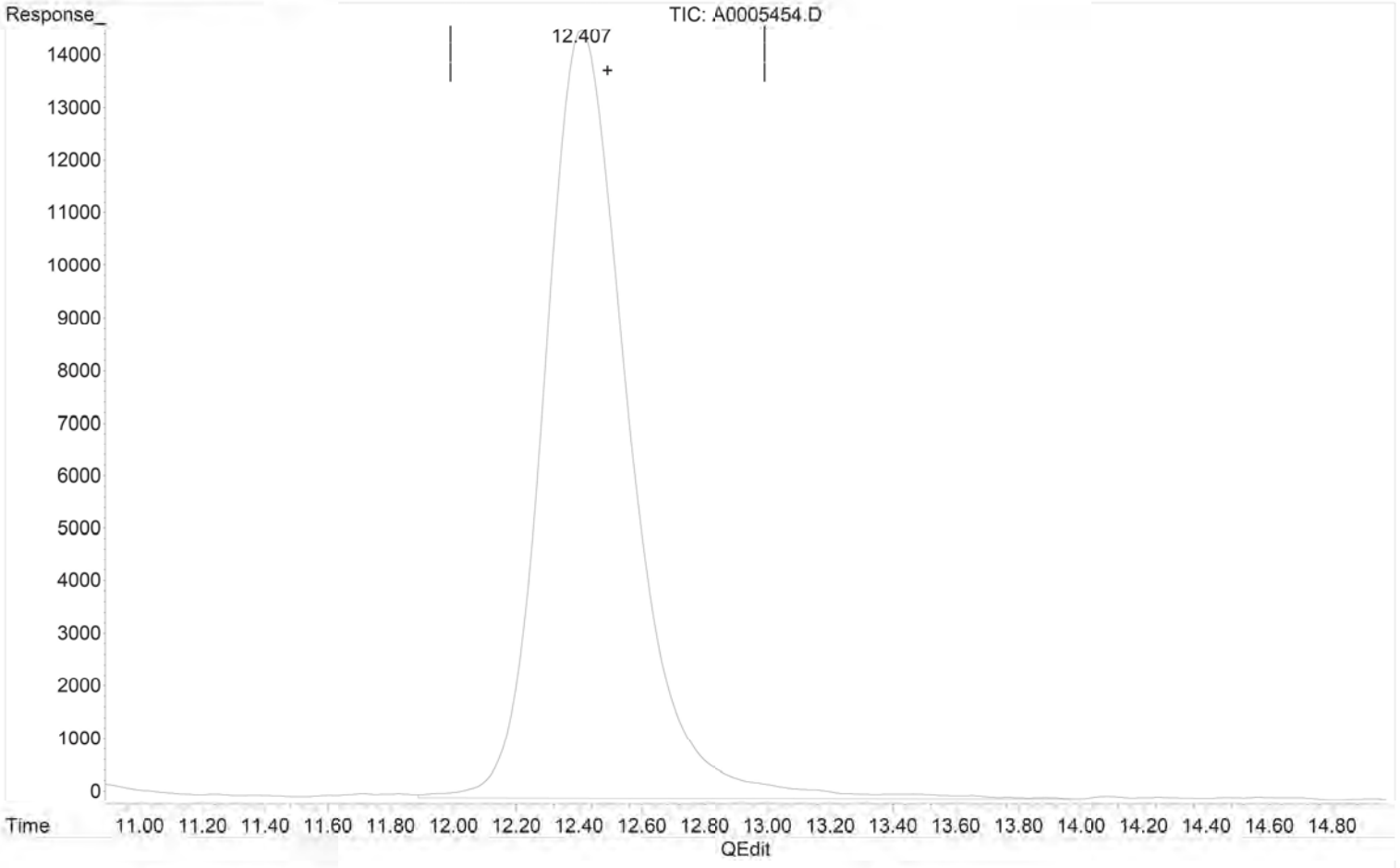
(+) = Expected Retention Time

Quantitation Report (Qedit) 1st

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005454.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:48:28
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:39 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

12.413min 50.550 ppm

response 2747773

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

1st AF 07/06/20
2nd BA 07/06/20

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005454.D
Signal(s) : dad1C.ch
Acq On : ~~31-Dec-2000, 02:48:28~~ 01-Jul-2020, 20:11
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:39 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.232	87.036 E3	6.6	92	0.00
2 T	Pyruvic acid	591.568	615.694 E3	-4.1	104	0.00
3 T	Lactic Acid	56.417	53.445 E3	5.3	95	-0.01
4 T	Acetic Acid	56.048	55.634 E3	0.7	98	-0.01
5 T	Propionic Acid	54.357	53.476 E3	1.6	96	-0.08
6 T	Butyric Acid	52.562	49.573 E3	5.7	93	-0.31

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005454.D
Signal(s) : dad1C.ch
Acq On : ~~31 Dec 2000, 02:48:28~~ 01-Jul-2020, 20:11
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:39 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.286	4351784	46.677	ppm	
2) T	Pyruvic acid	4.078	3078468	5.204	ppm	
3) T	Lactic Acid	4.656	2672249	47.366	ppm	
4) T	Acetic Acid	5.088	2781679	49.630	ppm	
5) T	Propionic Acid	12.407	2673803	49.189	ppm	m
6) T	Butyric Acid	37.941	2478649	47.157	ppm	

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

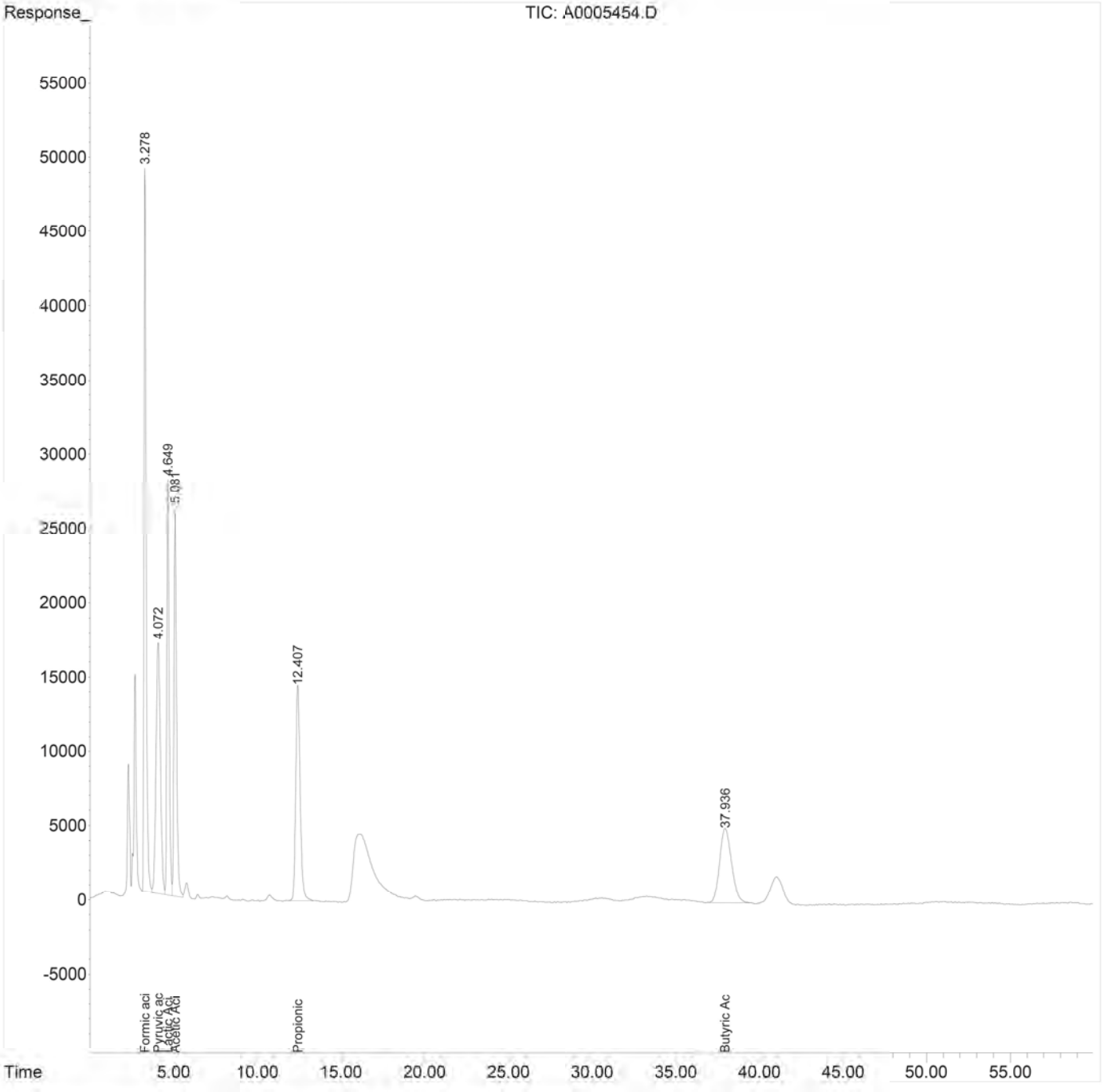
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005454.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:48:28
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:39 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



1st AF 07/06/20
2nd BA 07/06/20

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005460.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 02:32:48
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:05:35 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:13 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.232	86.967 E3	6.7	92	0.00
2 T	Pyruvic acid	591.568	618.225 E3	-4.5	105	0.00
3 T	Lactic Acid	56.417	53.615 E3	5.0	95	-0.01
4 T	Acetic Acid	56.048	55.562 E3	0.9	98	-0.01
5 T	Propionic Acid	54.357	53.174 E3	2.2	95	-0.07
6 T	Butyric Acid	52.562	50.719 E3	3.5	95	-0.34

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005460.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 02:32:48
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:05:35 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:13 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.283	4348362	46.640 ppm
2) T	Pyruvic acid	4.070	3091124	5.225 ppm
3) T	Lactic Acid	4.644	2680731	47.517 ppm
4) T	Acetic Acid	5.074	2778090	49.566 ppm
5) T	Propionic Acid	12.337	2658692	48.911 ppm
6) T	Butyric Acid	37.600	2535956	48.247 ppm

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

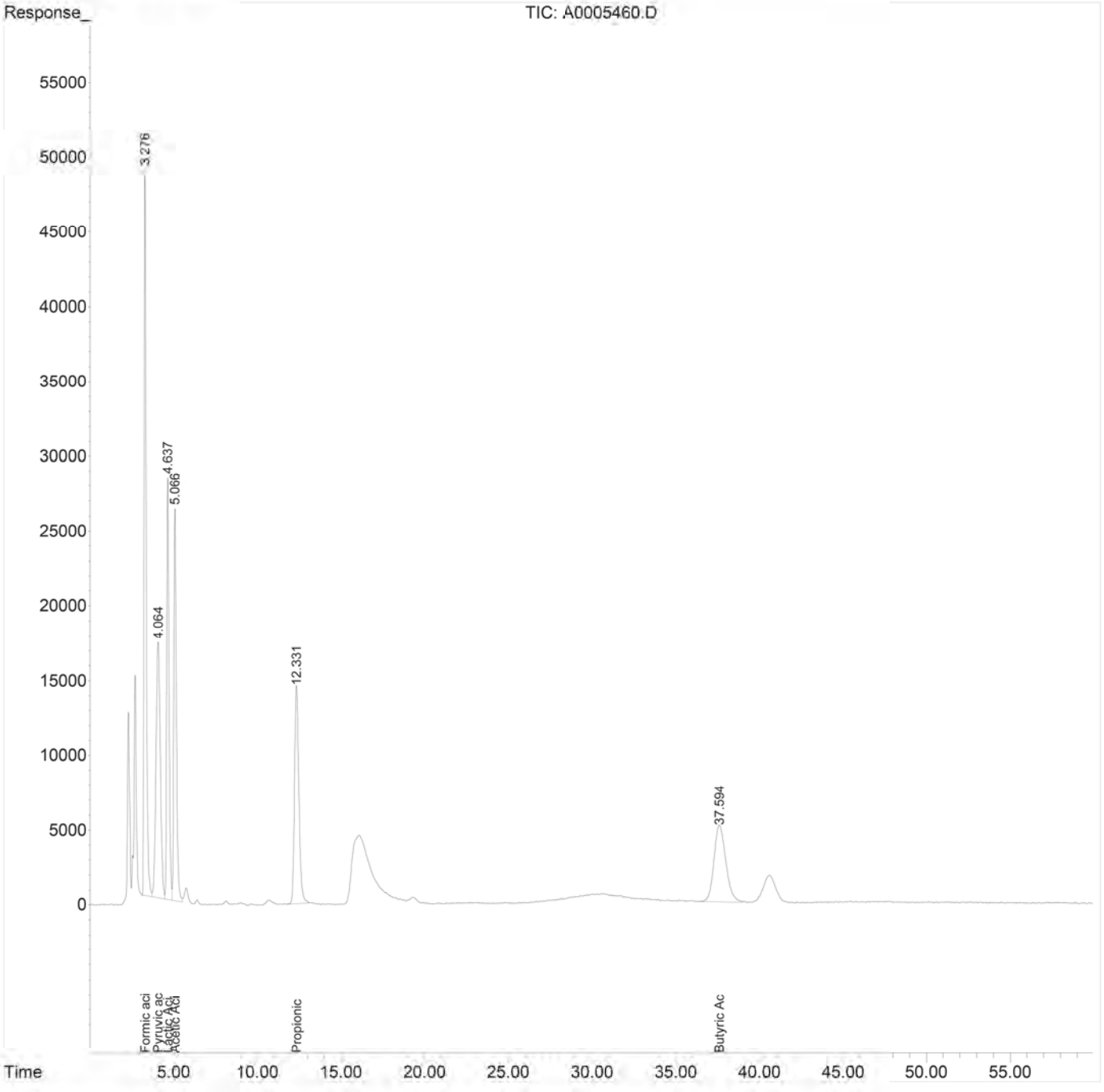
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005460.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 02:32:48
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:05:35 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:13 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

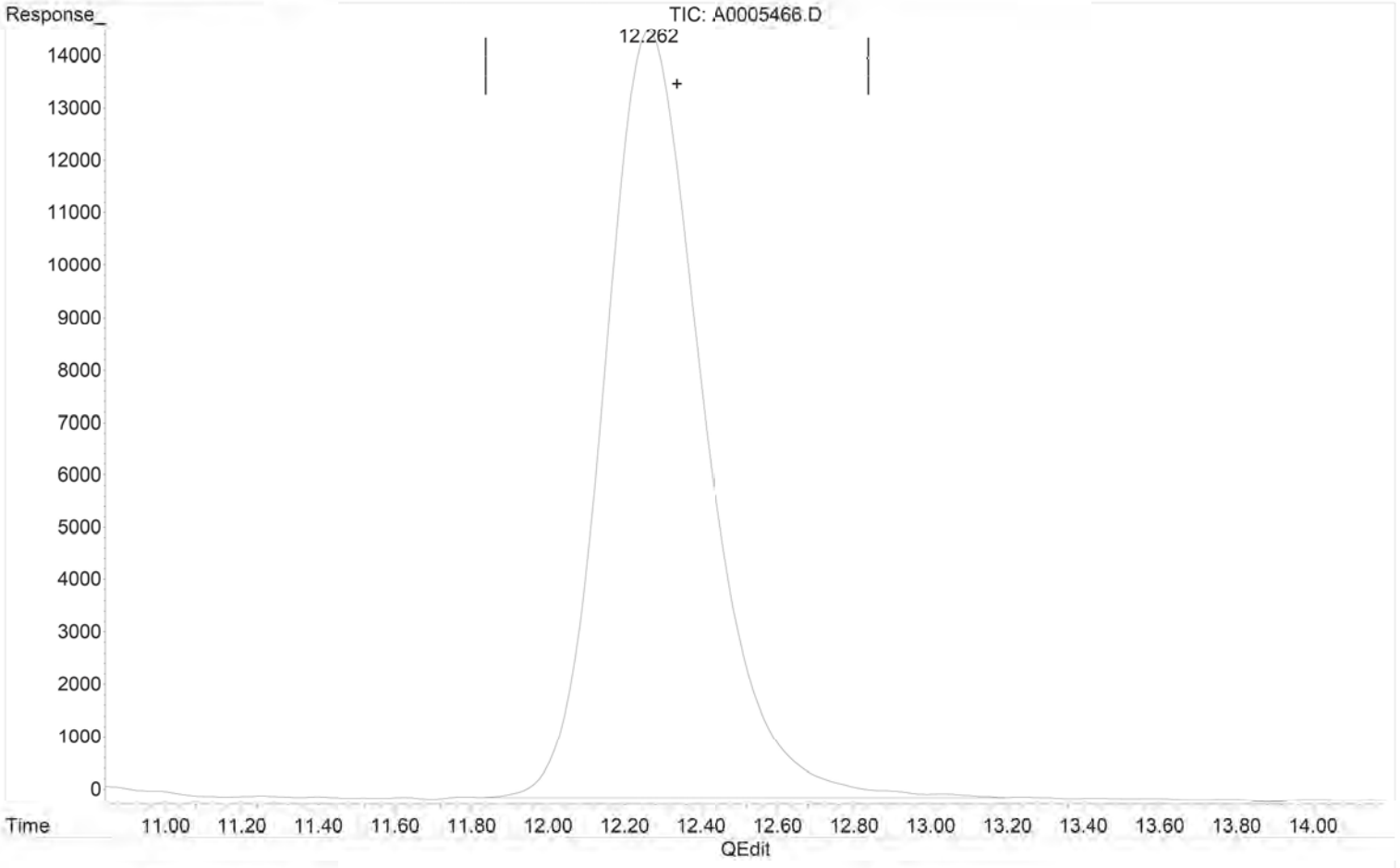


Quantitation Report (Qedit) 1st

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005466.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 08:50:41
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
12.262min 48.691 ppm m
response 2646708

Manual Integration:
After
Poor integration.
07/02/20

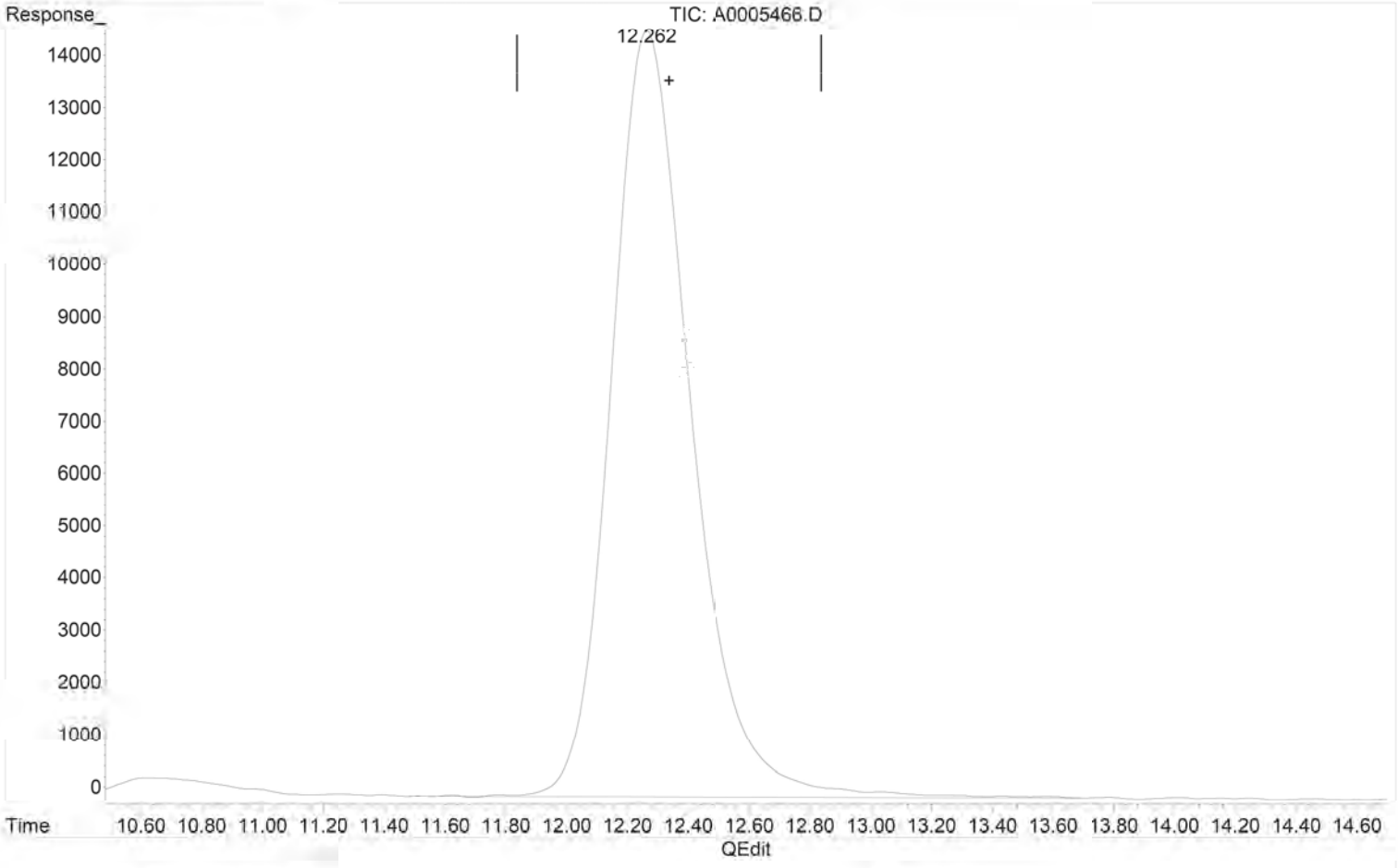
(+) = Expected Retention Time

Quantitation Report (Qedit) 1st

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005466.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 08:50:41
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

12.268min 49.322 ppm

response 2681012

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

1st AF 07/06/20
2nd BA 07/06/20

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005466.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 08:50:41
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.232	85.866 E3	7.9	91	0.00
2 T	Pyruvic acid	591.568	594.210 E3	-0.4	101	0.00
3 T	Lactic Acid	56.417	52.771 E3	6.5	94	-0.01
4 T	Acetic Acid	56.048	54.437 E3	2.9	96	-0.02
5 T	Propionic Acid	54.357	52.934 E3	2.6	95	-0.07
6 T	Butyric Acid	52.562	52.270 E3	0.6	98	-0.25

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005466.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 08:50:41
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.279	4293319	46.050	ppm	
2) T	Pyruvic acid	4.060	2971052	5.022	ppm	
3) T	Lactic Acid	4.630	2638527	46.769	ppm	
4) T	Acetic Acid	5.057	2721854	48.563	ppm	
5) T	Propionic Acid	12.262	2646708	48.691	ppm	m
6) T	Butyric Acid	37.347	2613511	49.723	ppm	

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

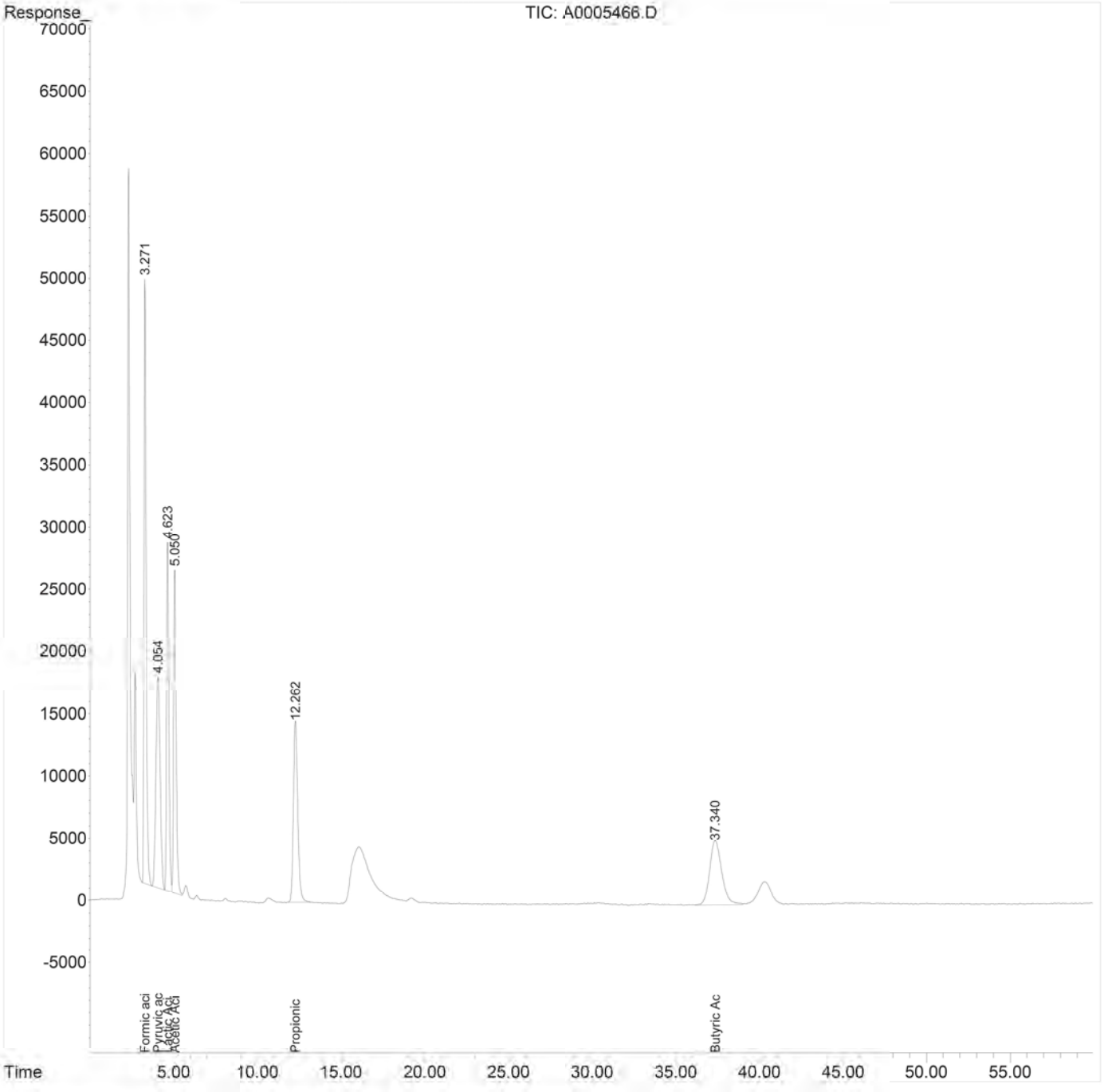
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005466.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 08:50:41
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



1st AF 07/06/20
2nd BA 07/06/20

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005472.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 15:08:24
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.232	85.492 E3	8.3	91	0.00
2 T	Pyruvic acid	591.568	593.597 E3	-0.3	101	0.00
3 T	Lactic Acid	56.417	53.078 E3	5.9	94	0.00
4 T	Acetic Acid	56.048	54.351 E3	3.0	96	0.00
5 T	Propionic Acid	54.357	53.792 E3	1.0	96	-0.02
6 T	Butyric Acid	52.562	52.259 E3	0.6	98	-0.19

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005472.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 15:08:24
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.279	4274586	45.849 ppm
2) T	Pyruvic acid	4.054	2967984	5.017 ppm
3) T	Lactic Acid	4.627	2653881	47.041 ppm
4) T	Acetic Acid	5.055	2717571	48.486 ppm
5) T	Propionic Acid	12.242	2689612	49.480 ppm
6) T	Butyric Acid	37.161	2612962	49.712 ppm

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

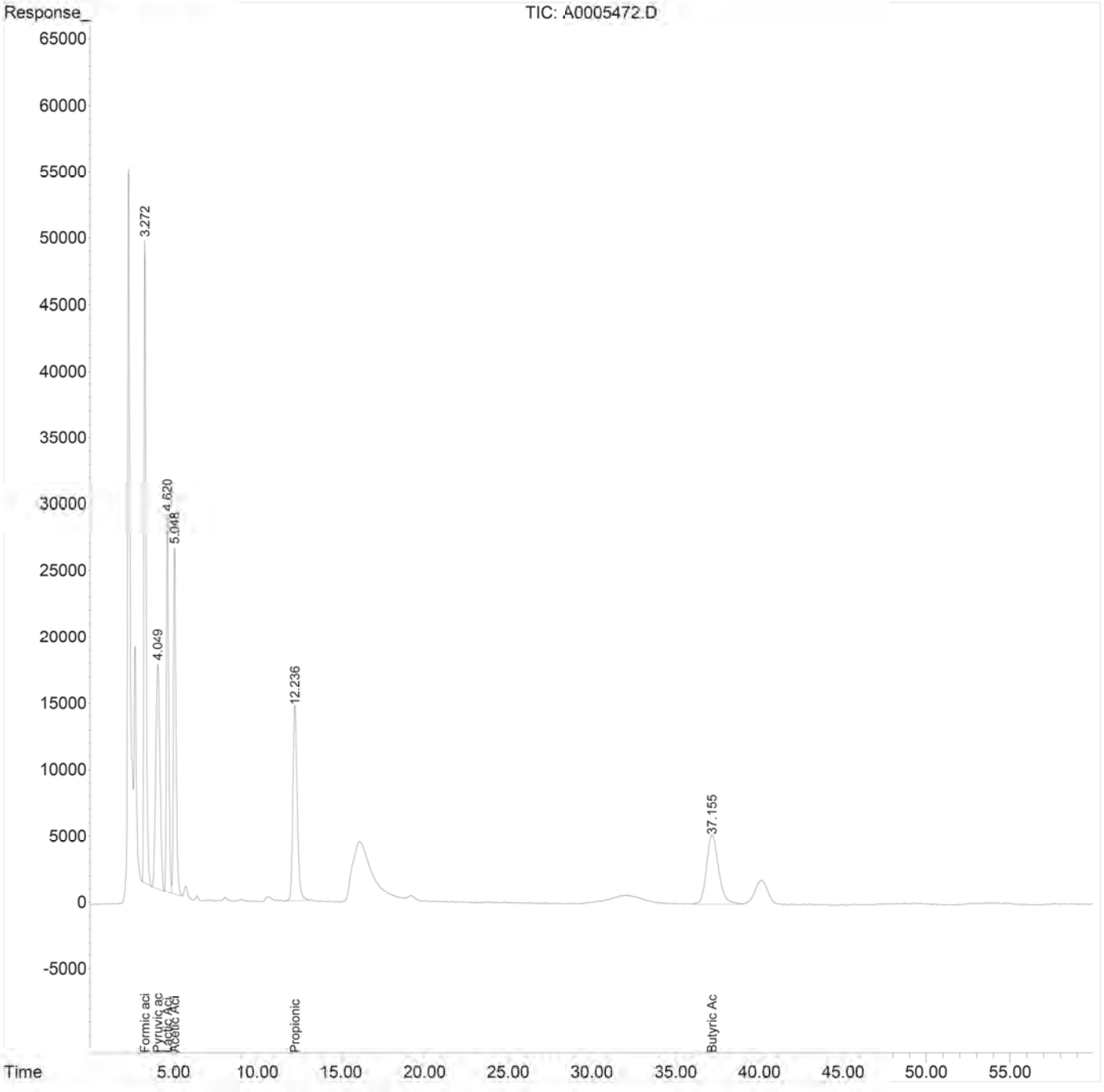
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005472.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 15:08:24
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



Analysis: Met Acids Analyst: Archer Run Method: NEWMETA.M
Date: 03/12/2020 Instr. HPLC05 Quant Method: MA03/220.M
LIMS Run#:
Setup: Column: Synergi Hydro-RP 150x4.6 Col.Temp: 35°C Flow: 0.6mL/min
Mobile Phase: 0.02M KH2PO4 prep 0.1% PO4 ul Inj.: 50
Mobile Phase ID: O-760-76 03/12/2020

Pos.	Sample	Diln.	Stds. ID	File#	OK?	Comments
1	Blk			A0004461	—	
1	Blk			62	—	
1	Blk			63	—	
1	last Blk			64	Y	
2	STD 1	2µL/1mL	205268	65	Y	
3	2	4µL/1mL		66	Y	
4	3	10µL/1mL		67	Y	
5	4	20µL/1mL		68	Y	
6	5	40µL/1mL		69	Y	
7	6	0.1mL/1mL		70	Y	
8	7	0.2mL/1mL		71	Y	
9	8	0.4mL/1mL		72	Y	
10	ICV	100µL/1mL	203153	73	N	Interference w/ Butyric

Archer 03/27/2020

Primary: 205268 exp: 09/21/20 Secondary: 203153 exp: 09/21/20
pH Paper: 205502 Acid: 203550

Runlog HPLCr2
3/23/18

Analysis: Met Acids Analyst: ASelmer Run Method: NEWMETA.M

Date: 03/16/2020 Instr. HPLC05 Quant Method: MA031220.M

LIMS Run#: 673626

Setup: Column: Synergi Hydro RP 150 x 4.6 Col.Temp: 35°C Flow: 0.6mL/min

Mobile Phase: 0.02M KH_2PO_4 pH 6.0 in DI Water ul Inj.: 50

Mobile Phase ID: O-7668-76 03/12/2020

Pos.	Sample	Diln.	Stds. ID	File#	OK?	Comments
1	DLK			A0004774	—	
1	DLK			75		
2	CCV	100ppm/1mL	205268	76	Y	
3	ICV	↓	203153	77	Y	
4	CCV	100ppm/1mL	205268	78	Y	Retest ↑
5	MD			79	Y	
6	LCS	100ppm/1mL	203153	80	Y	
7	DLCS	↓	↓	81	Y	
8	K2001981-001			82	N	Acetic >LR, dilute 1/2
9	↓ -001 MS		203153	83	N	↓
4	CCV	100ppm/1mL	205268	84	Y	
10	K2001981-001 Dup		203153	85	N	Acetic >LR
11	K2001990-001	2		86	Y	
12	R2001765-012			87	Y	
13	↓ -022			88	Y	
14	↓ -023			89	Y	
4	CCV	100ppm/1mL	205268	90	Y	
15	LOQ/MDL	10ppm/1mL	203153	91	Y	
16	LODV	5ppm/1mL	↓	92	Y	
17	R2002223-001			93	Y	
18	↓ -003			94	Y	
19	↓ -005			95	Y	
4	CCV	100ppm/1mL	205268	96	Y	
20	K2001981-001	2		97		
4	CCV	100ppm/1mL	205268	98	Y	

05/17/2020

Primary: 205268 exp: 03/21/20 Secondary: 203153 exp: 03/28/20

pH Paper: 205502 Acid: 203940

Runlog HPLCr2
3/23/18

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.949	18444040	201.560	ppm	
2) T	Pyruvic acid	3.625	11605902	19.912	ppm	m
3) T	Lactic Acid	4.103	11063811	199.720	ppm	m
4) T	Acetic Acid	4.584	11047591	197.987	ppm	m
5) T	Propionic Acid	11.450	10994386	200.127	ppm	
6) T	Butyric Acid	36.001f	10326182	196.253	ppm	m

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

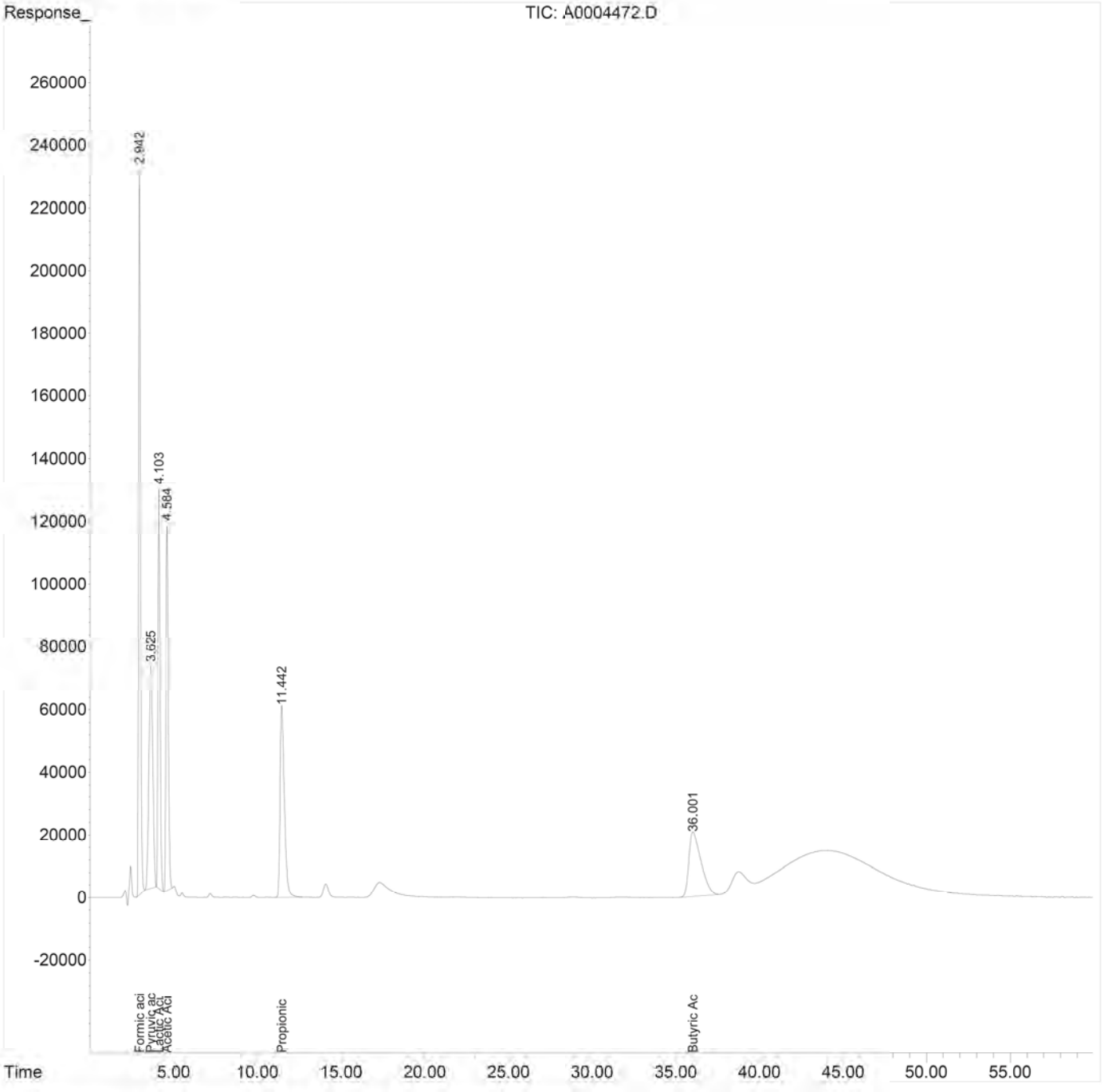
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004464.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 11:36:51
Operator : A.Felser
Sample : INST BLK
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:30:23 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:29:26 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) t	Formic acid	0.000	0	N.D.	ppm
2) T	Pyruvic acid	0.000	0	N.D.	ppm
3) T	Lactic Acid	0.000	0	N.D.	ppm
4) T	Acetic Acid	0.000	0	N.D.	ppm
5) T	Propionic Acid	0.000	0	N.D.	ppm
6) T	Butyric Acid	0.000	0	N.D.	ppm

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

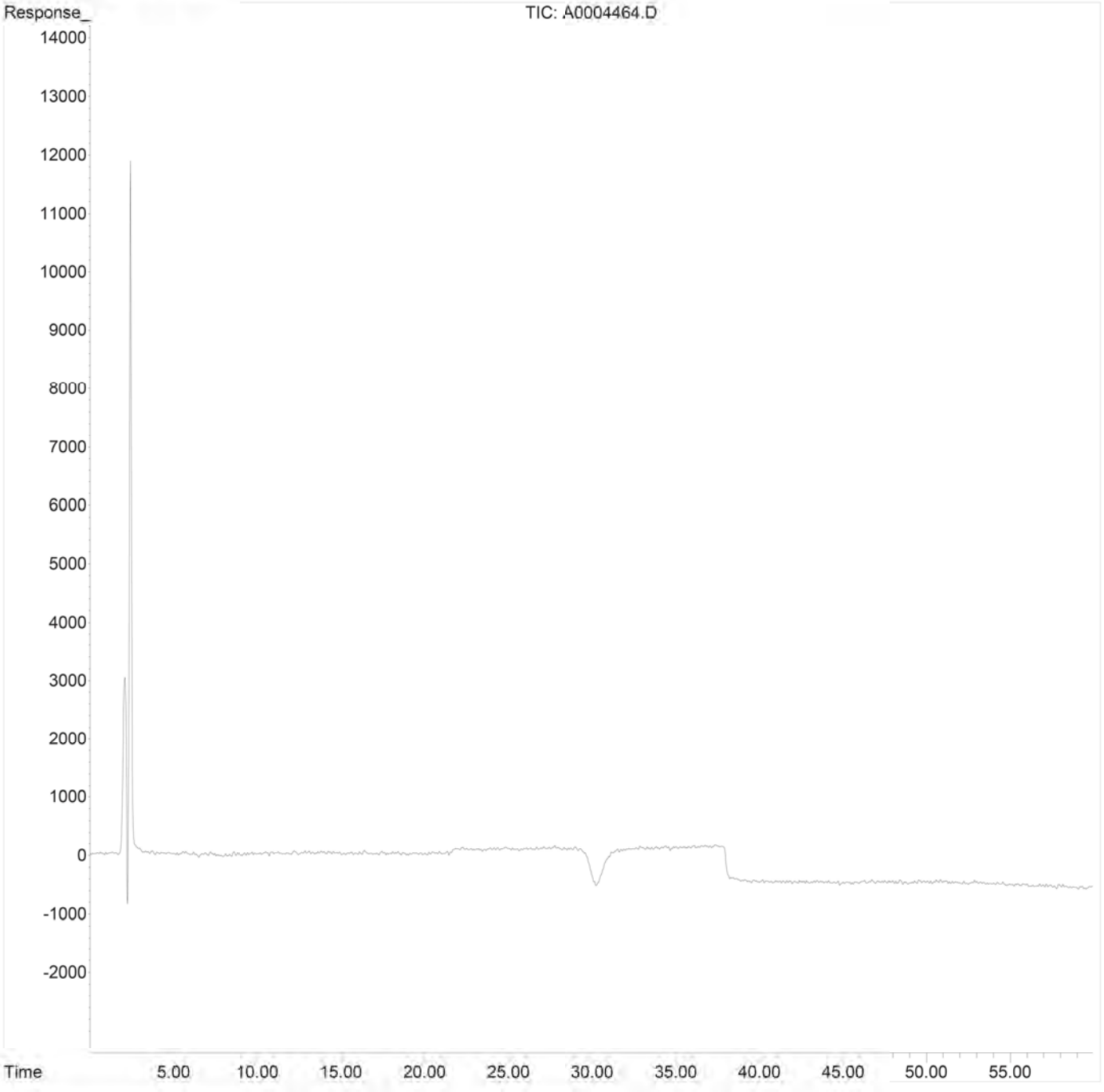
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004464.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 11:36:51
Operator : A.Felser
Sample : INST BLK
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:30:23 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:29:26 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



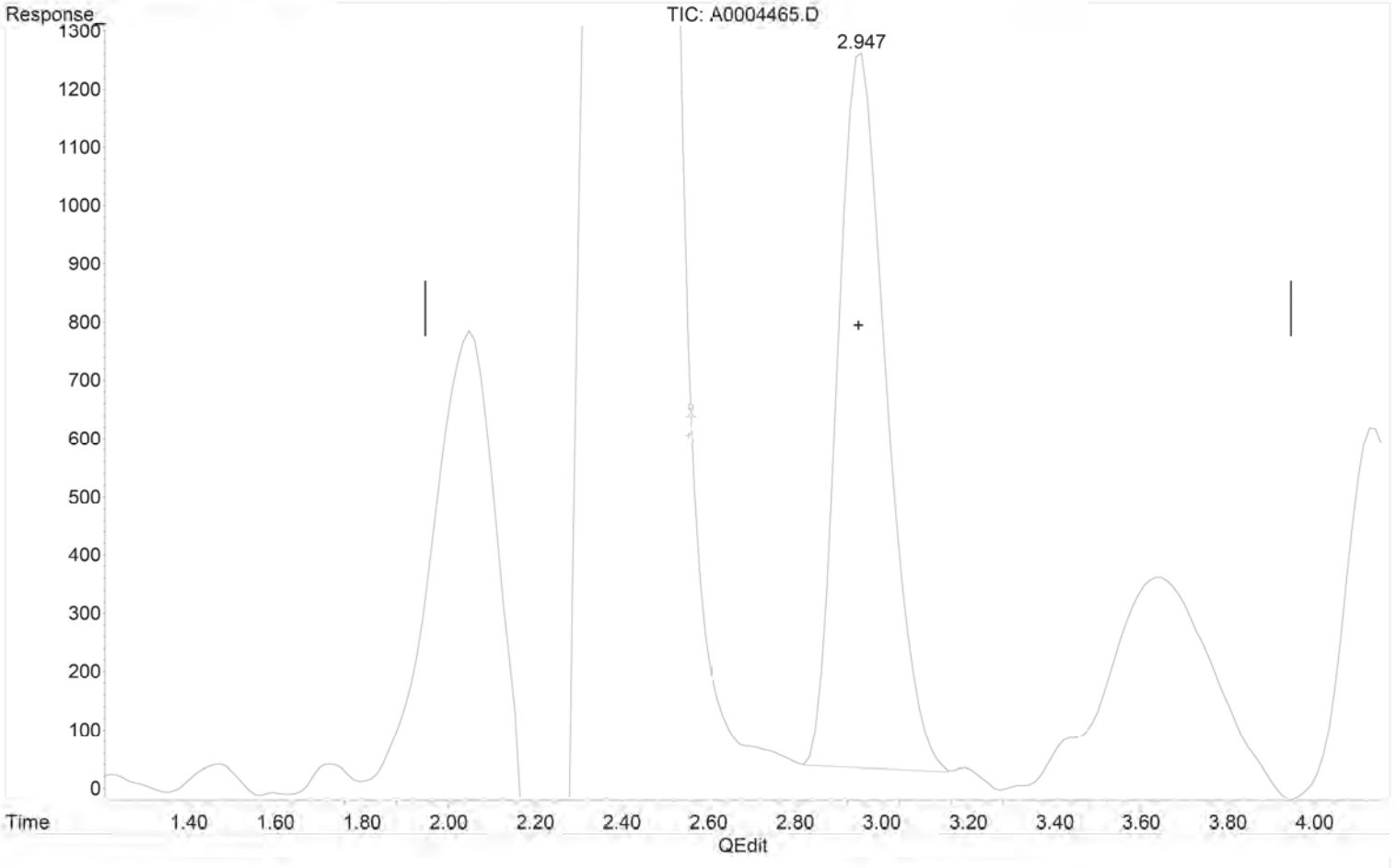
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.947min 1.051 ppm m

response 96141

Manual Integration:

After

Peak not found.

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:18:53 2020

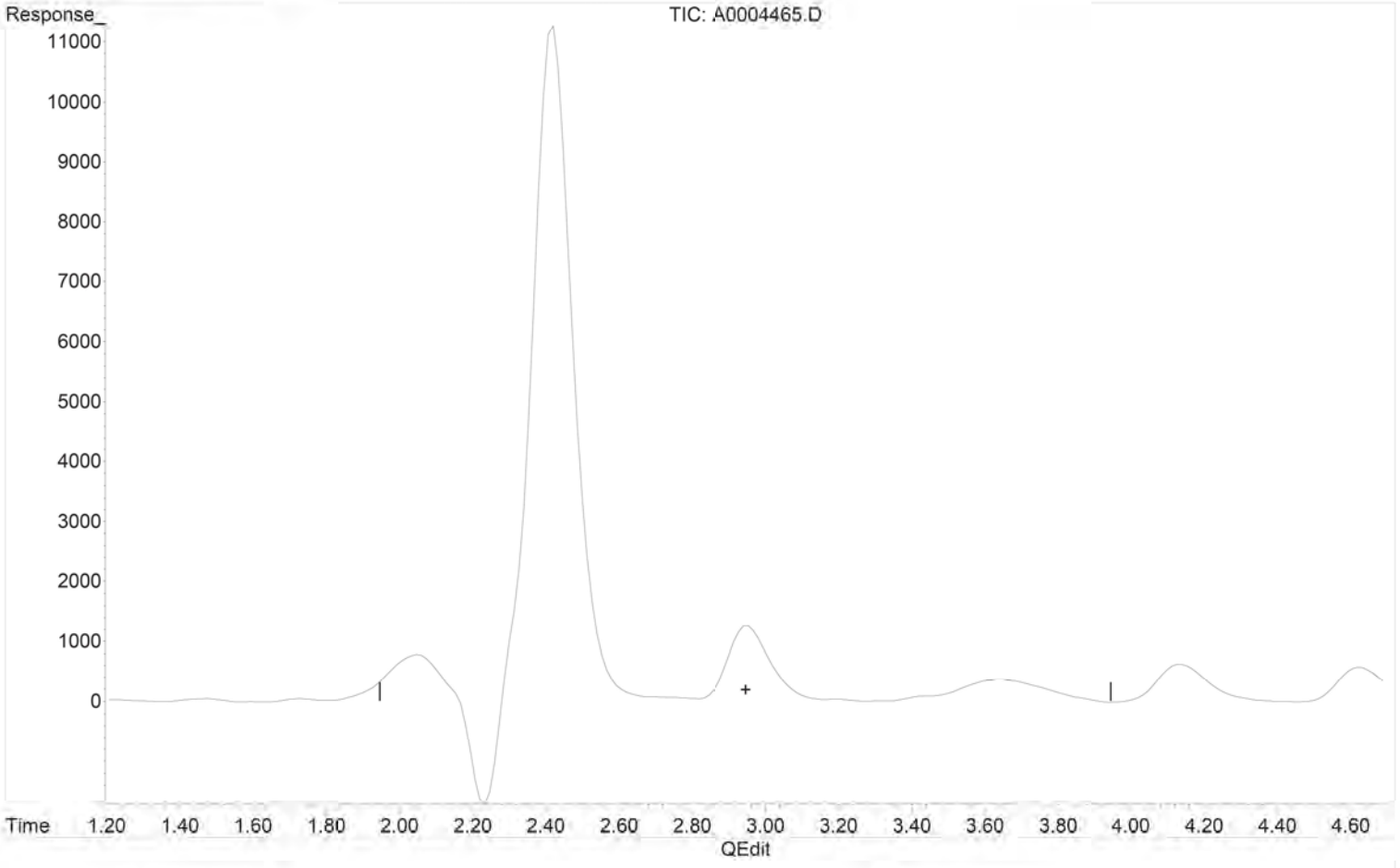
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.946min 0.000 ppm

response 0

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:18:43 2020

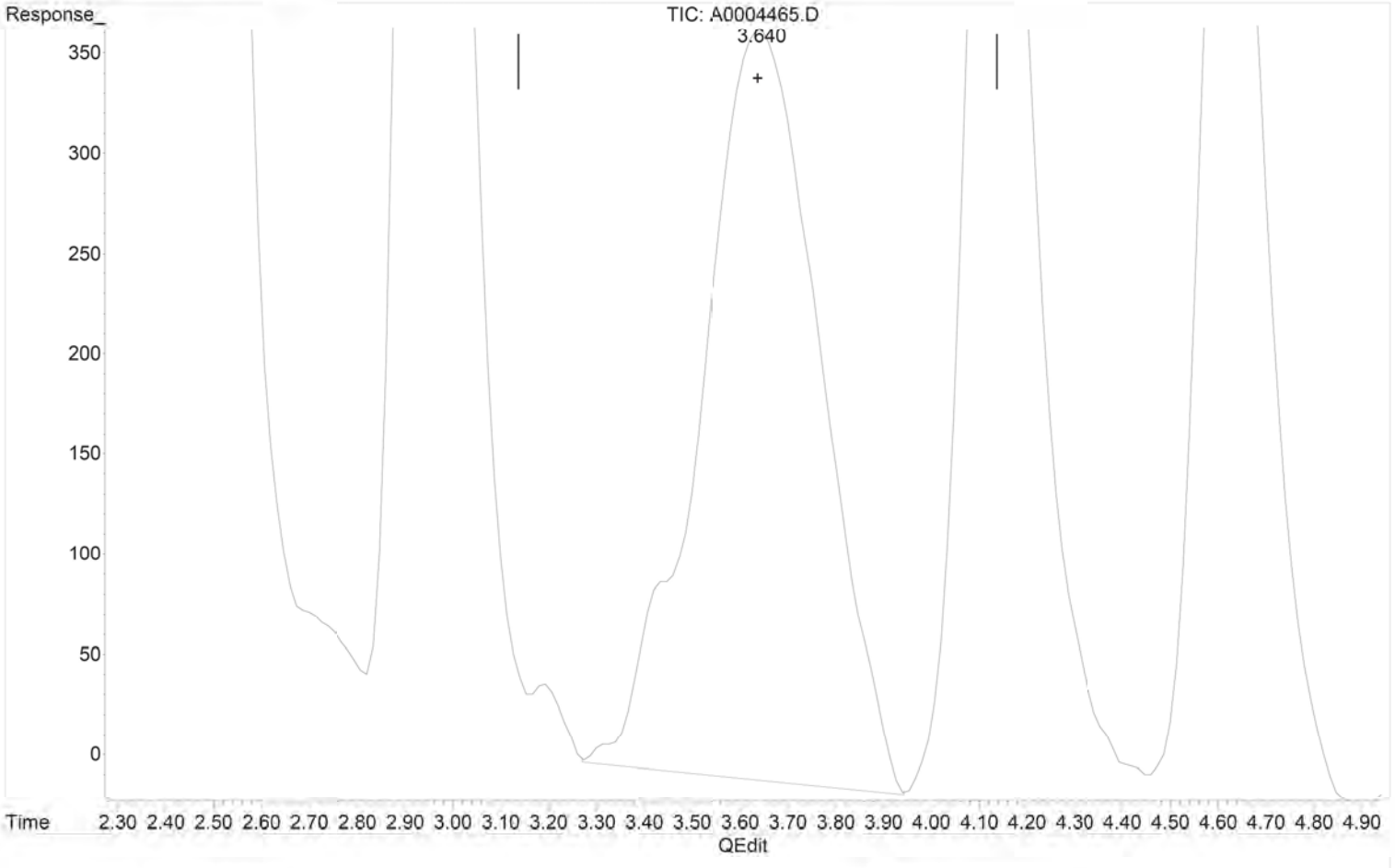
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.640min 0.112 ppm m

response 65073

Manual Integration:

After

Peak not found.

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:19:08 2020

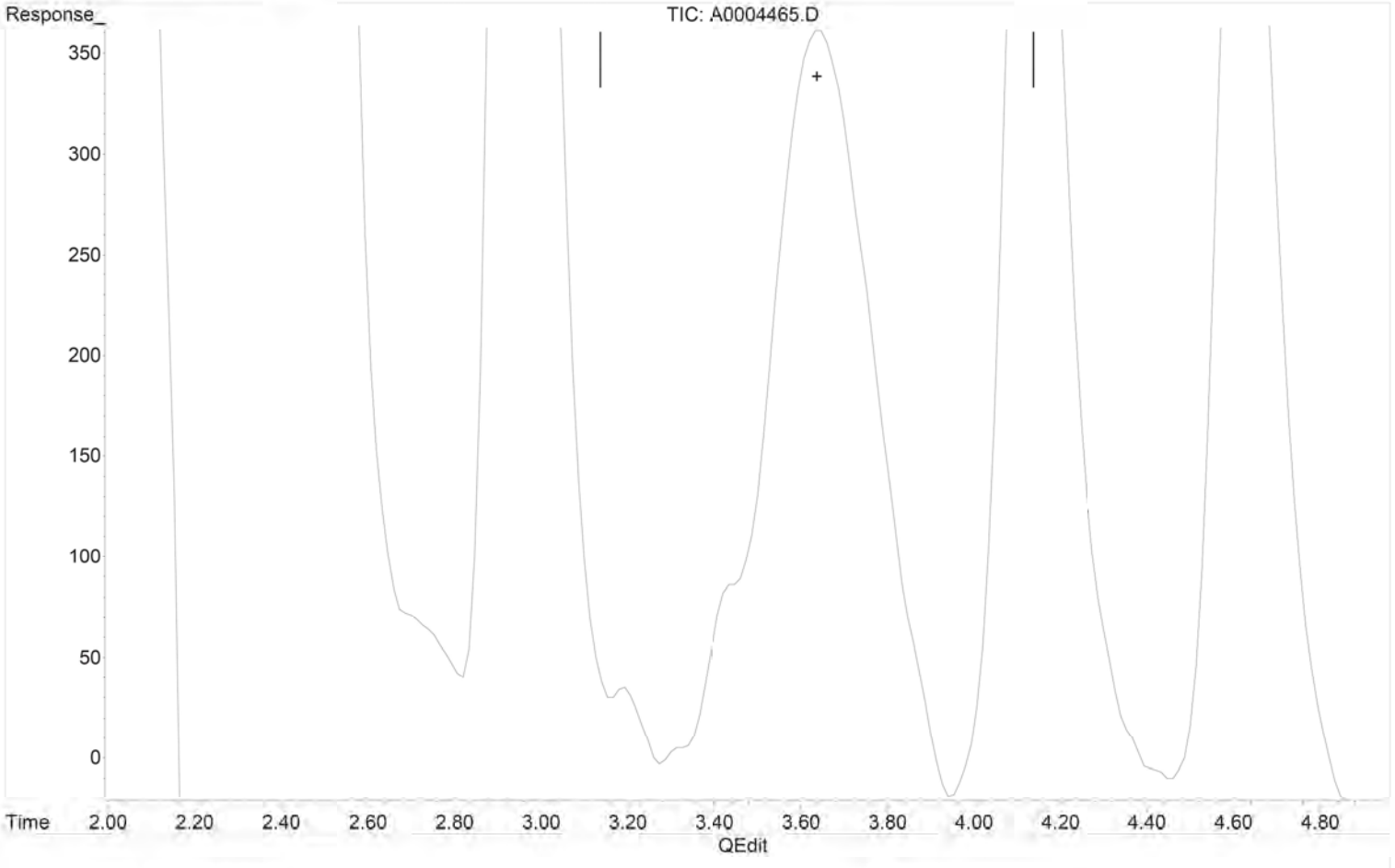
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.645min -0.100 ppm
response 58358

Manual Integration:
Before

03/16/20

(+) = Expected Retention Time

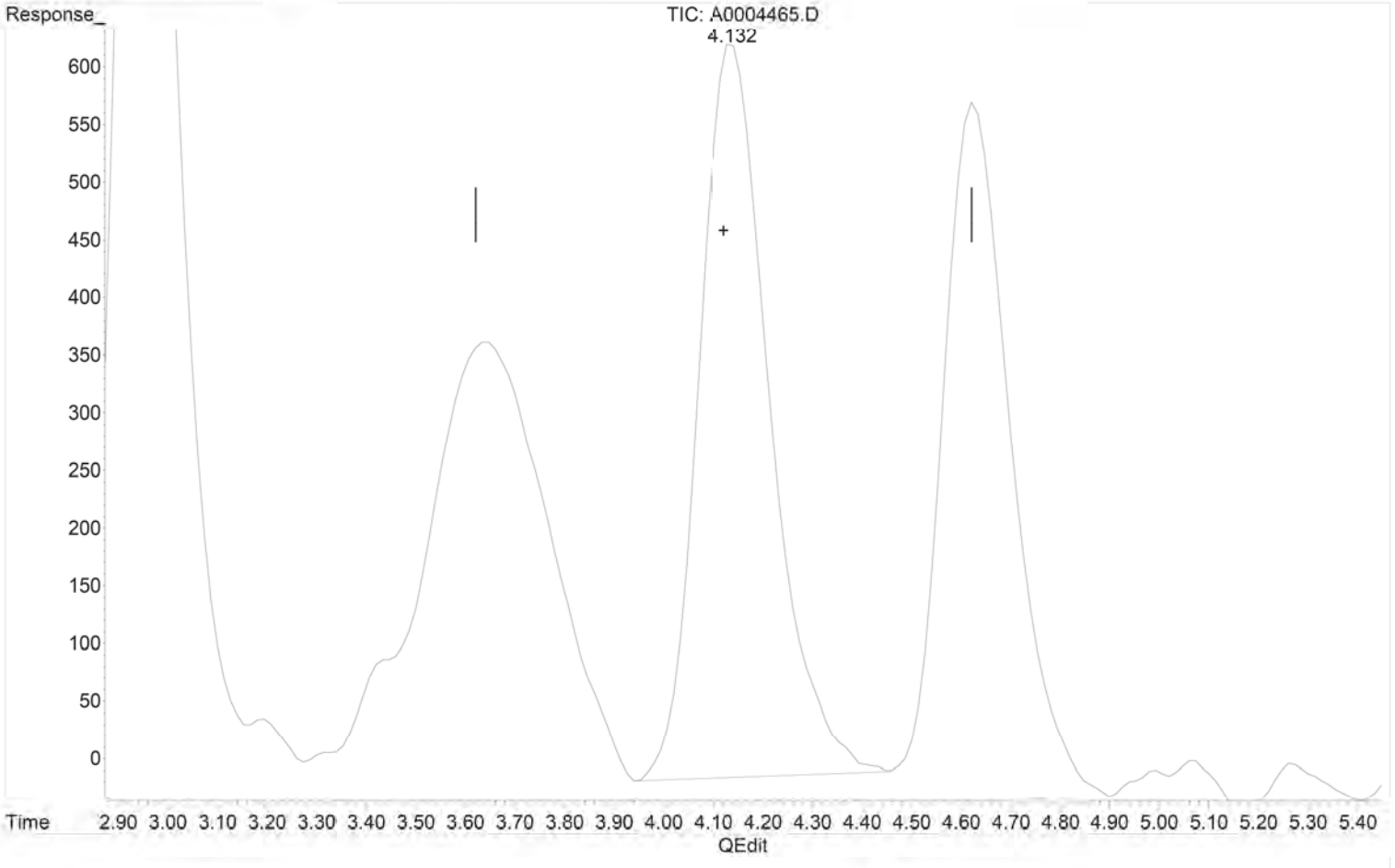
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.132min 1.131 ppm m

response 62664

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

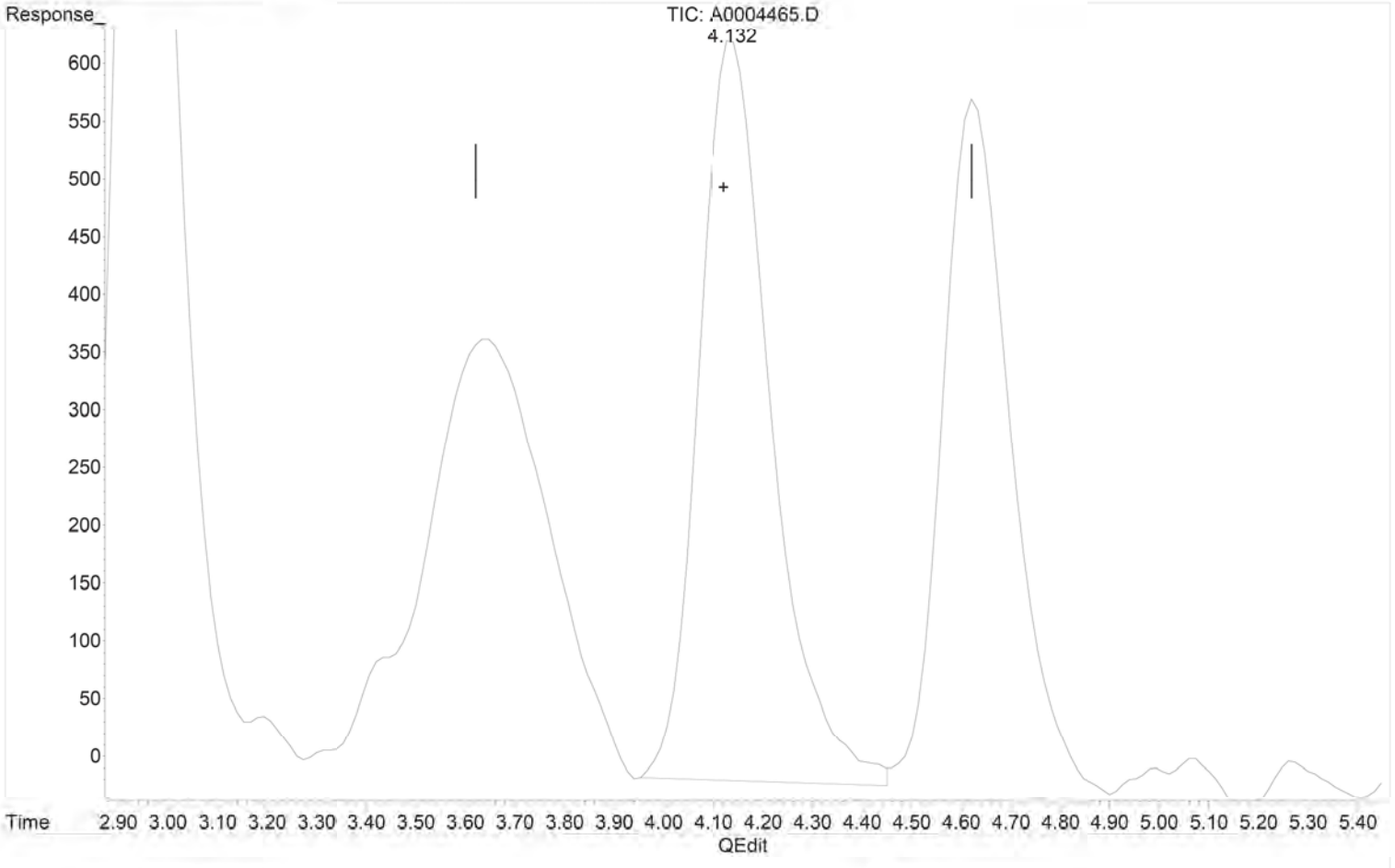
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.140min 1.165 ppm

response 64524

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

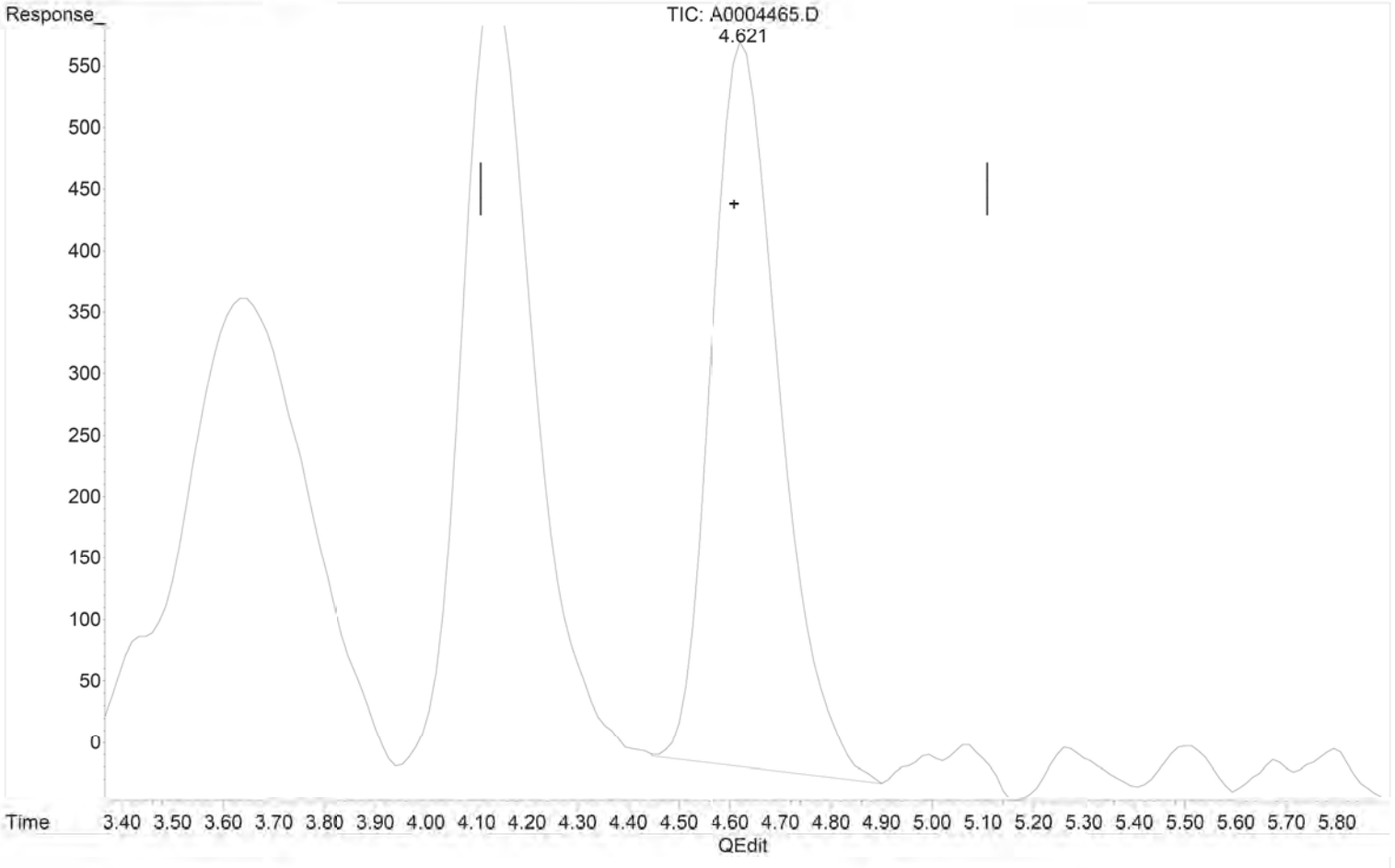
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.621min 0.989 ppm m
response 55208

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:19:51 2020

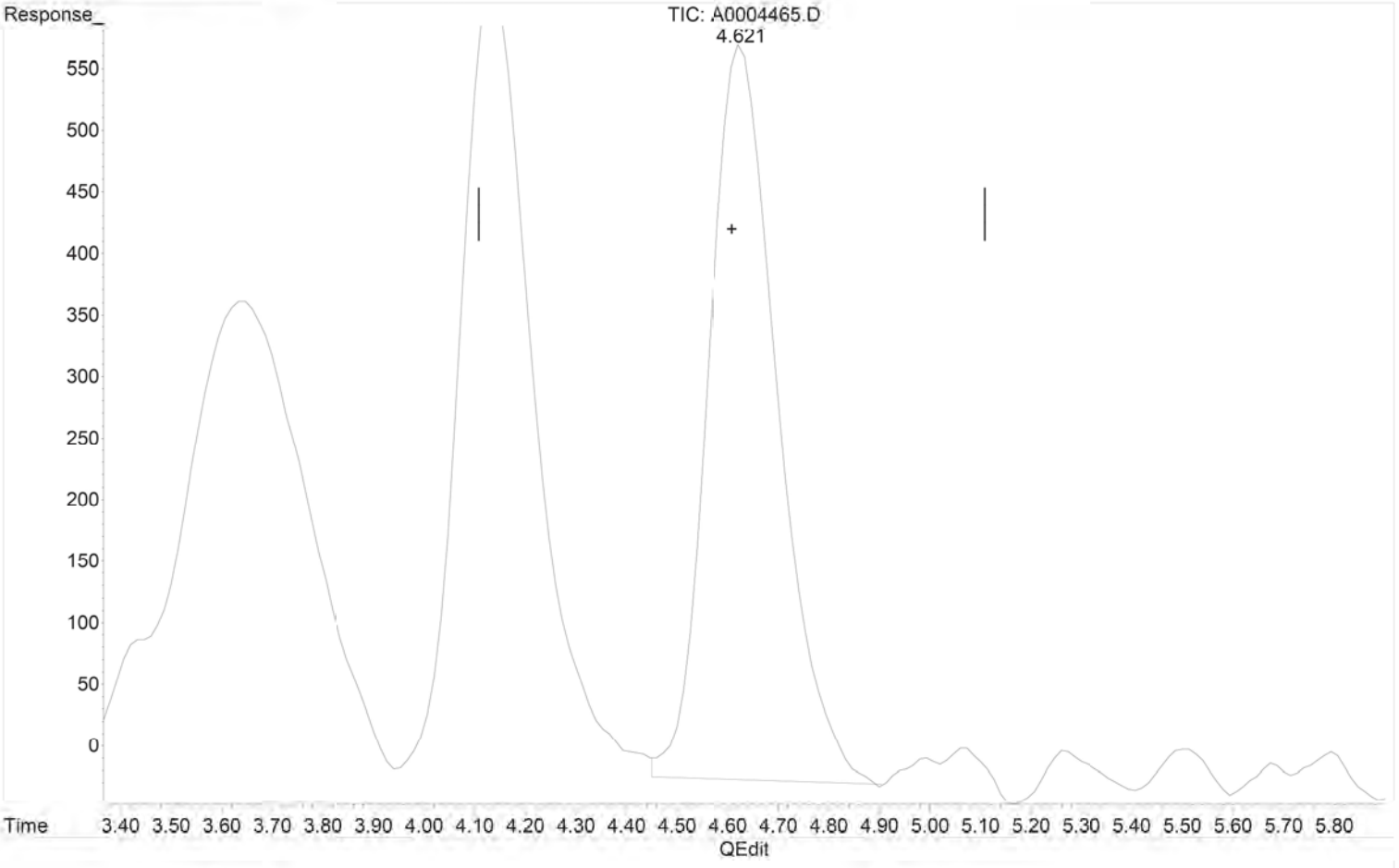
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.629min 1.019 ppm

response 56862

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

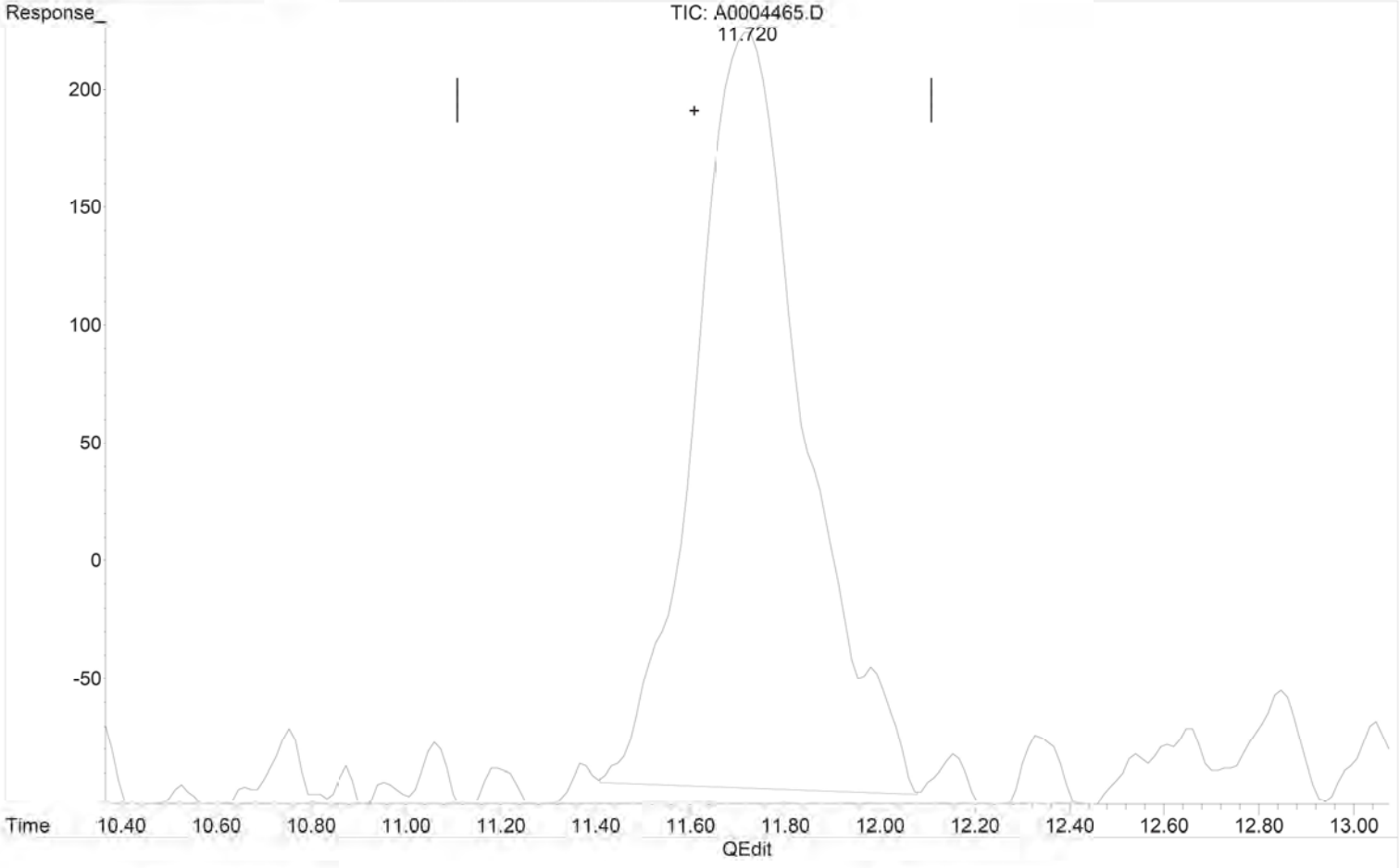
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.720min 0.938 ppm m
response 51534

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:20:06 2020

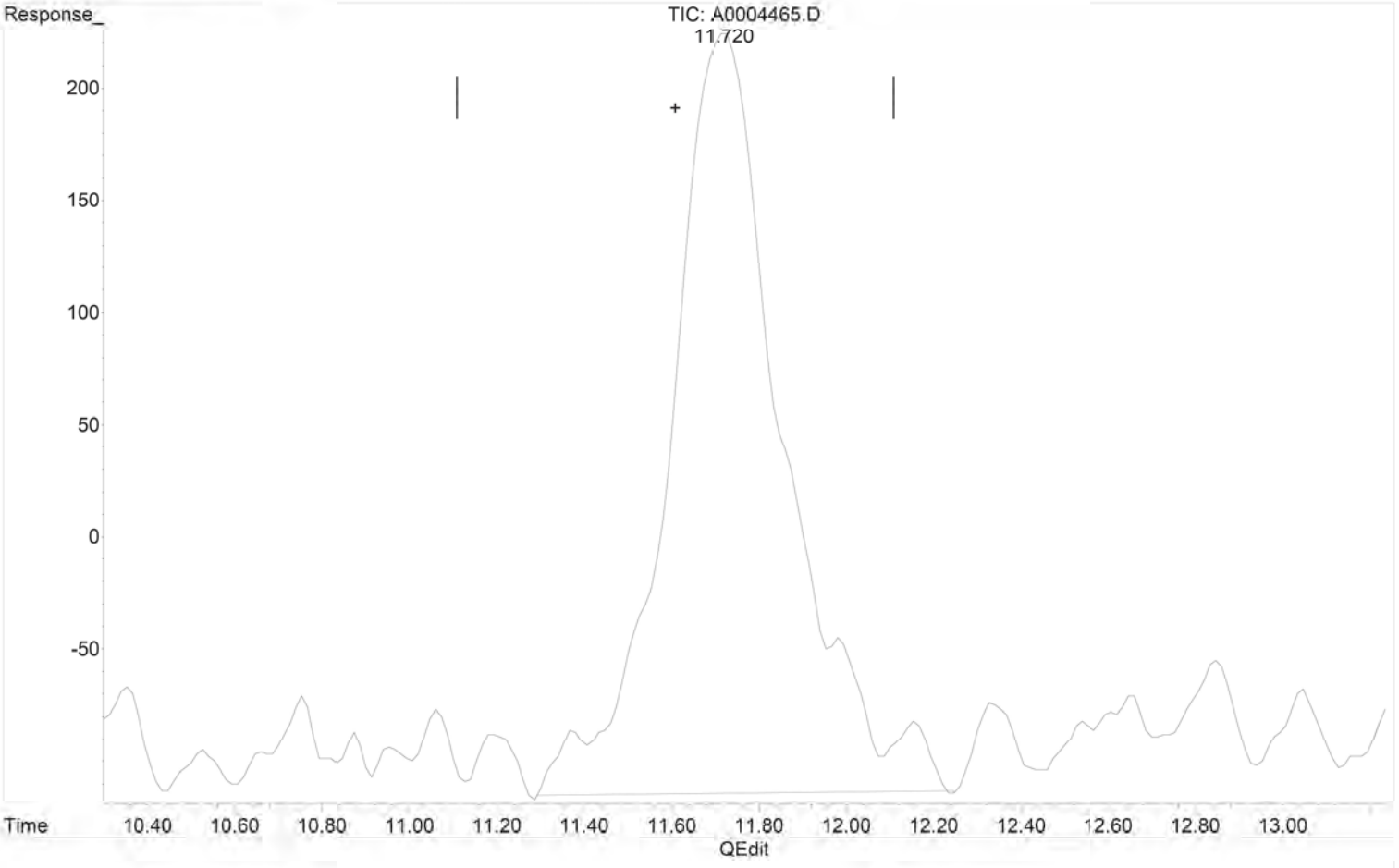
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.721min 1.124 ppm
response 61737

Manual Integration:
Before

03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:19:59 2020

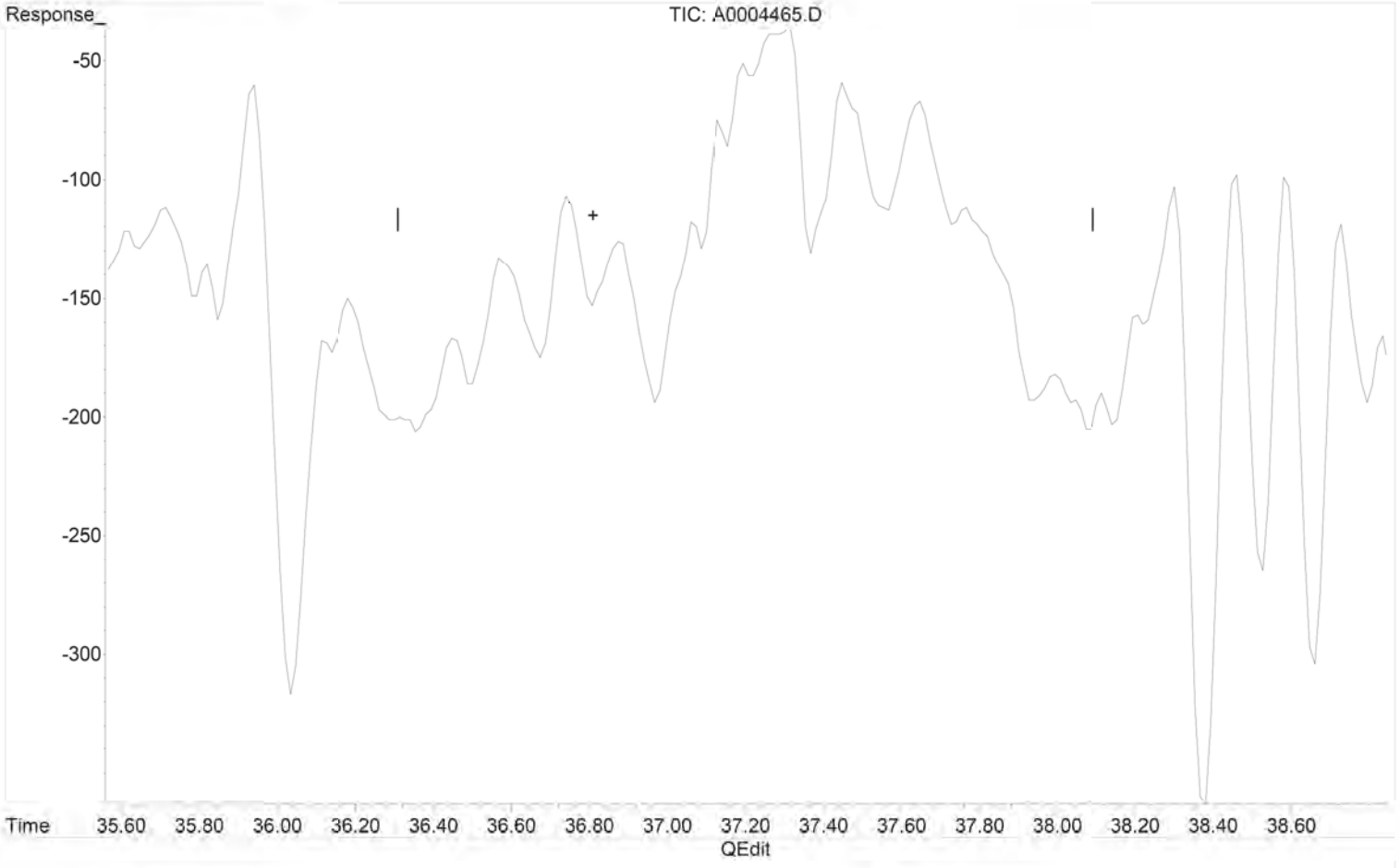
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.309min 1.012 ppm m

response 53231

Manual Integration!

After

Peak not found.

03/16/20

(+) = Expected Retention Time

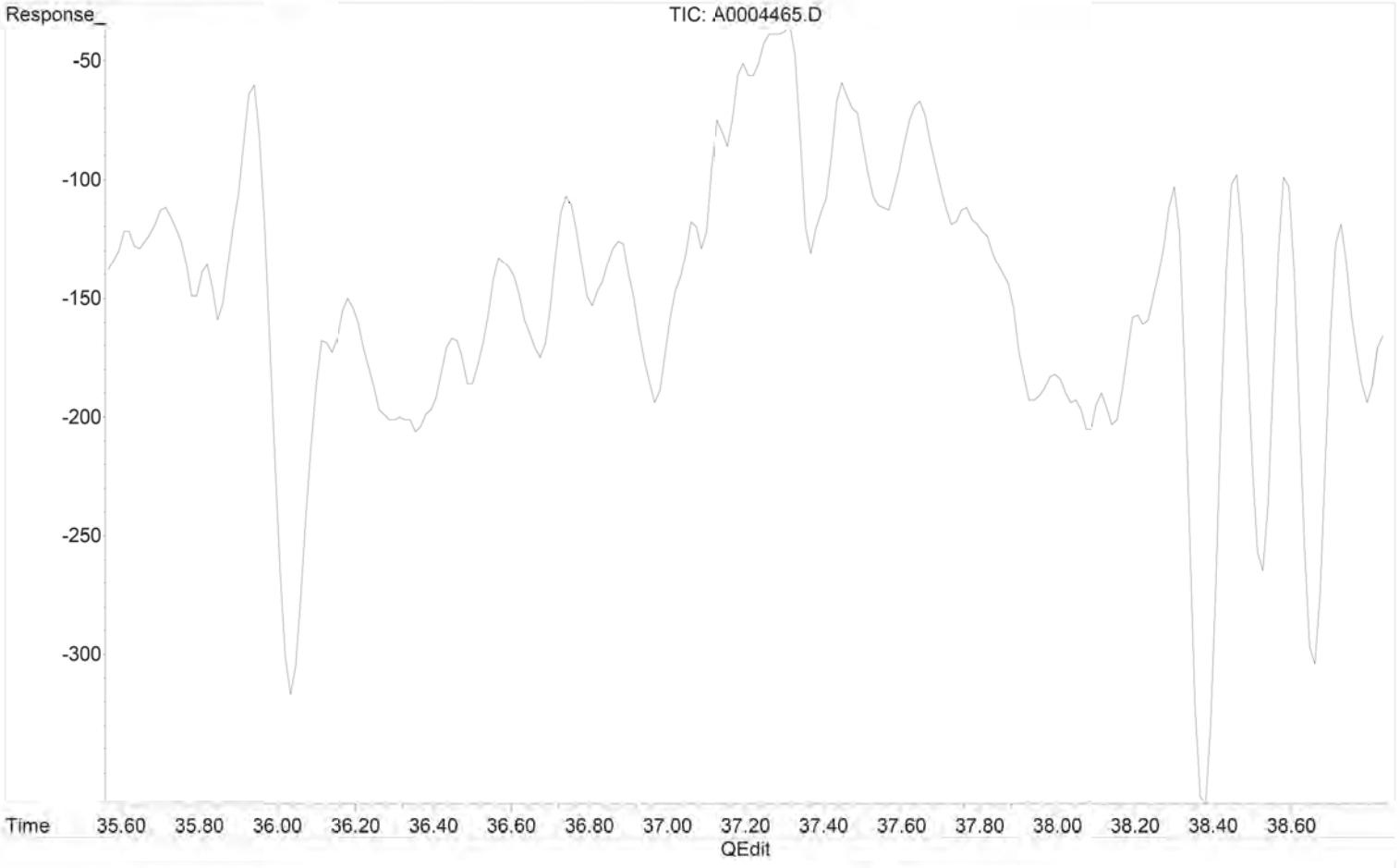
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

0.000min 0.000 ppm d

response 0

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.947	96141	1.051	ppm	m
2) T	Pyruvic acid	3.640	65073	0.112	ppm	m
3) T	Lactic Acid	4.132	62664	1.131	ppm	m
4) T	Acetic Acid	4.621	55208	0.989	ppm	m
5) T	Propionic Acid	11.720	51534	0.938	ppm	m
6) T	Butyric Acid	37.309f	53231	1.012	ppm	m

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

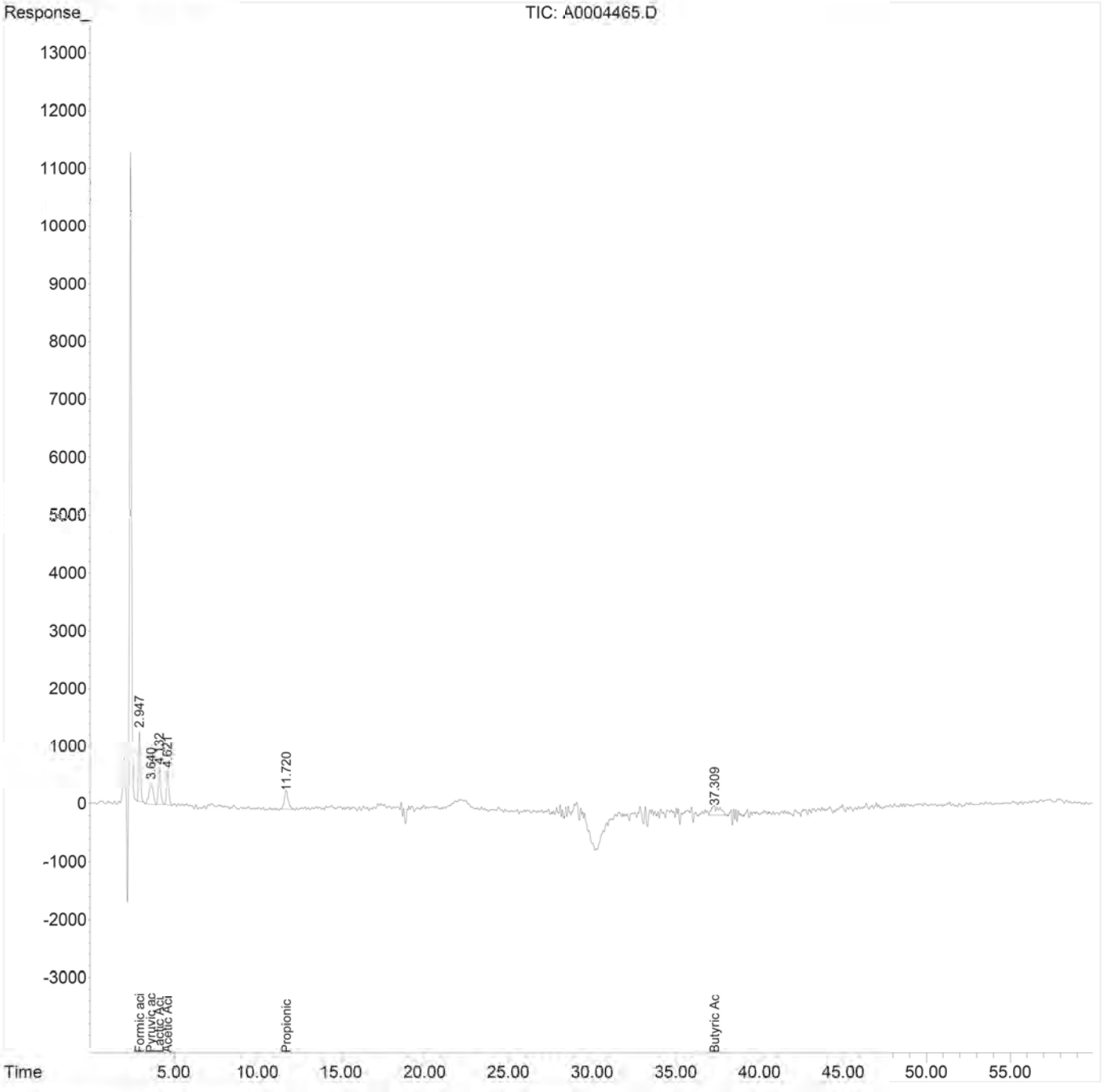
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



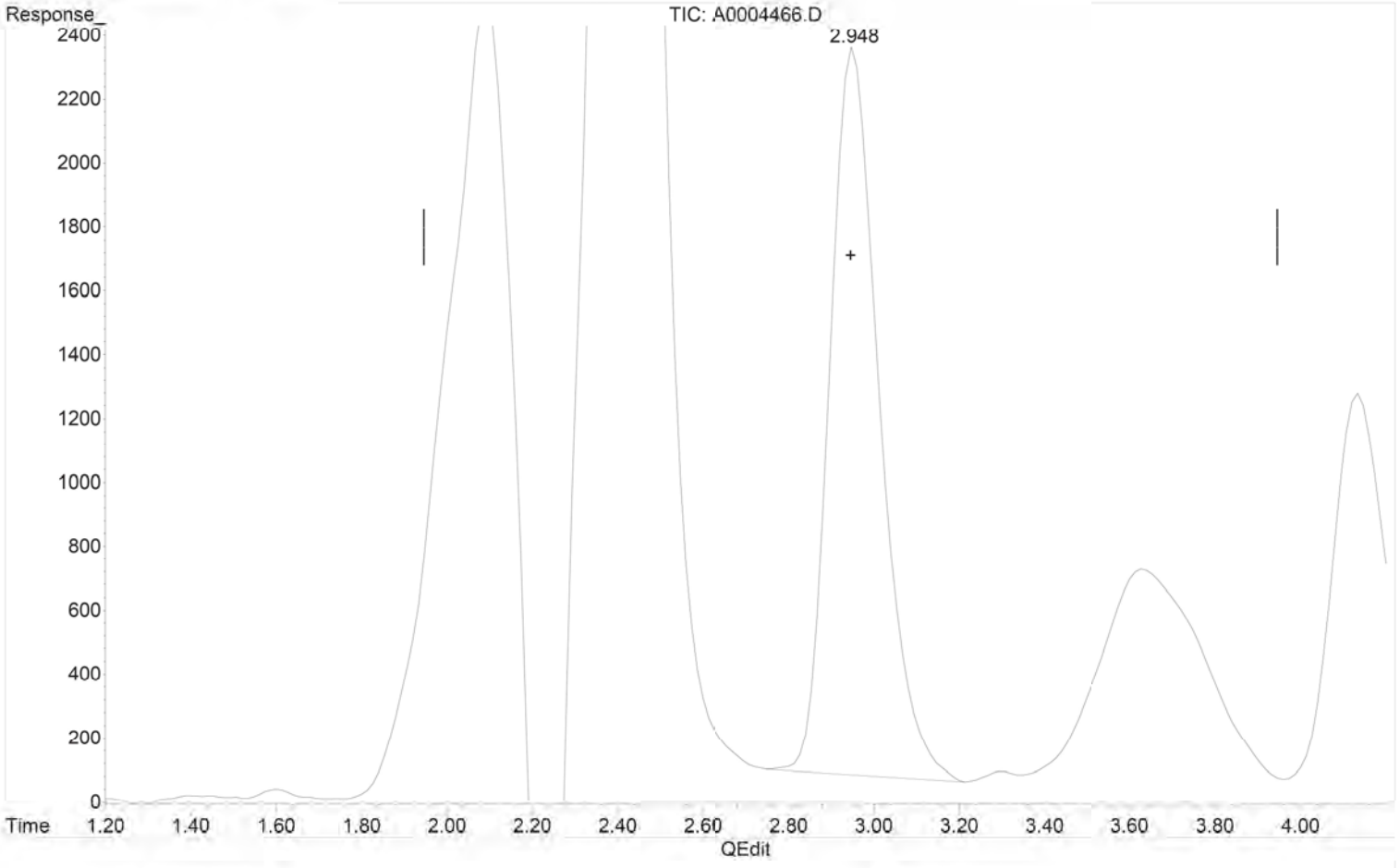
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.948min 2.019 ppm m

response 184745

Manual Integration!

After

Poor integration.

03/16/20

(+) = Expected Retention Time

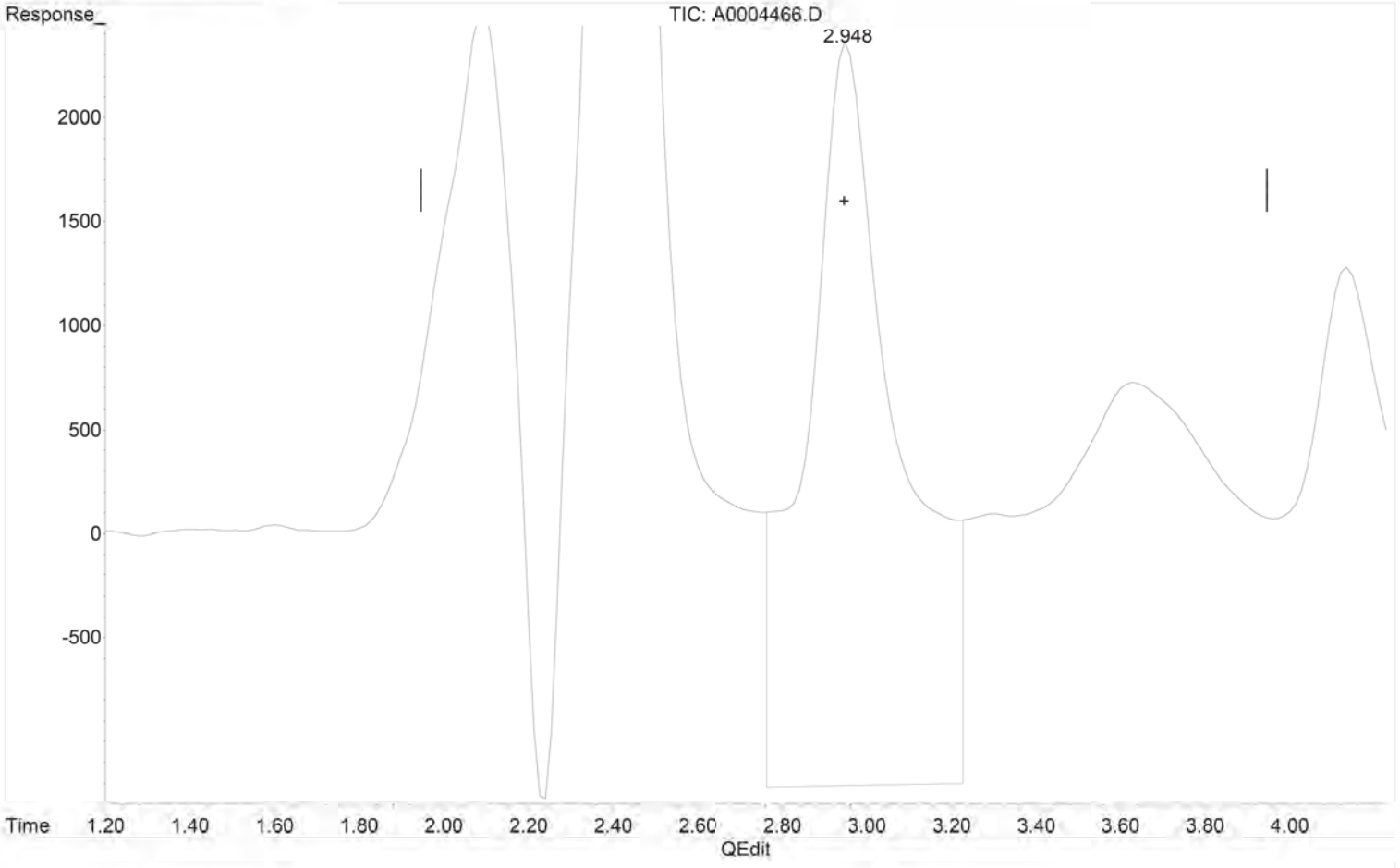
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.955min 5.943 ppm

response 543858

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

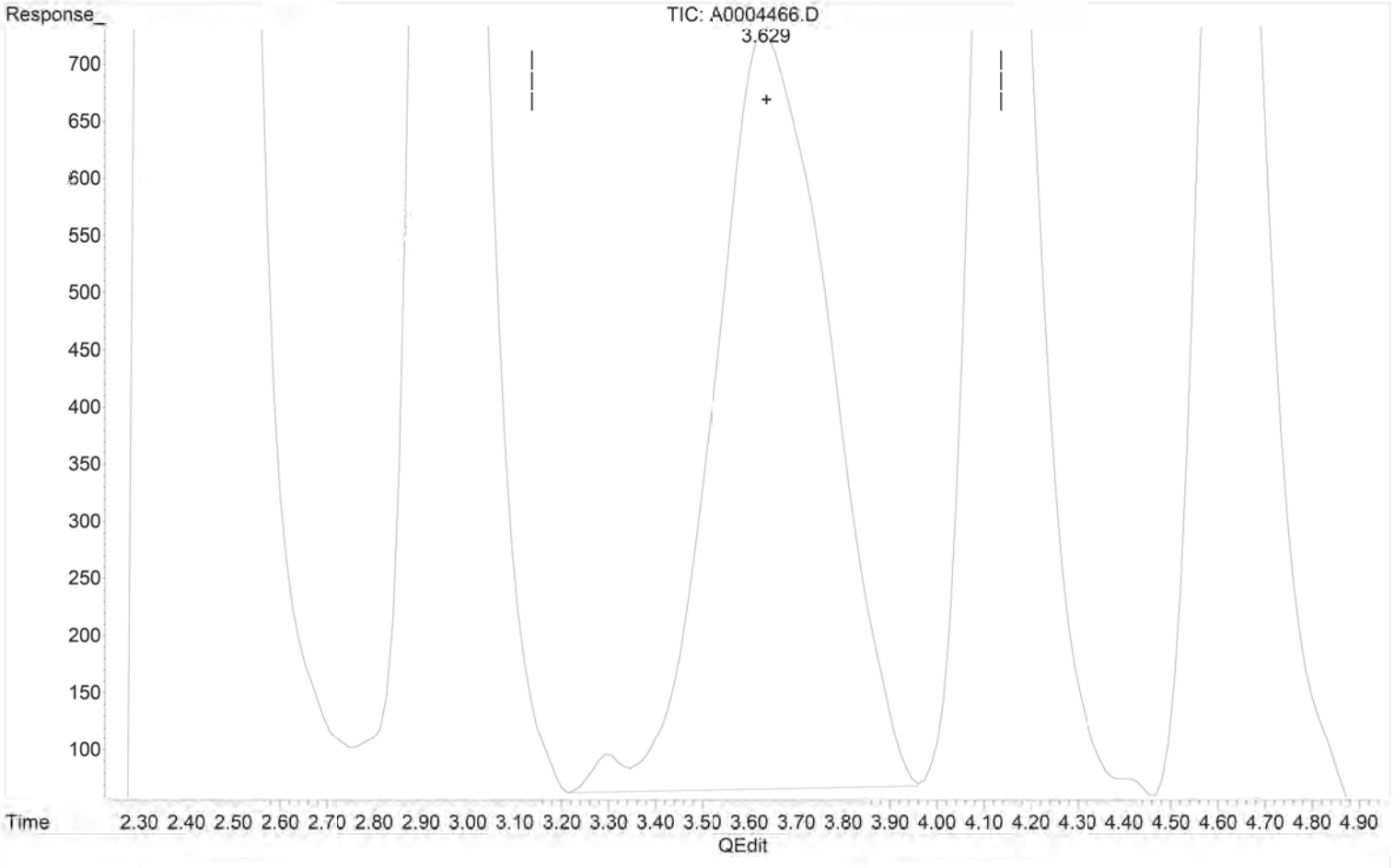
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.629min 0.194 ppm m
response 113308

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:21:23 2020

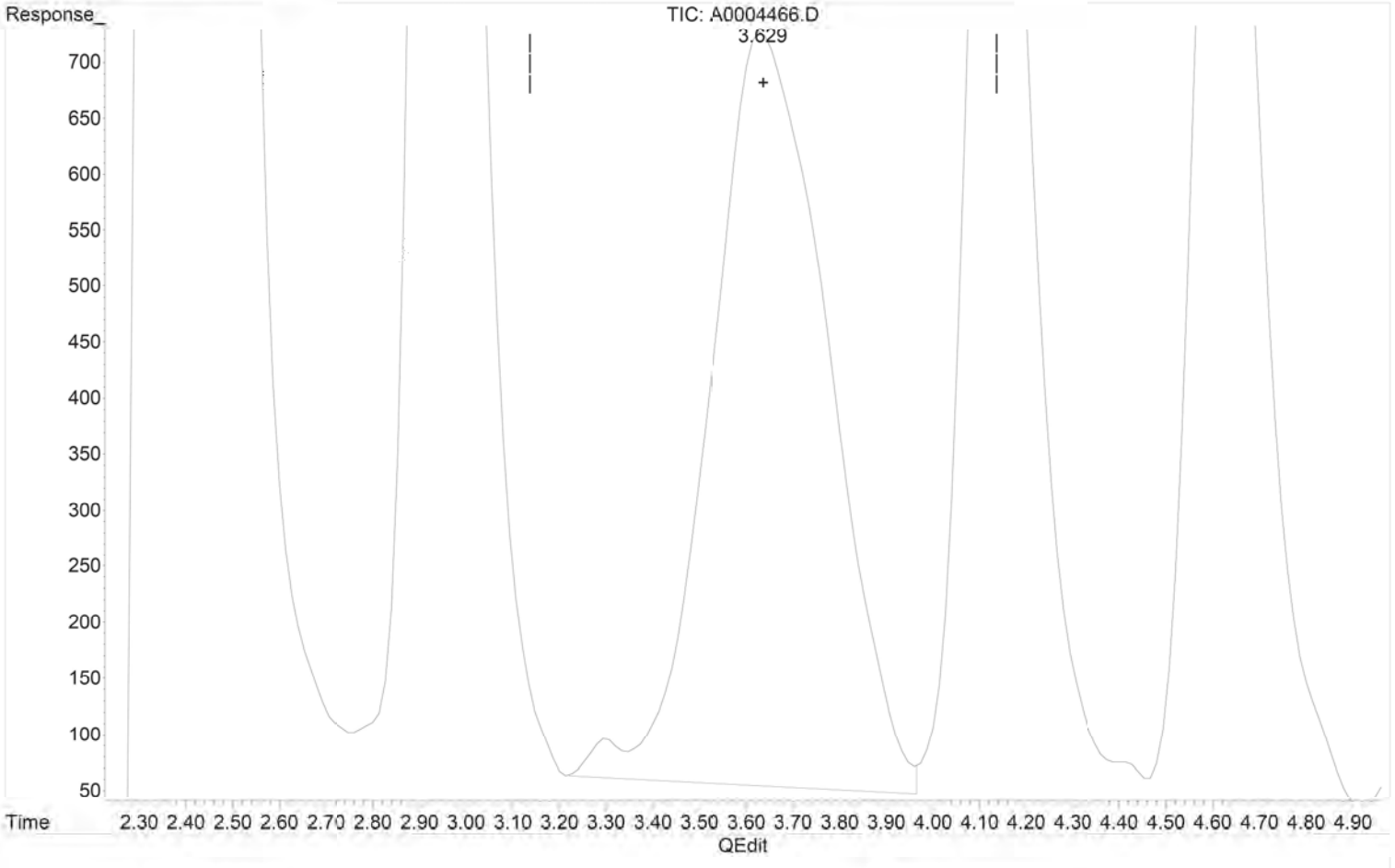
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.639min 0.203 ppm

response 118180

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

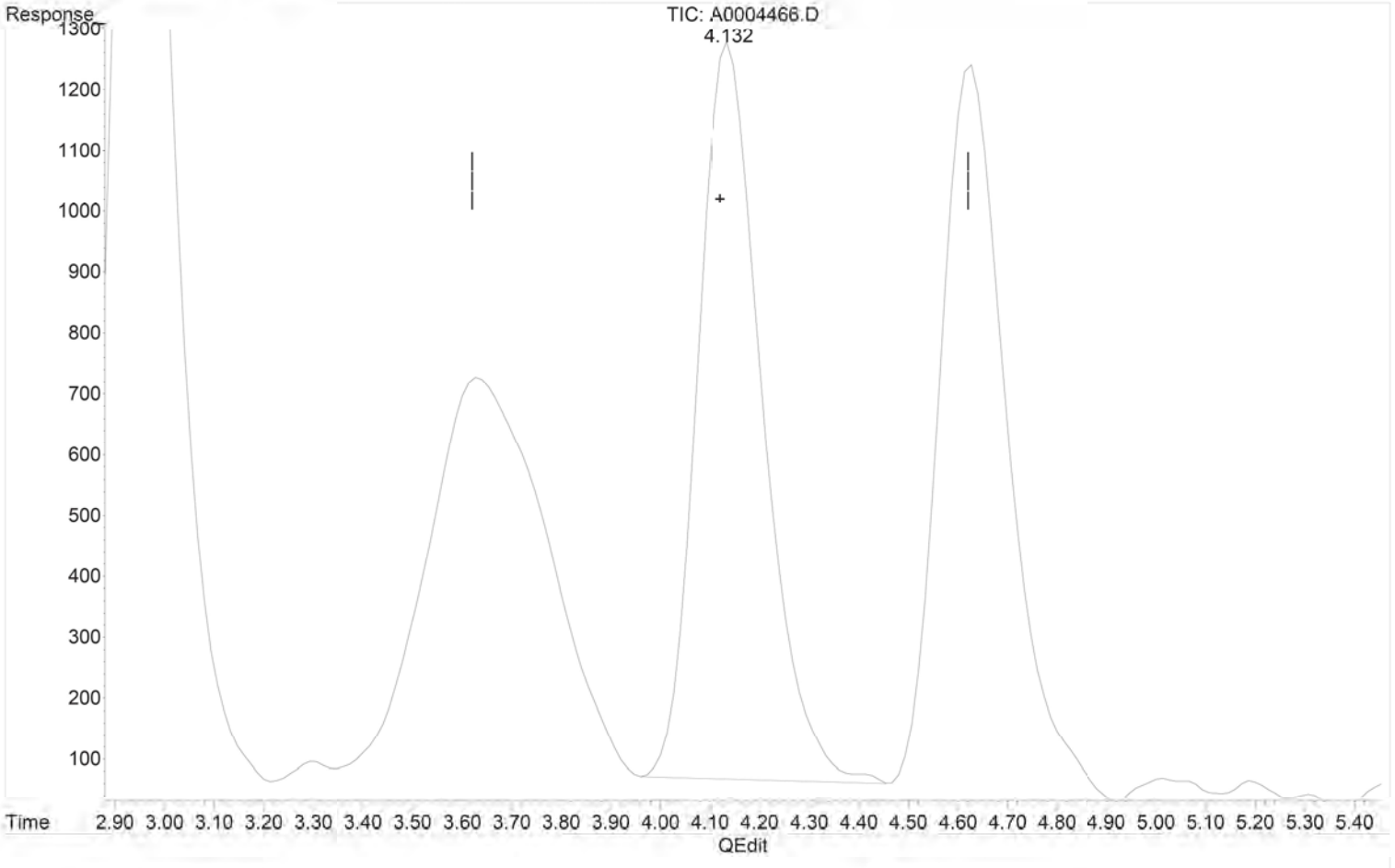
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.132min 1.974 ppm m

response 109344

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

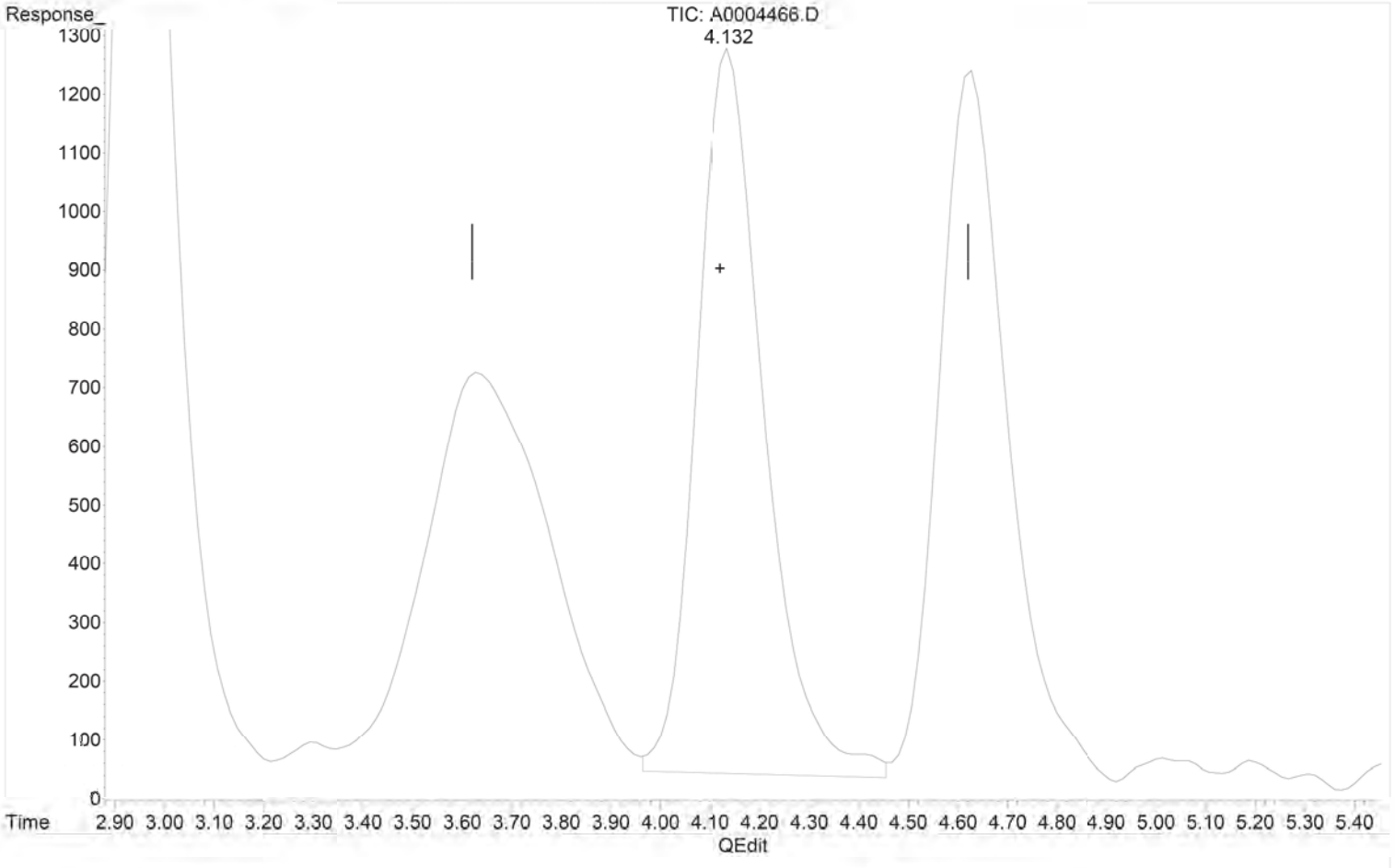
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.139min 2.102 ppm

response 116418

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

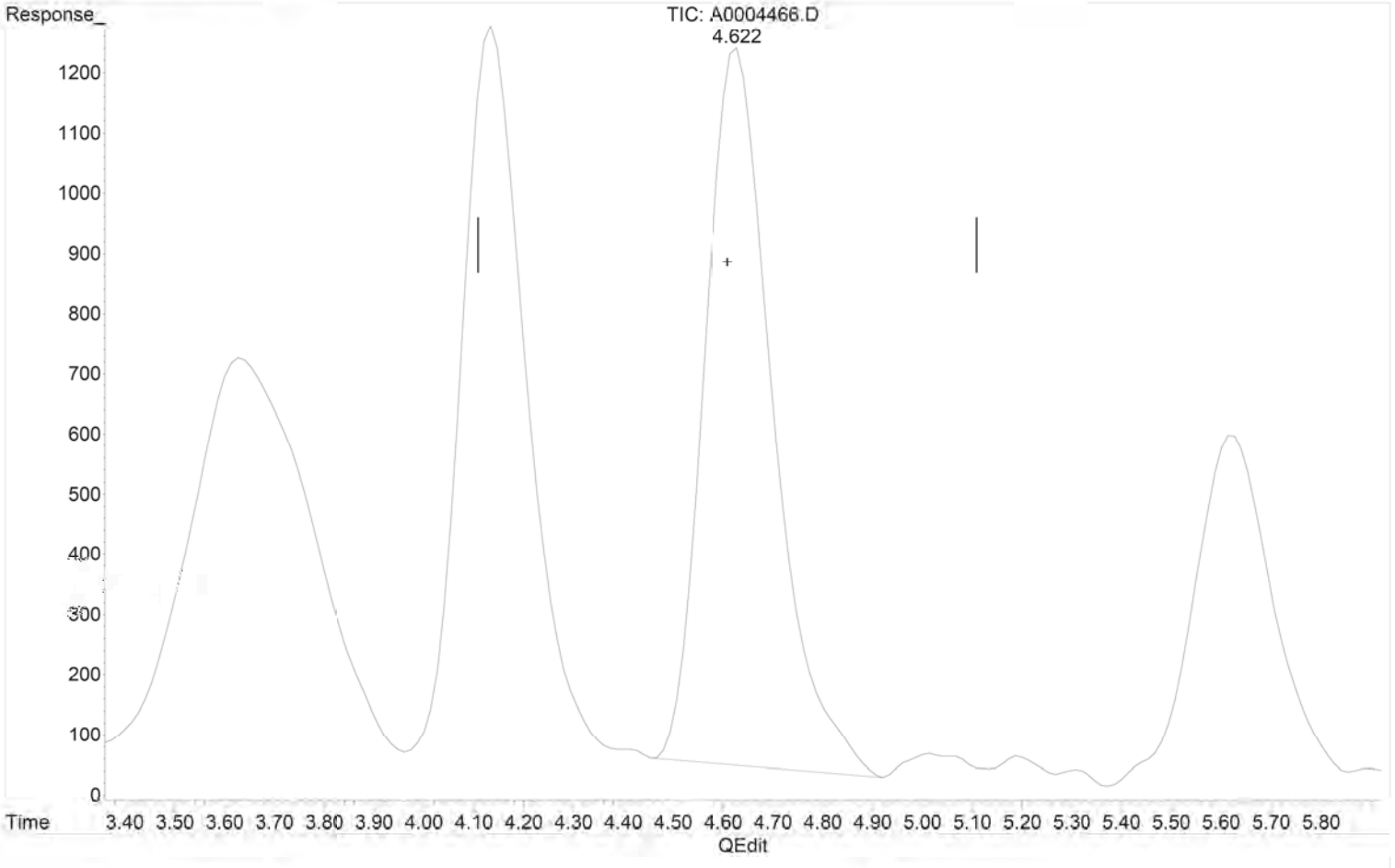
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.622min 2.028 ppm m
response 113173

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:21:48 2020

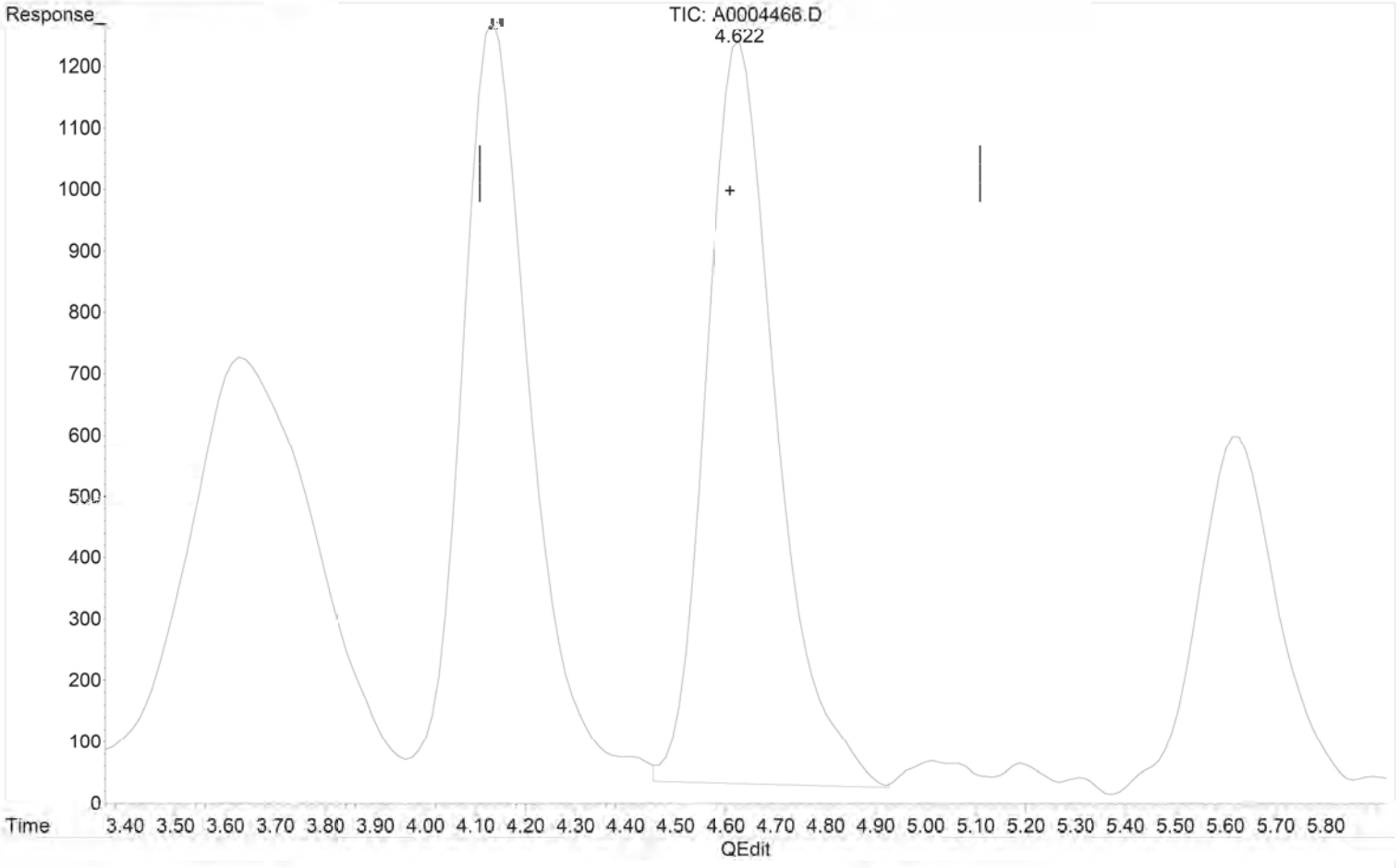
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.629min 2.100 ppm

response 117200

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

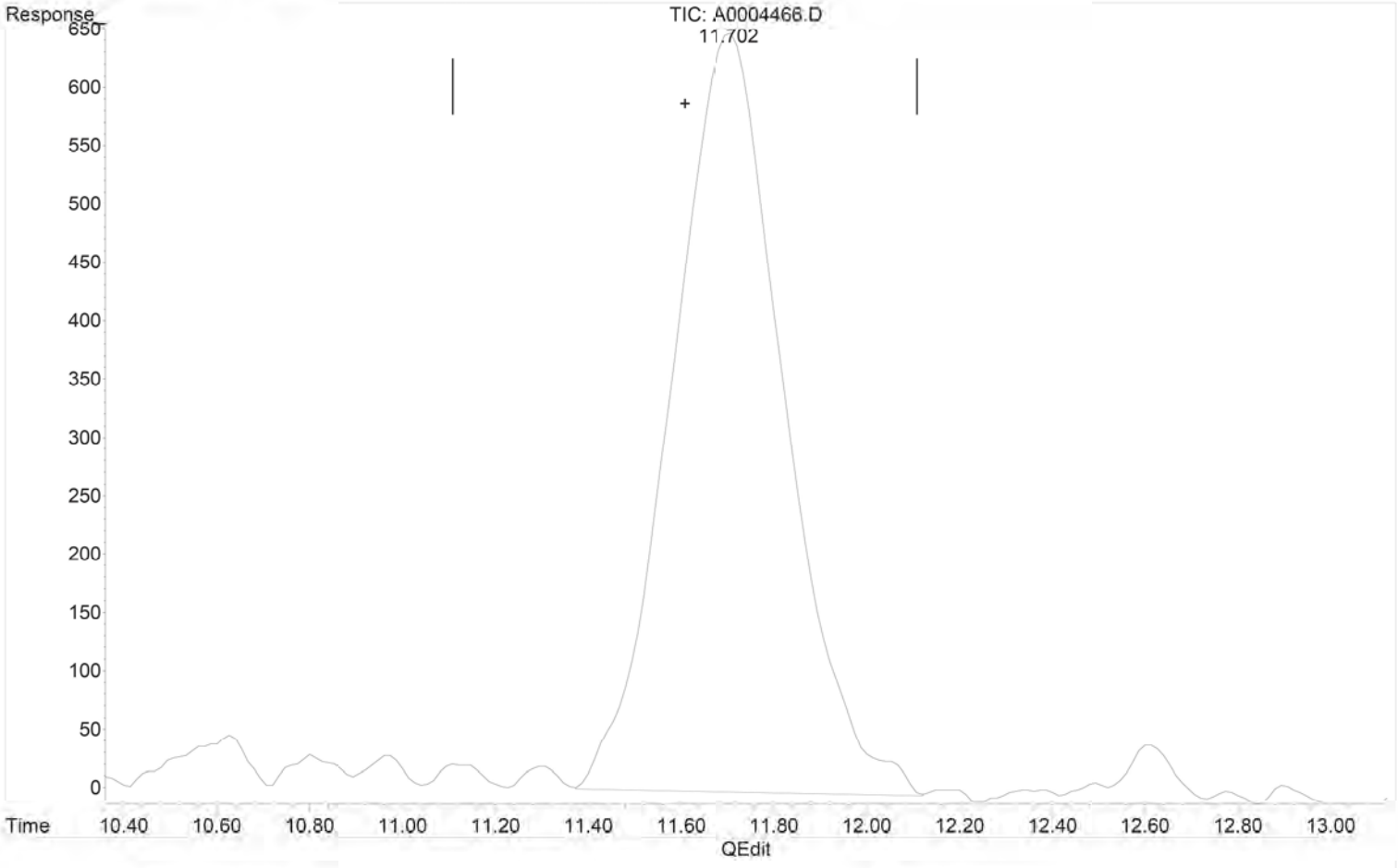
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.702min 1.979 ppm m
response 108705

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time

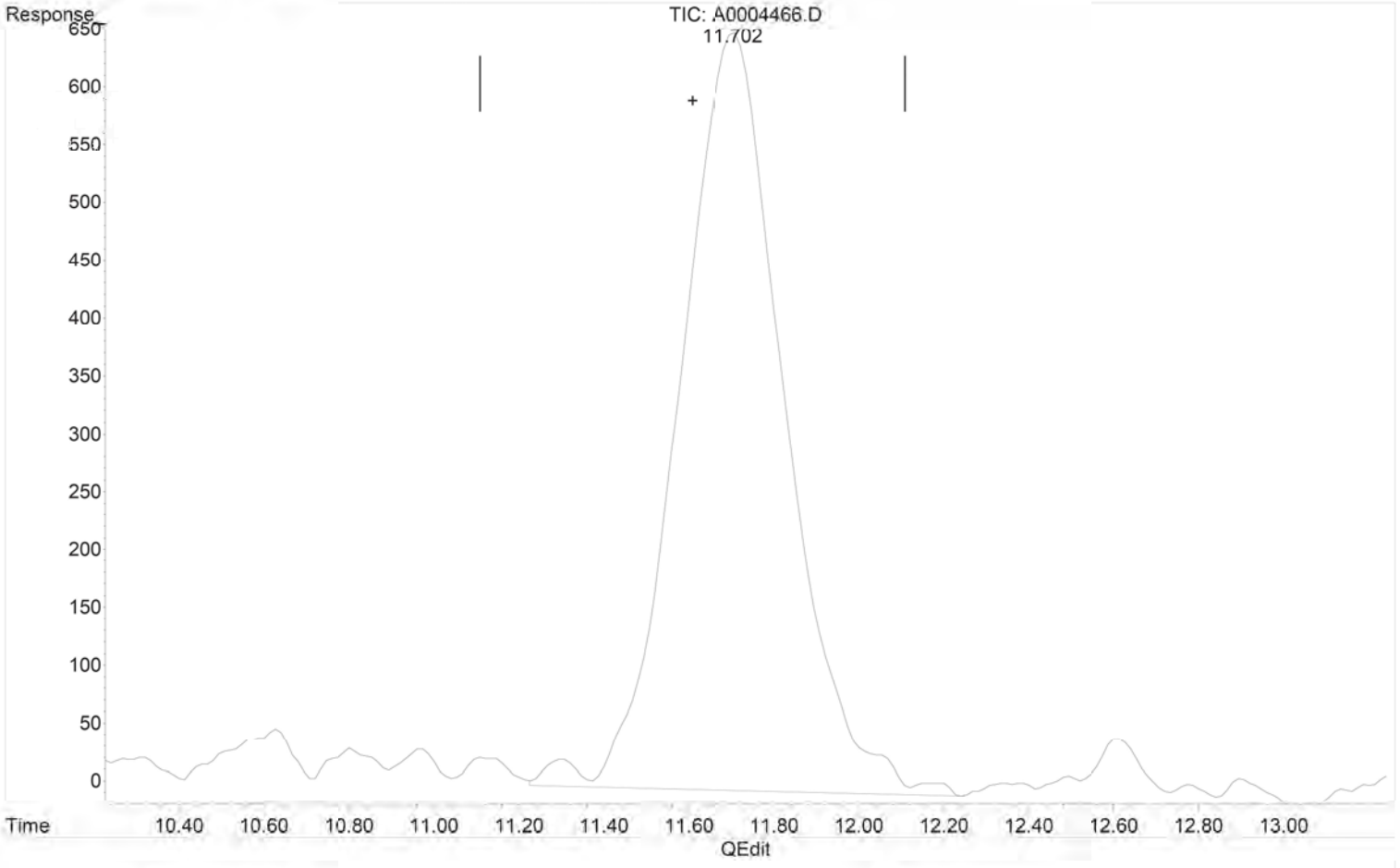
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.707min 2.047 ppm
response 112454

Manual Integration:
Before

03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:21:52 2020

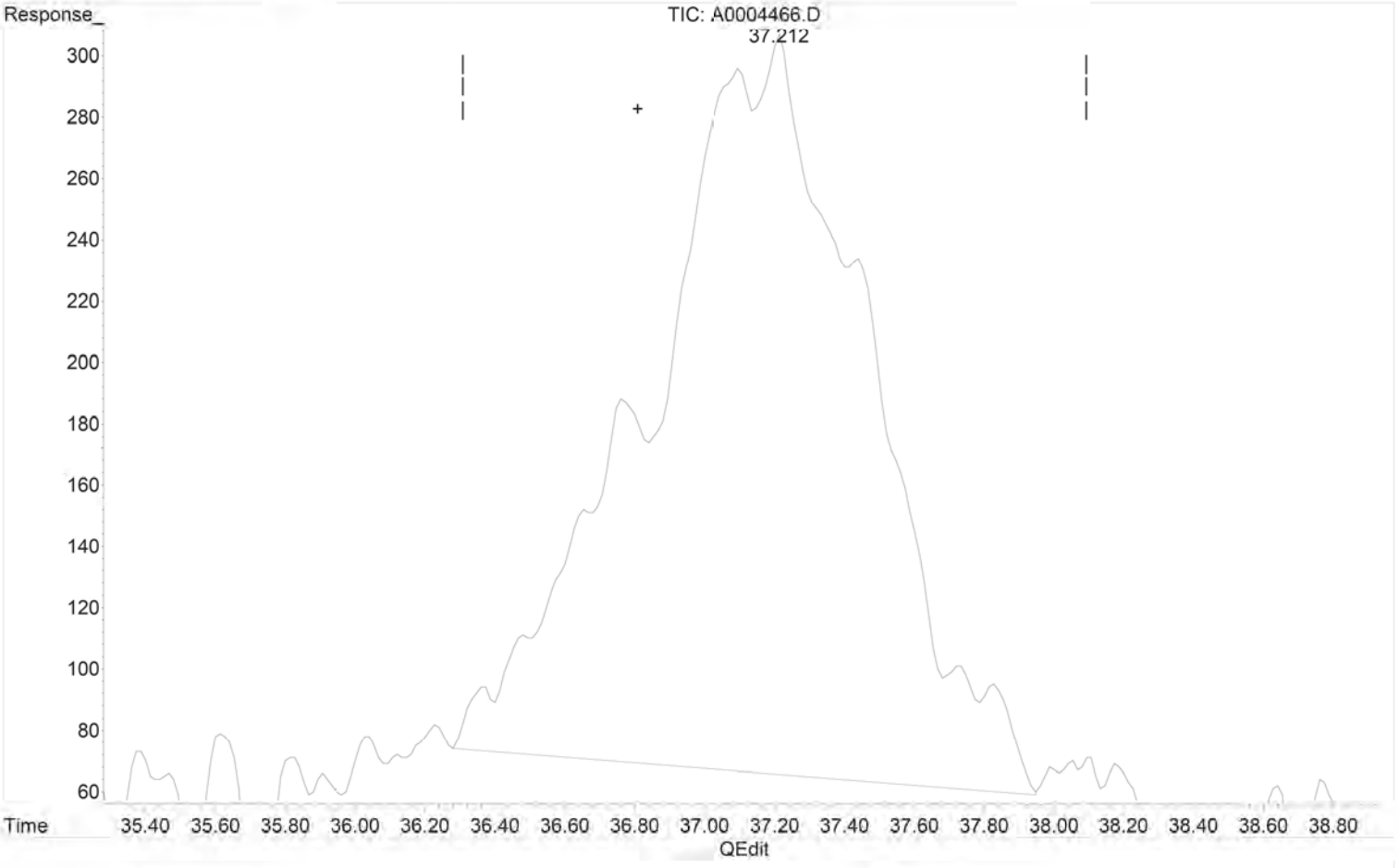
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.212min 2.029 ppm m

response 106761

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:22:18 2020

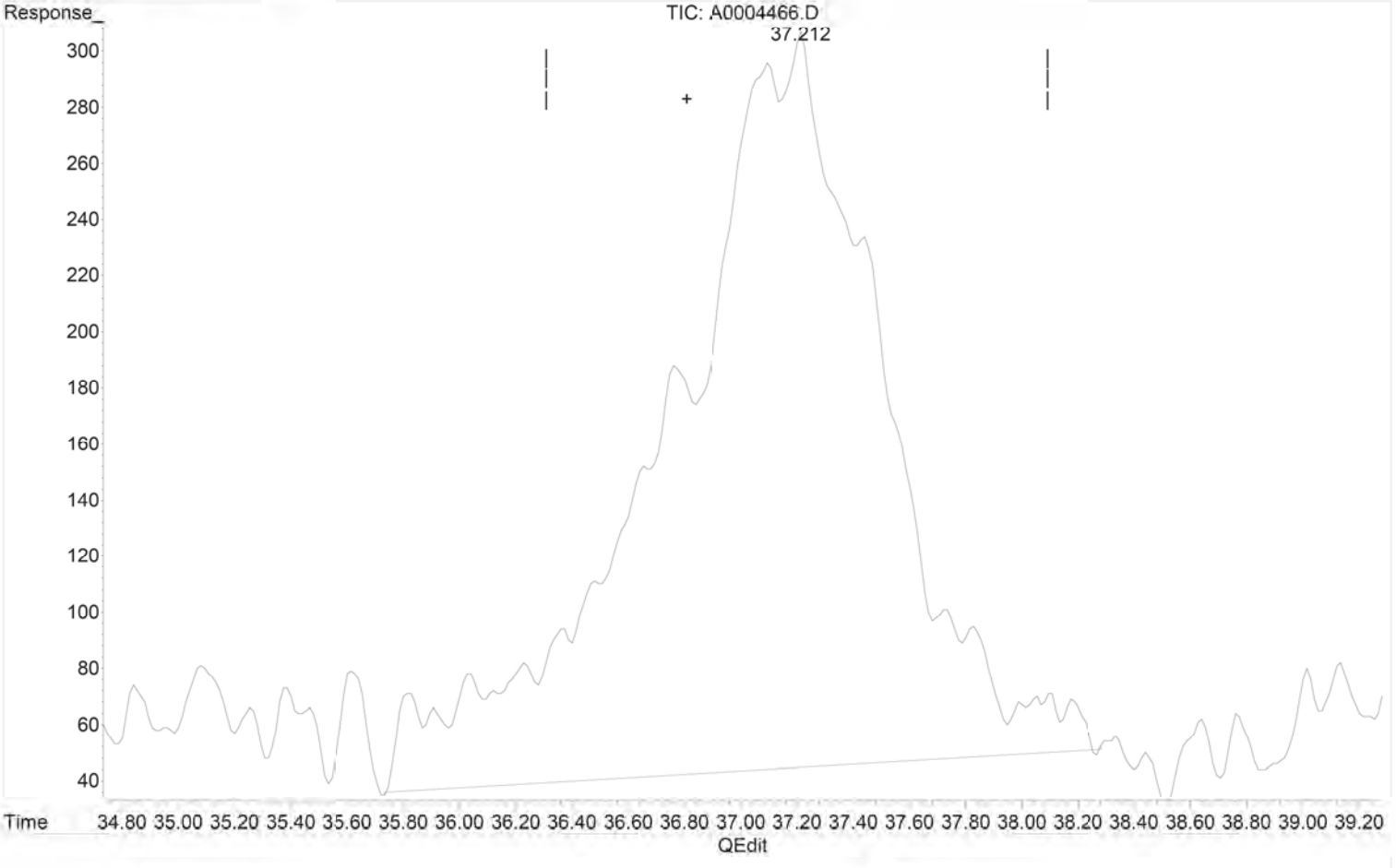
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.213min 2.698 ppm

response 141960

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.948	184745	2.019	ppm	m
2) T	Pyruvic acid	3.629	113308	0.194	ppm	m
3) T	Lactic Acid	4.132	109344	1.974	ppm	m
4) T	Acetic Acid	4.622	113173	2.028	ppm	m
5) T	Propionic Acid	11.702	108705	1.979	ppm	m
6) T	Butyric Acid	37.212	106761	2.029	ppm	m

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

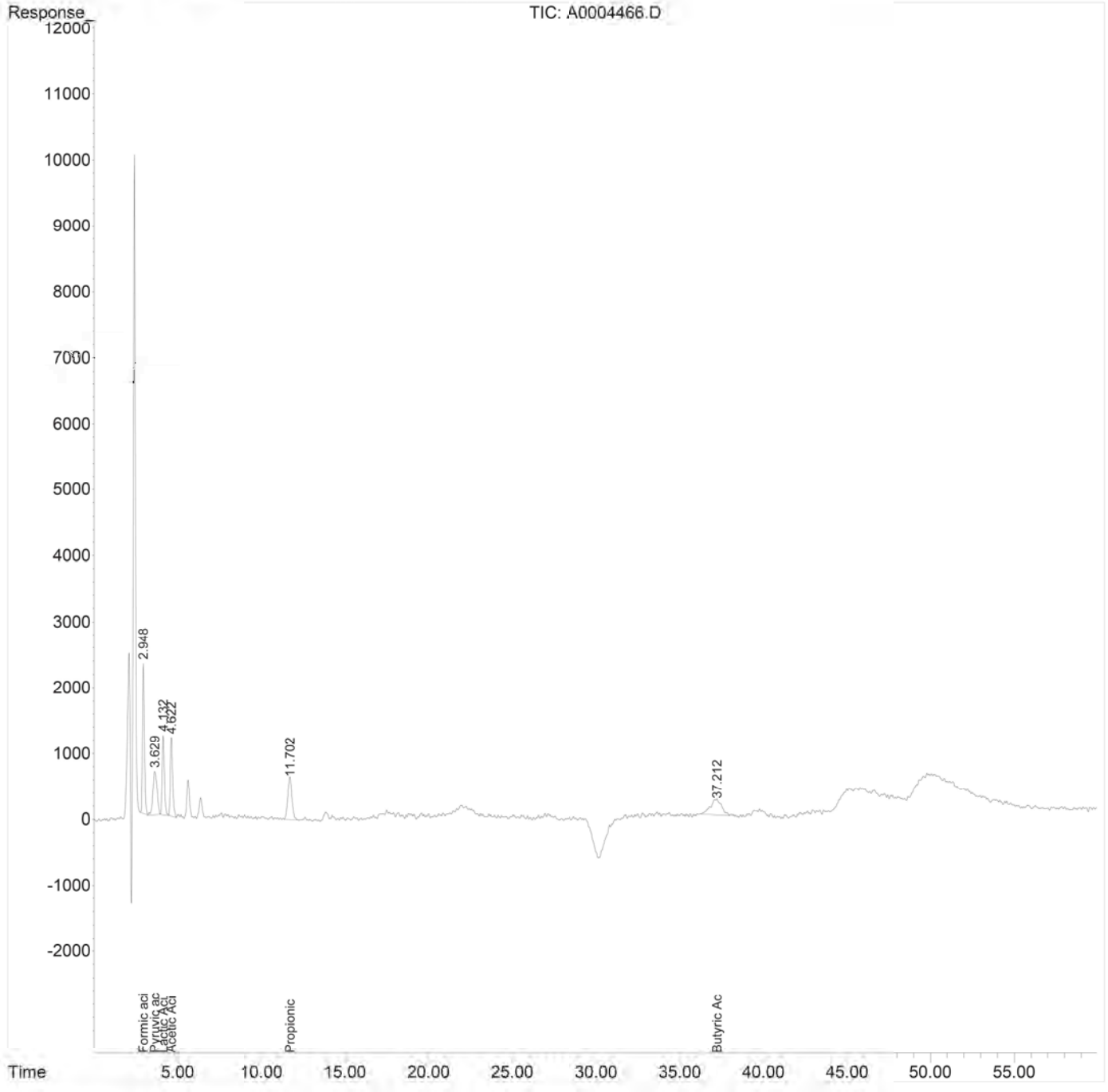
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



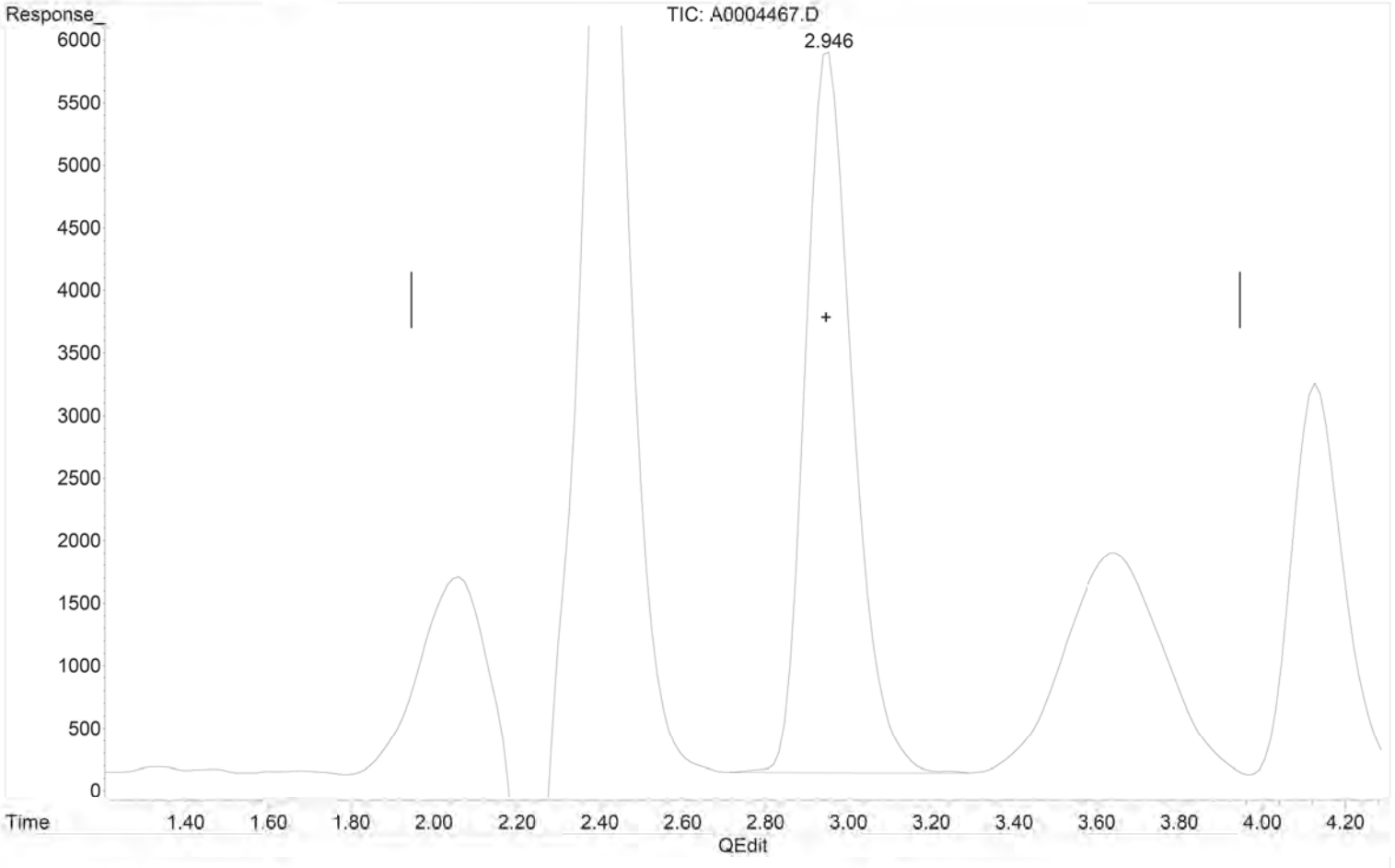
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)
2.946min 5.032 ppm m
response 460497

Manual Integration!
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:22:46 2020

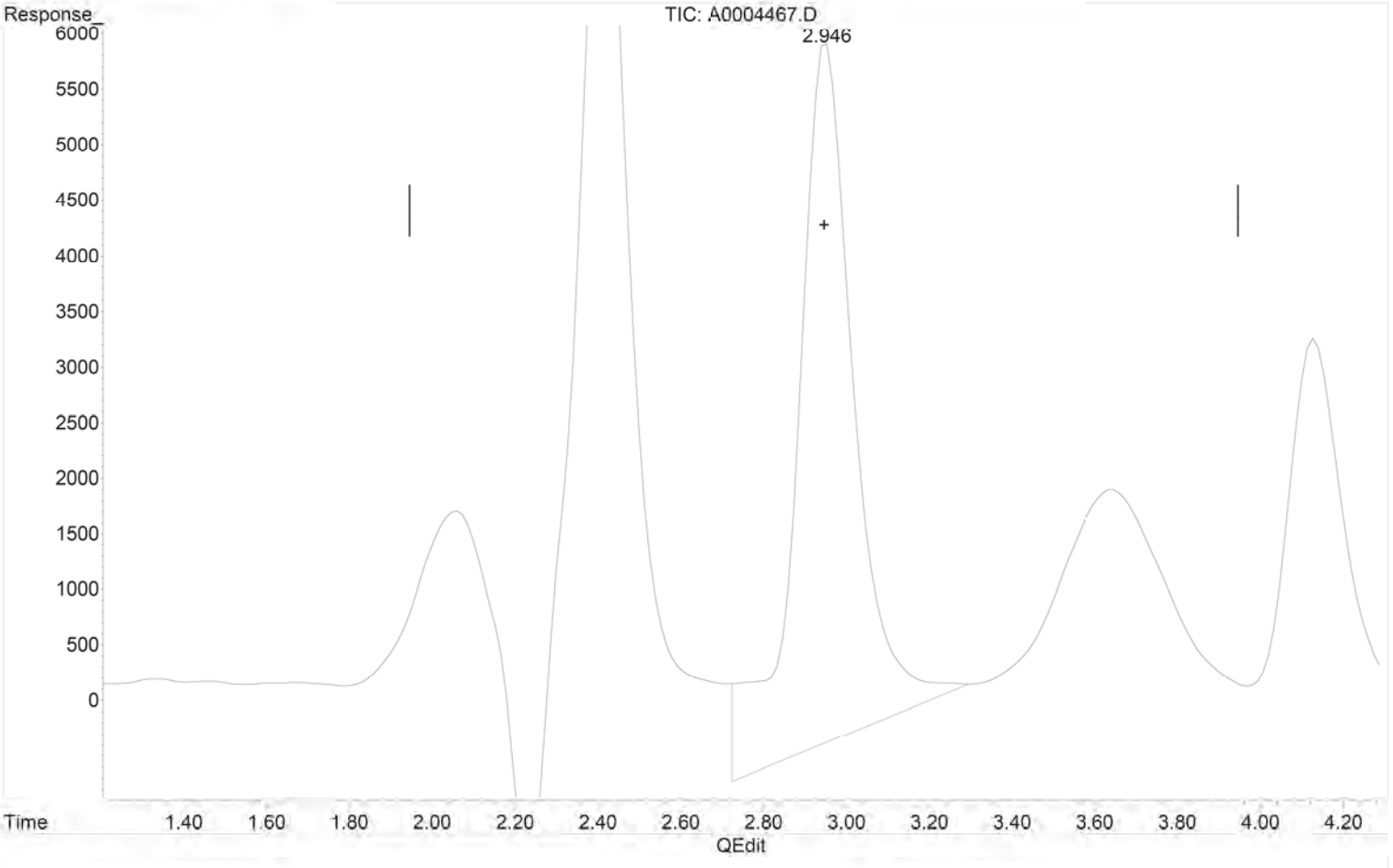
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.953min 6.666 ppm

response 609950

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

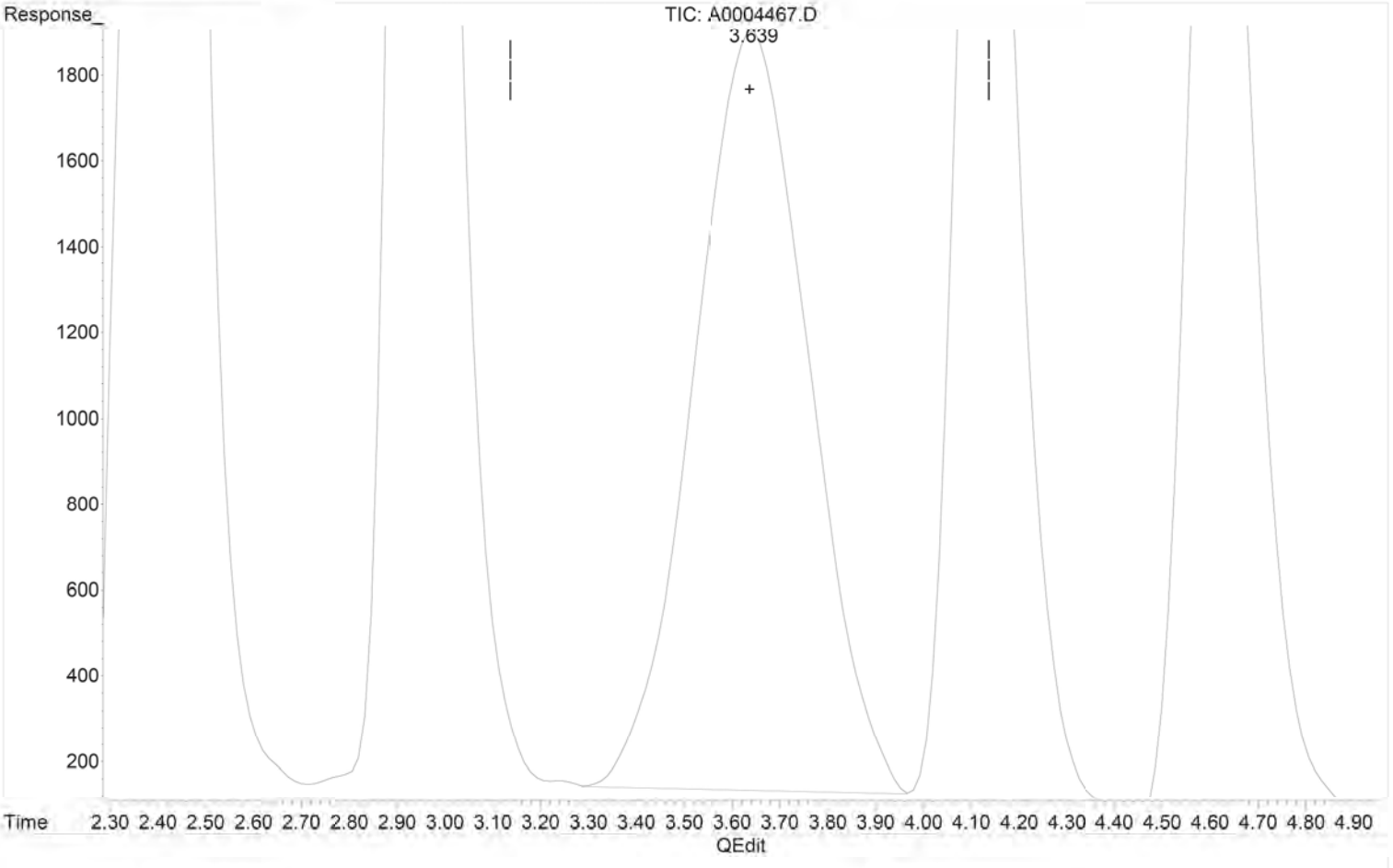
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.639min 0.503 ppm m
response 293242

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:23:00 2020

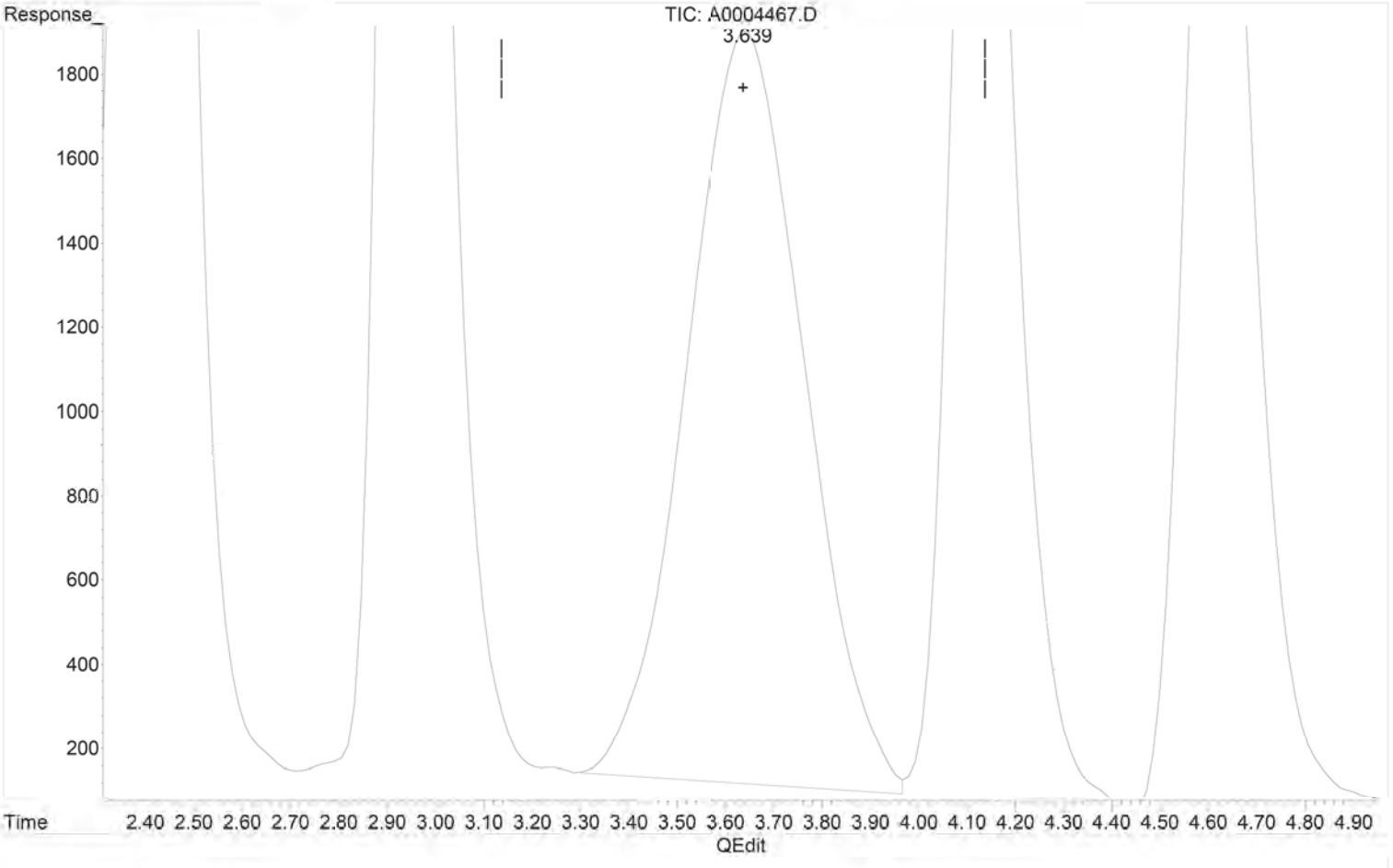
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.645min 0.513 ppm

response 299276

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

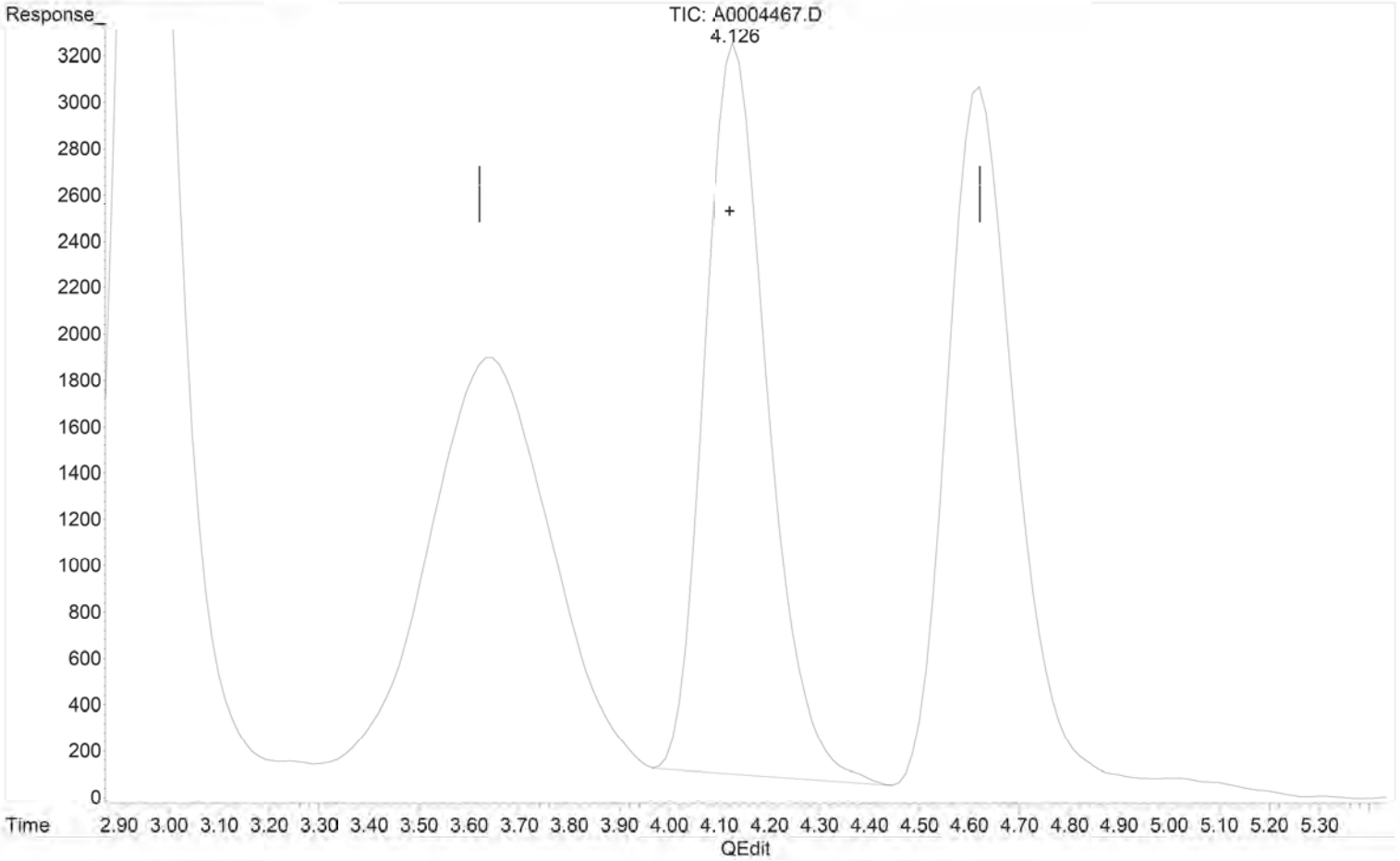
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)
4.126min 4.978 ppm m
response 275770

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:23:13 2020

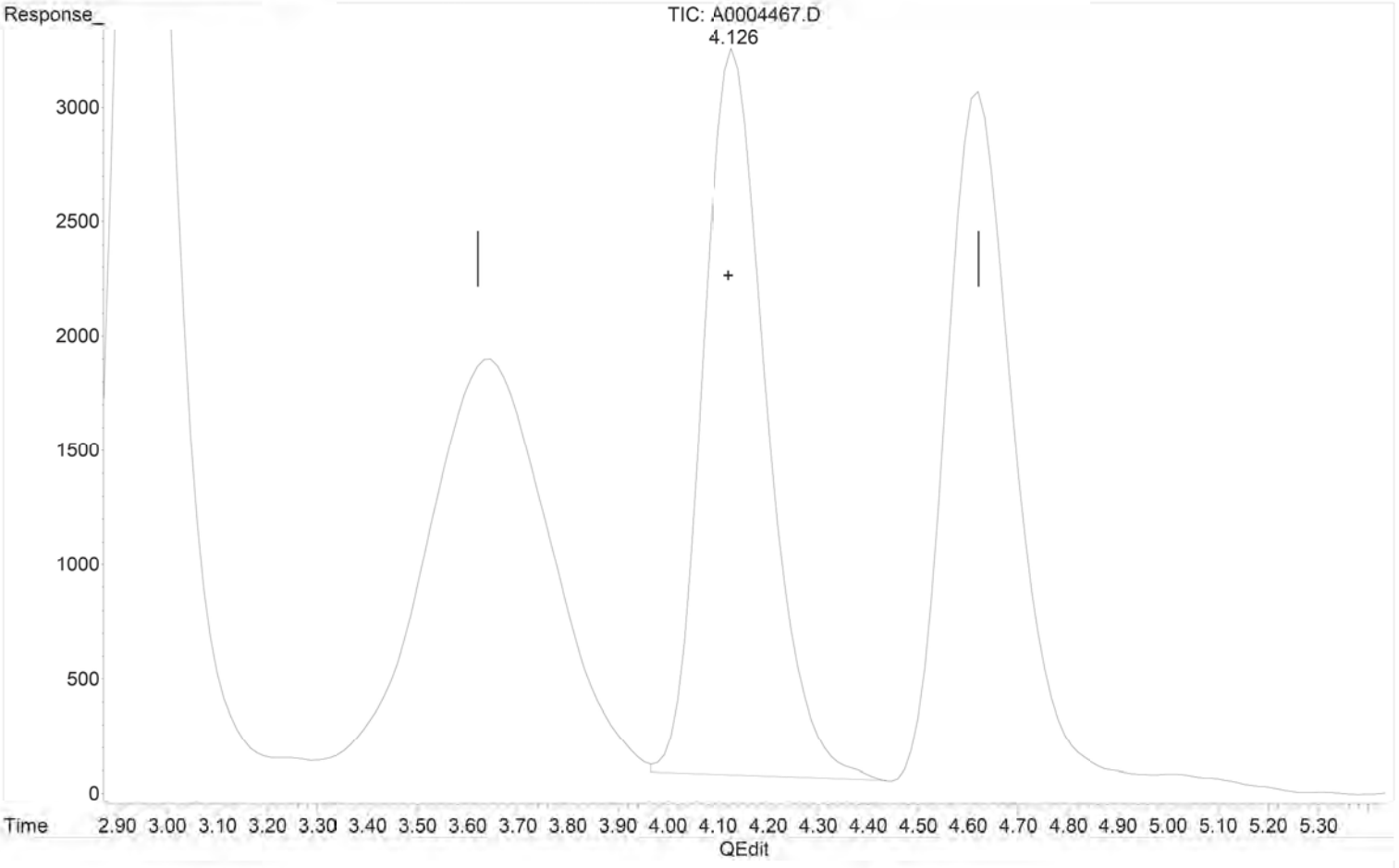
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.132min 5.051 ppm

response 279806

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:23:03 2020

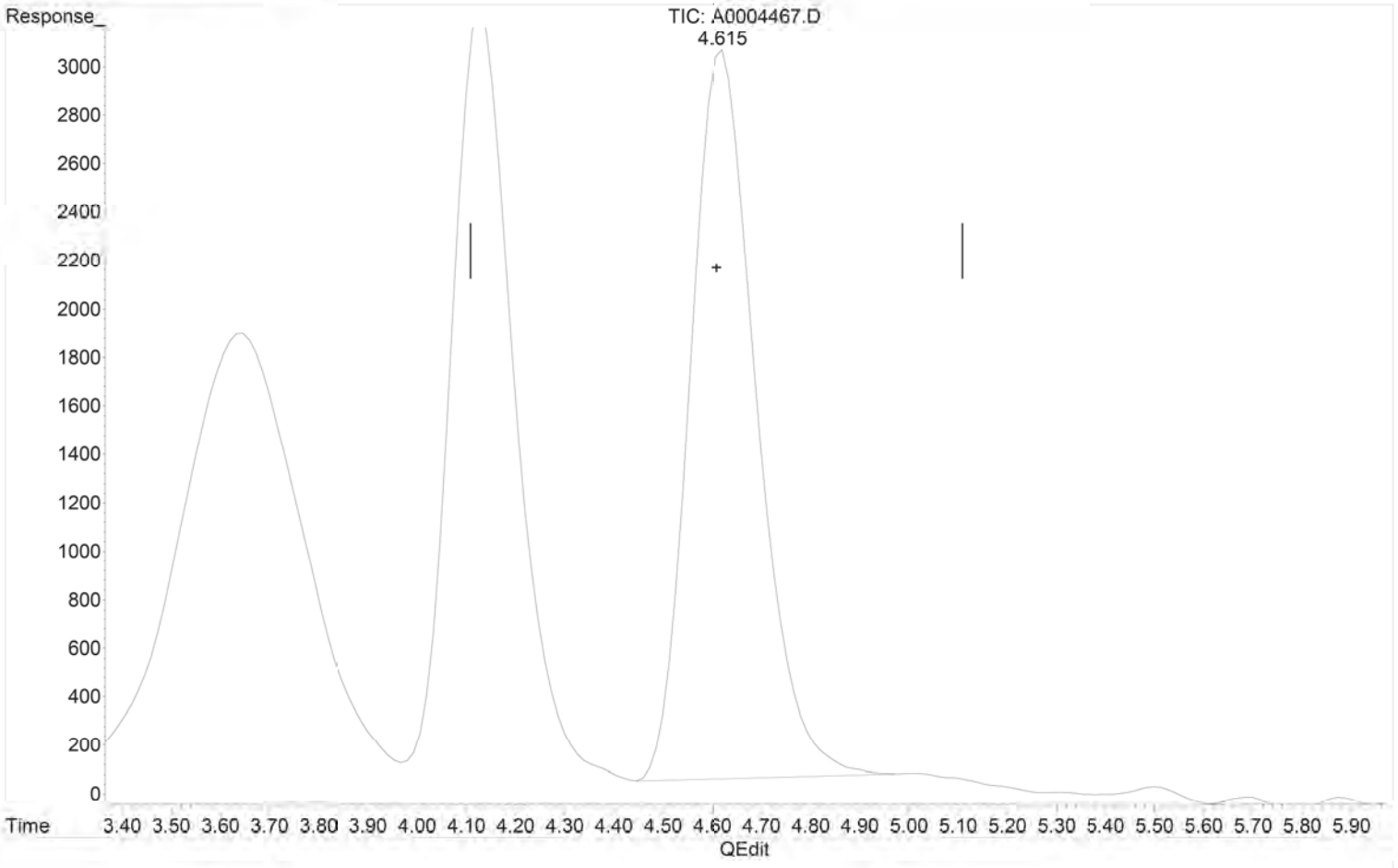
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.615min 5.028 ppm m
response 280536

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:23:24 2020

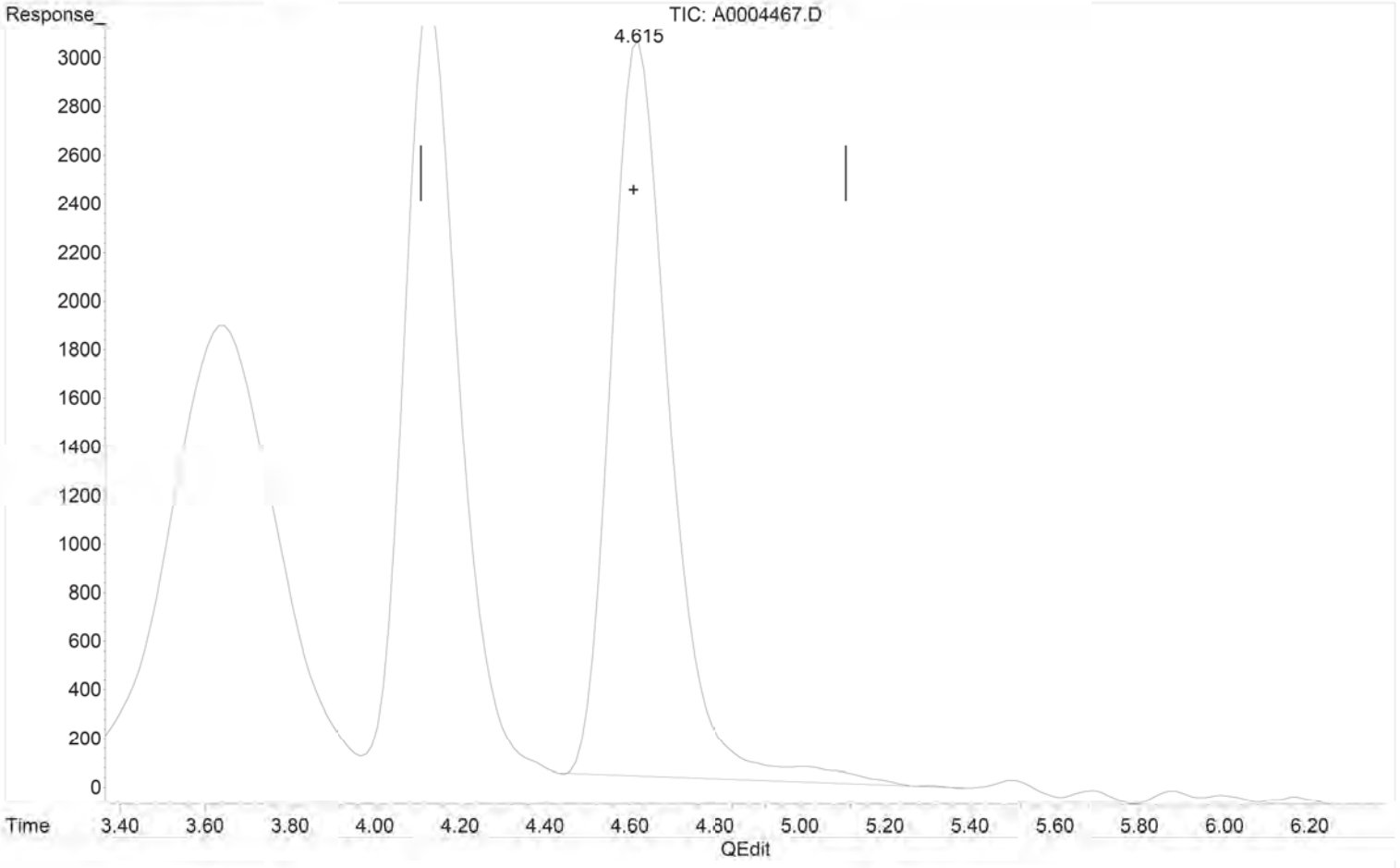
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.622min 5.292 ppm

response 295308

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

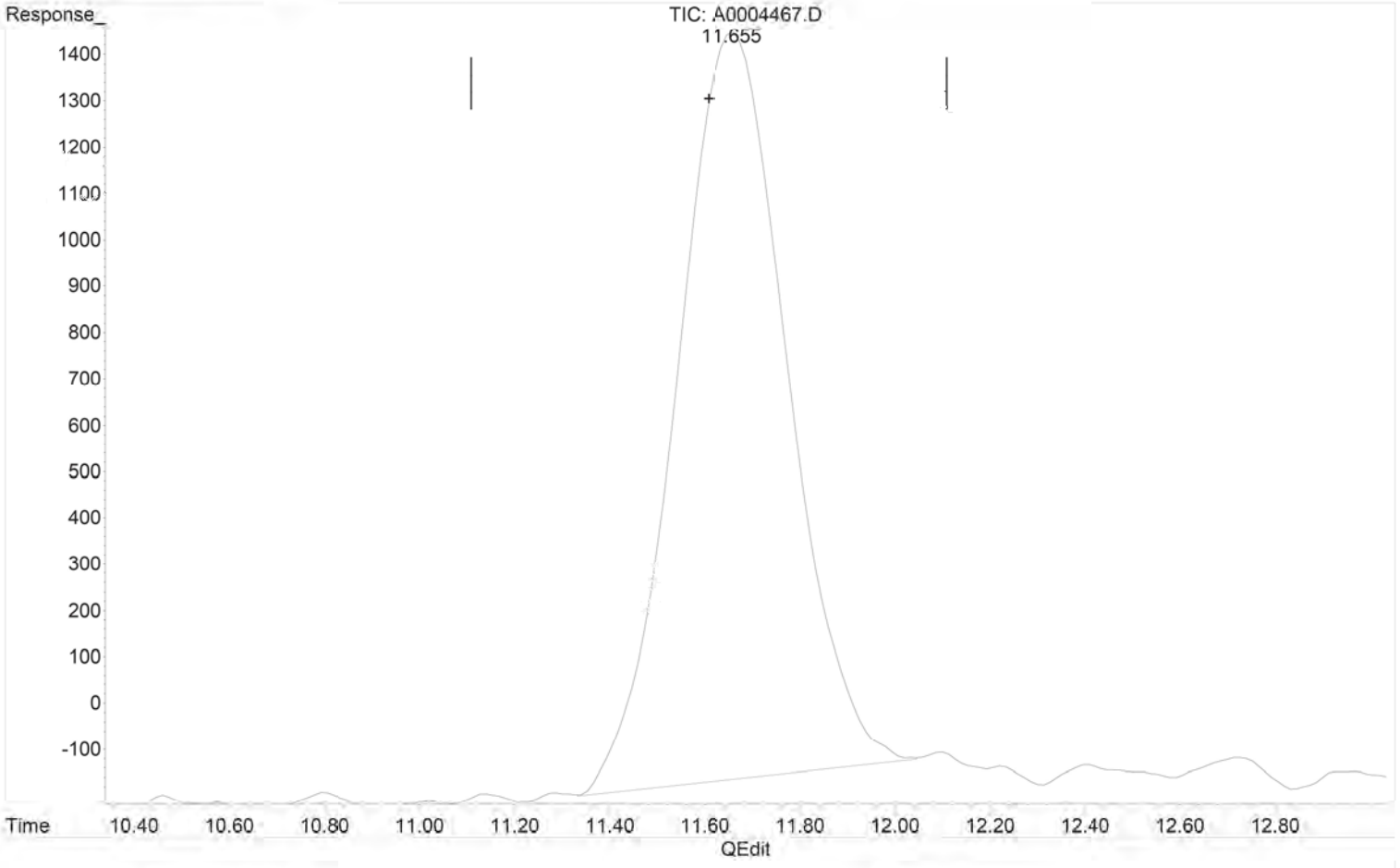
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.655min 4.717 ppm m
response 259122

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:23:37 2020

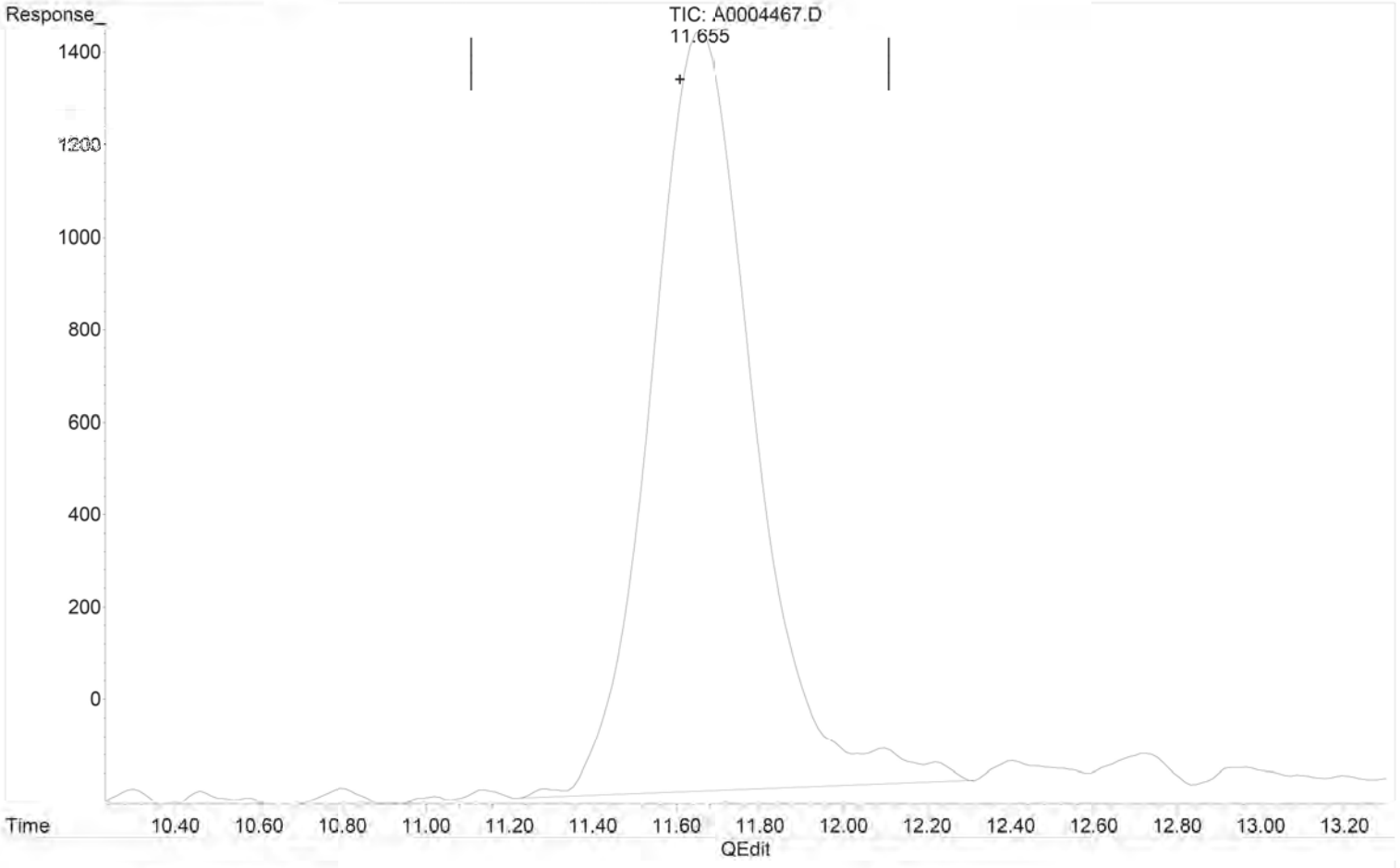
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.661min 5.138 ppm
response 282253

Manual Integration:
Before

03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:23:28 2020

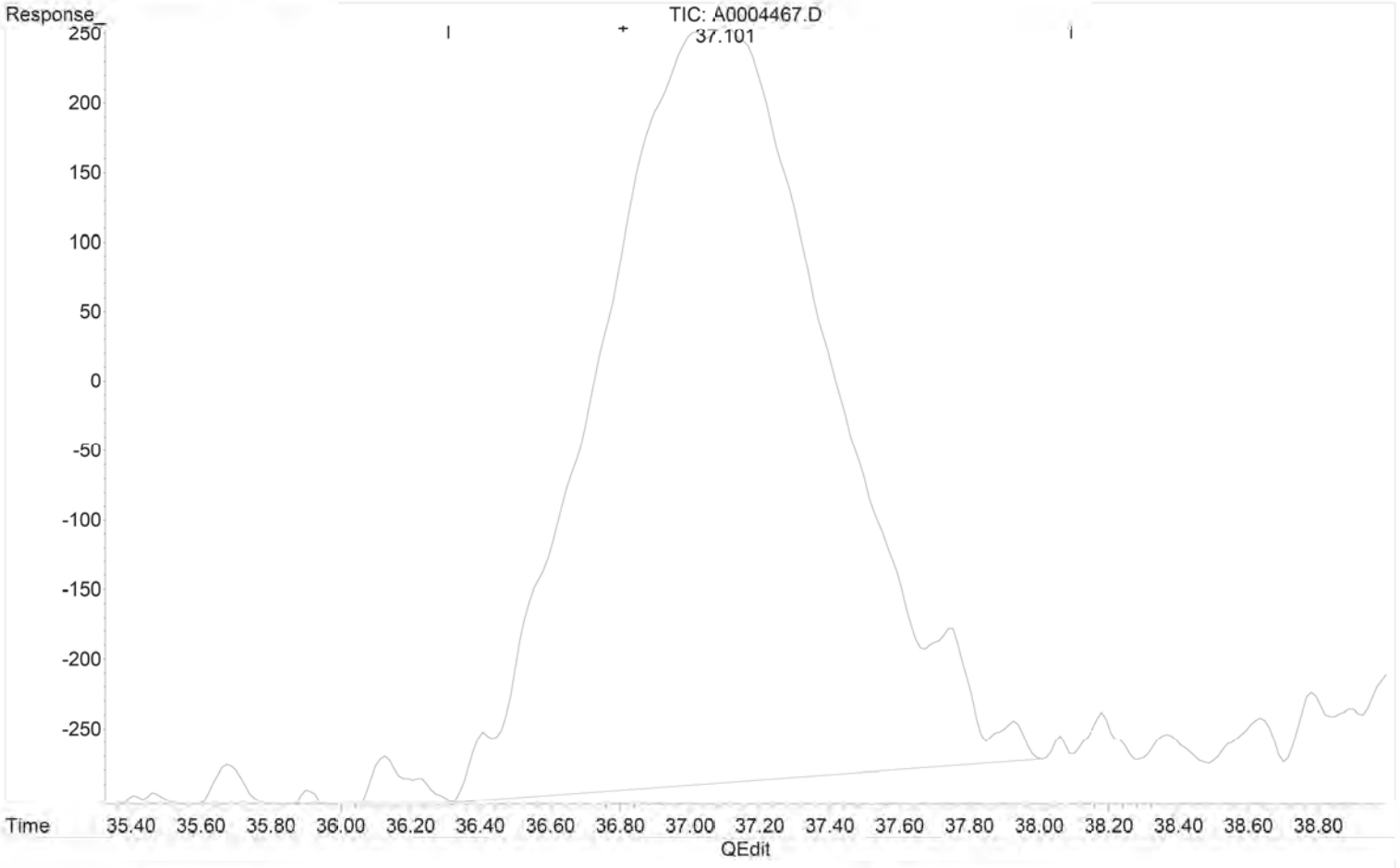
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.101min 4.834 ppm m

response 254345

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

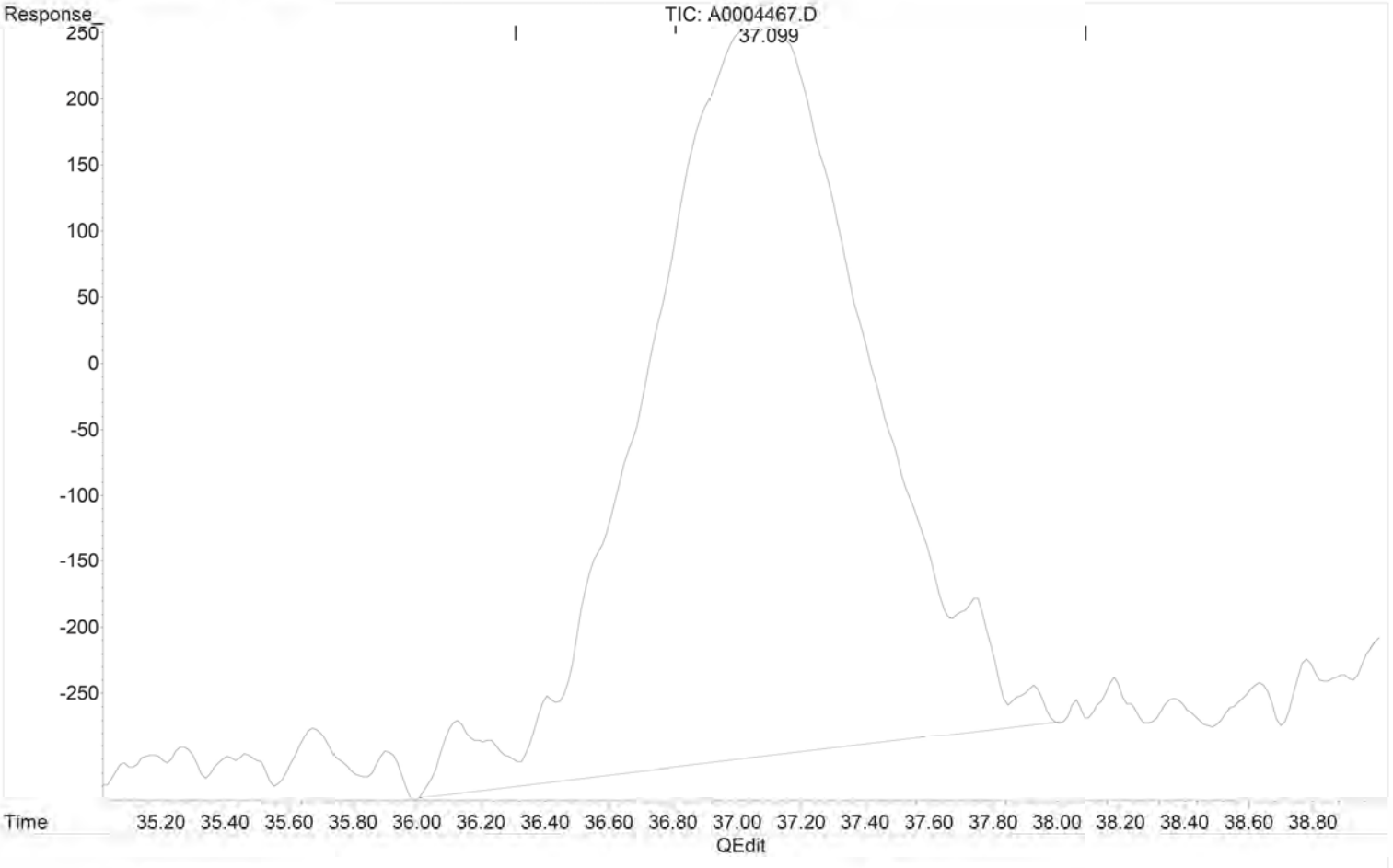
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.103min 5.106 ppm

response 268658

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : ~~30-Dec-2000, 02:48:14~~ 12-Mar-2020, 14:42
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.946	460497	5.032	ppm	m
2) T	Pyruvic acid	3.639	293242	0.503	ppm	m
3) T	Lactic Acid	4.126	275770	4.978	ppm	m
4) T	Acetic Acid	4.615	280536	5.028	ppm	m
5) T	Propionic Acid	11.655	259122	4.717	ppm	m
6) T	Butyric Acid	37.101	254345	4.834	ppm	m

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

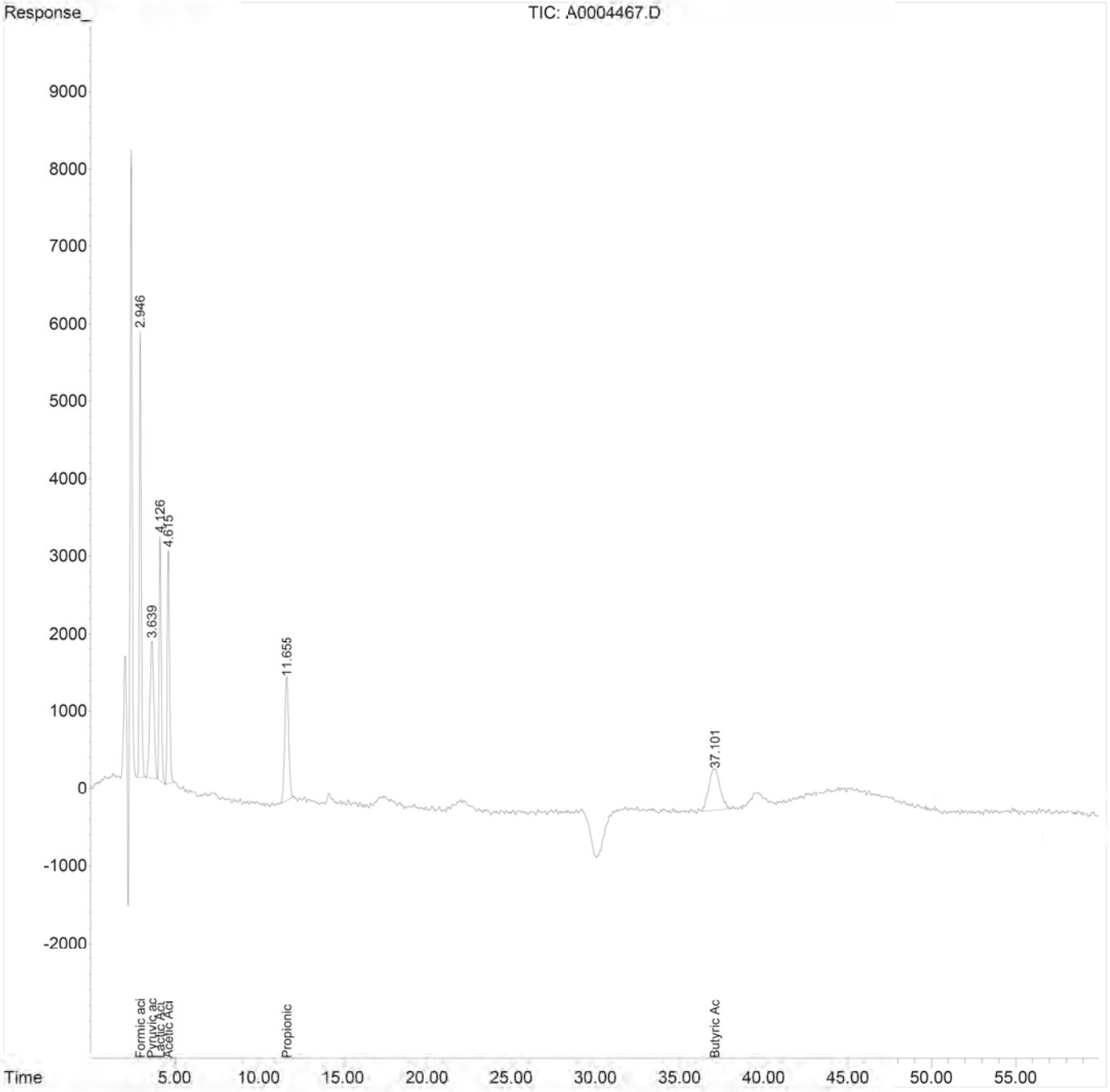
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



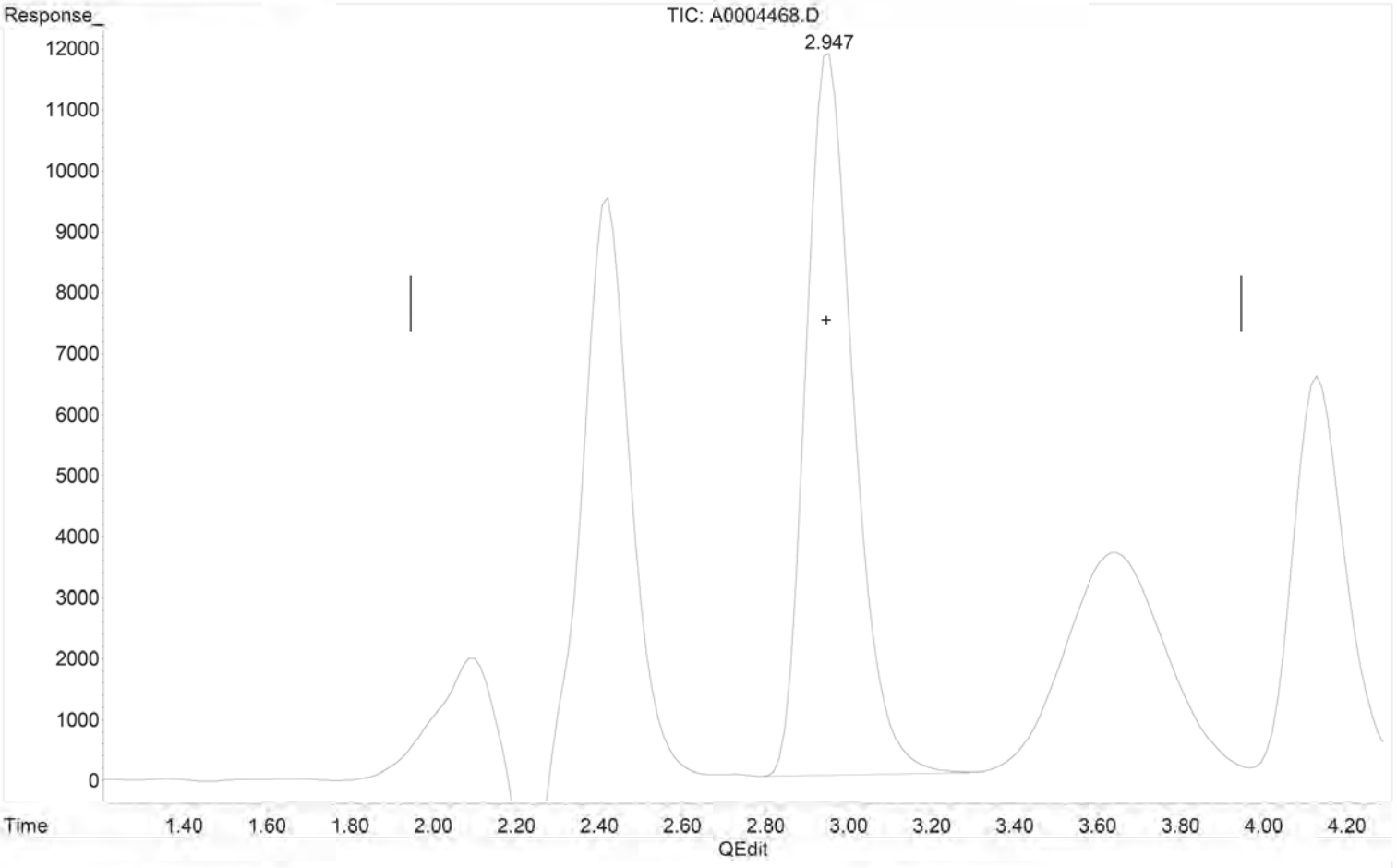
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.947min 10.368 ppm m

response 948710

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:24:19 2020

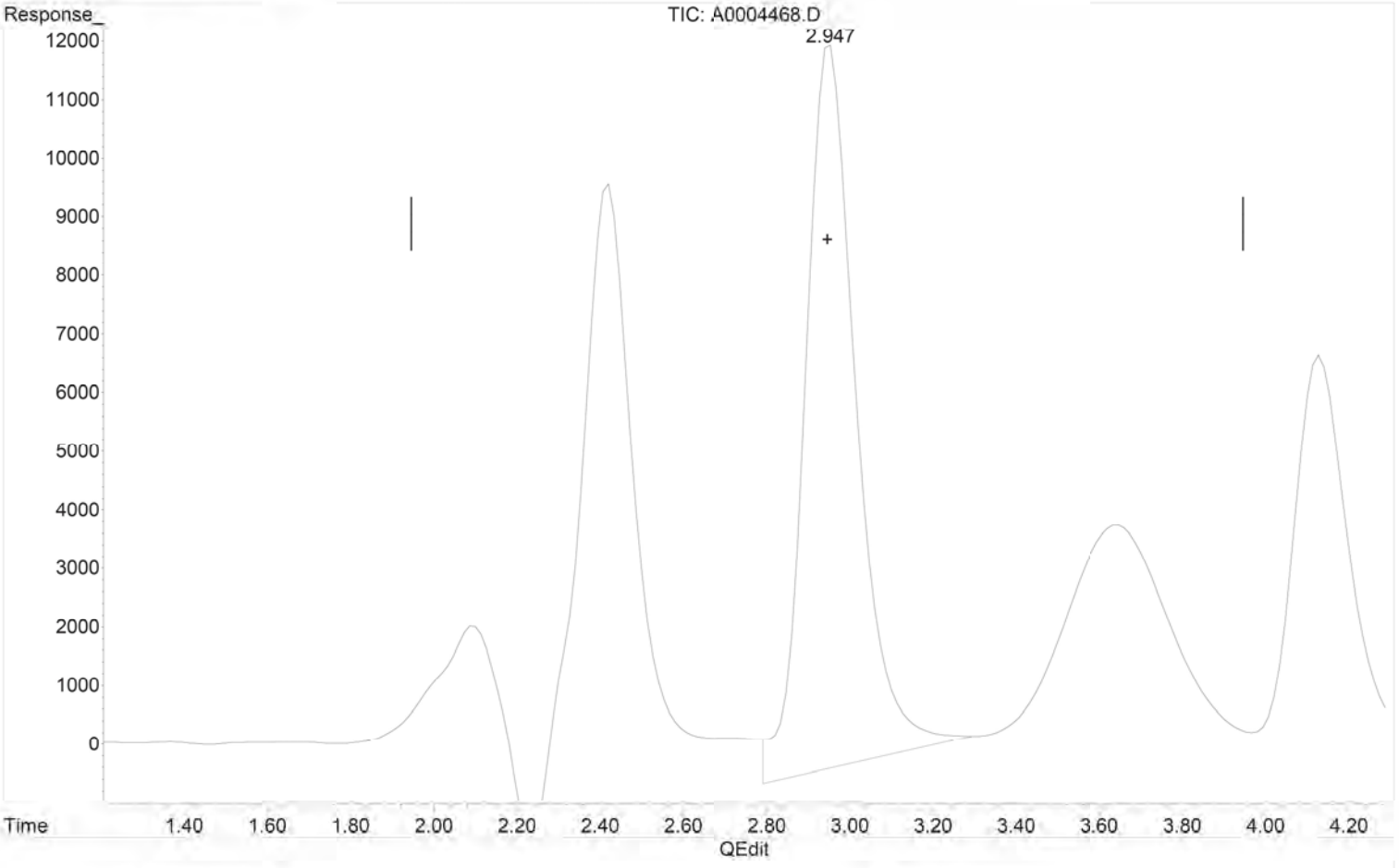
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.954min 11.593 ppm

response 1060848

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

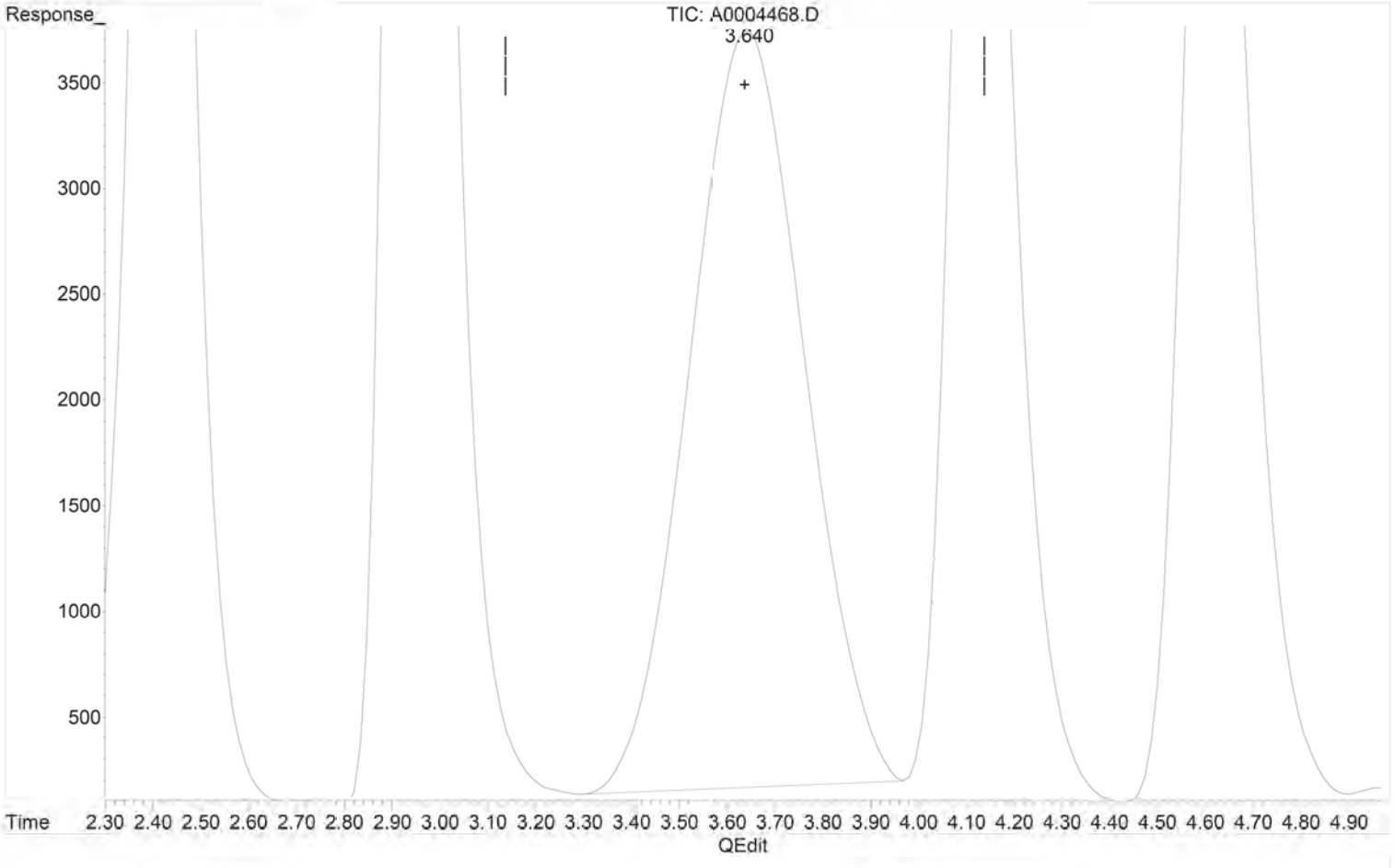
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.640min 1.020 ppm m
response 594304

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:24:37 2020

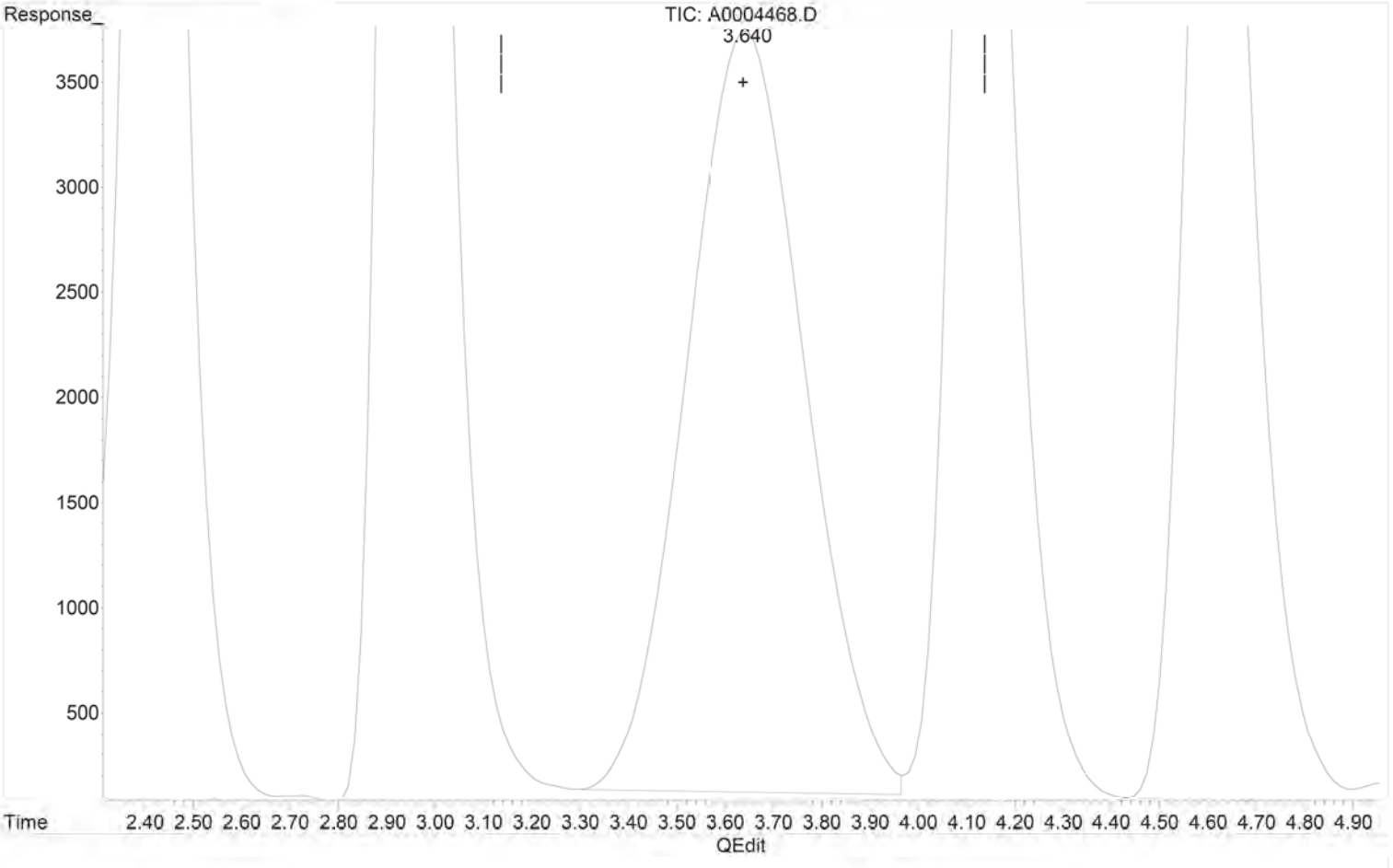
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.646min 1.048 ppm

response 611122

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

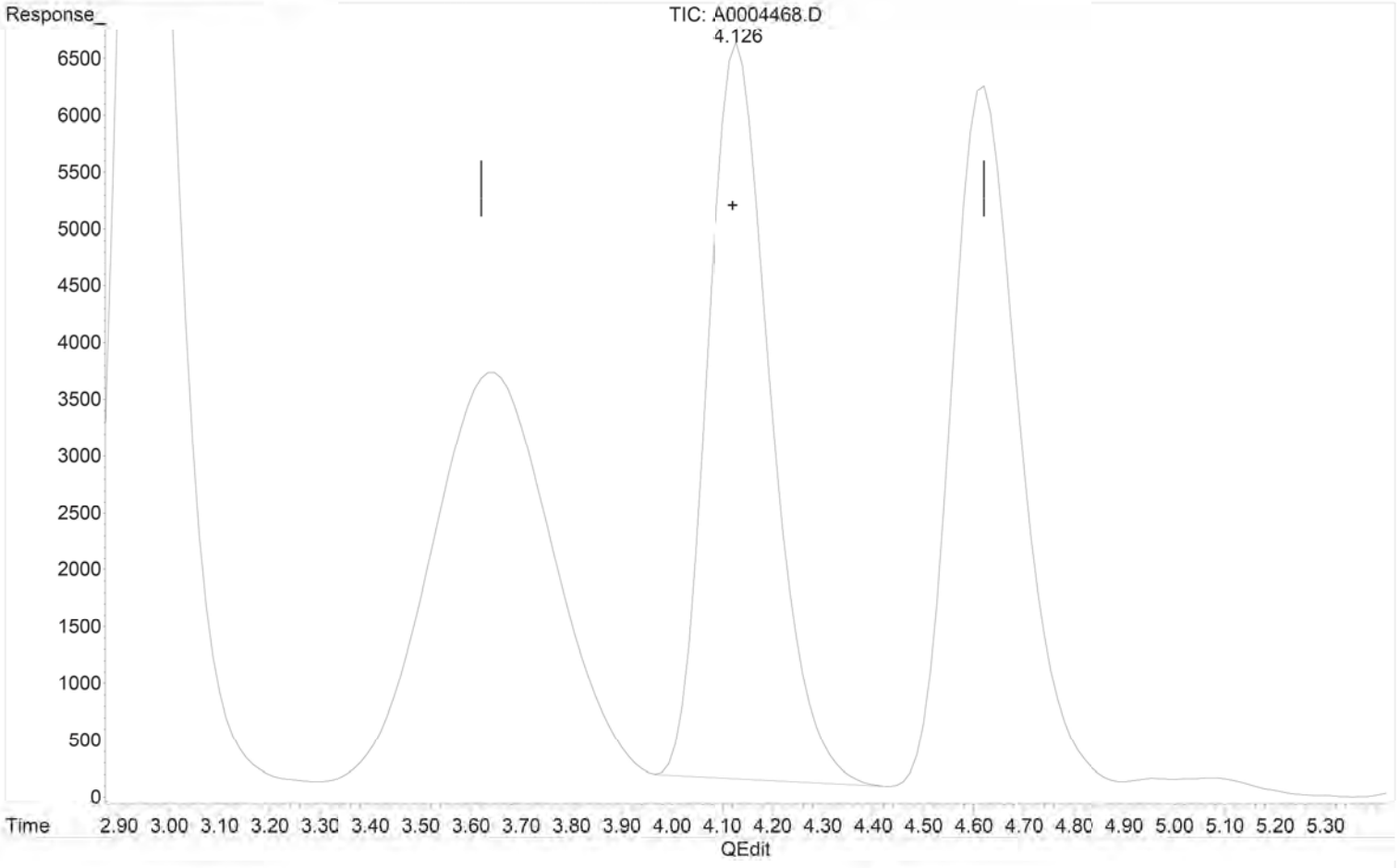
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.126min 10.183 ppm m

response 564128

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

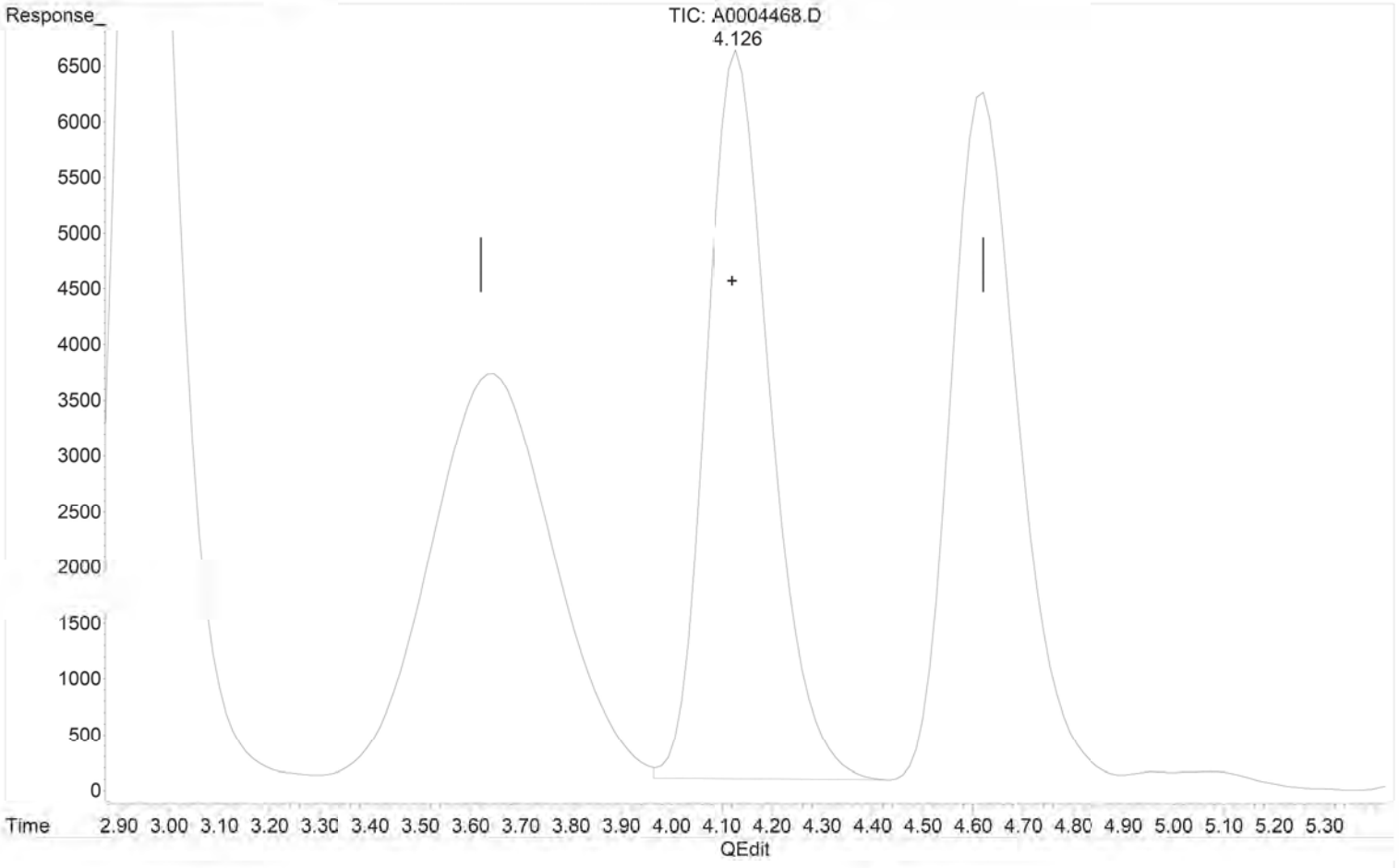
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.132min 10.406 ppm

response 576451

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

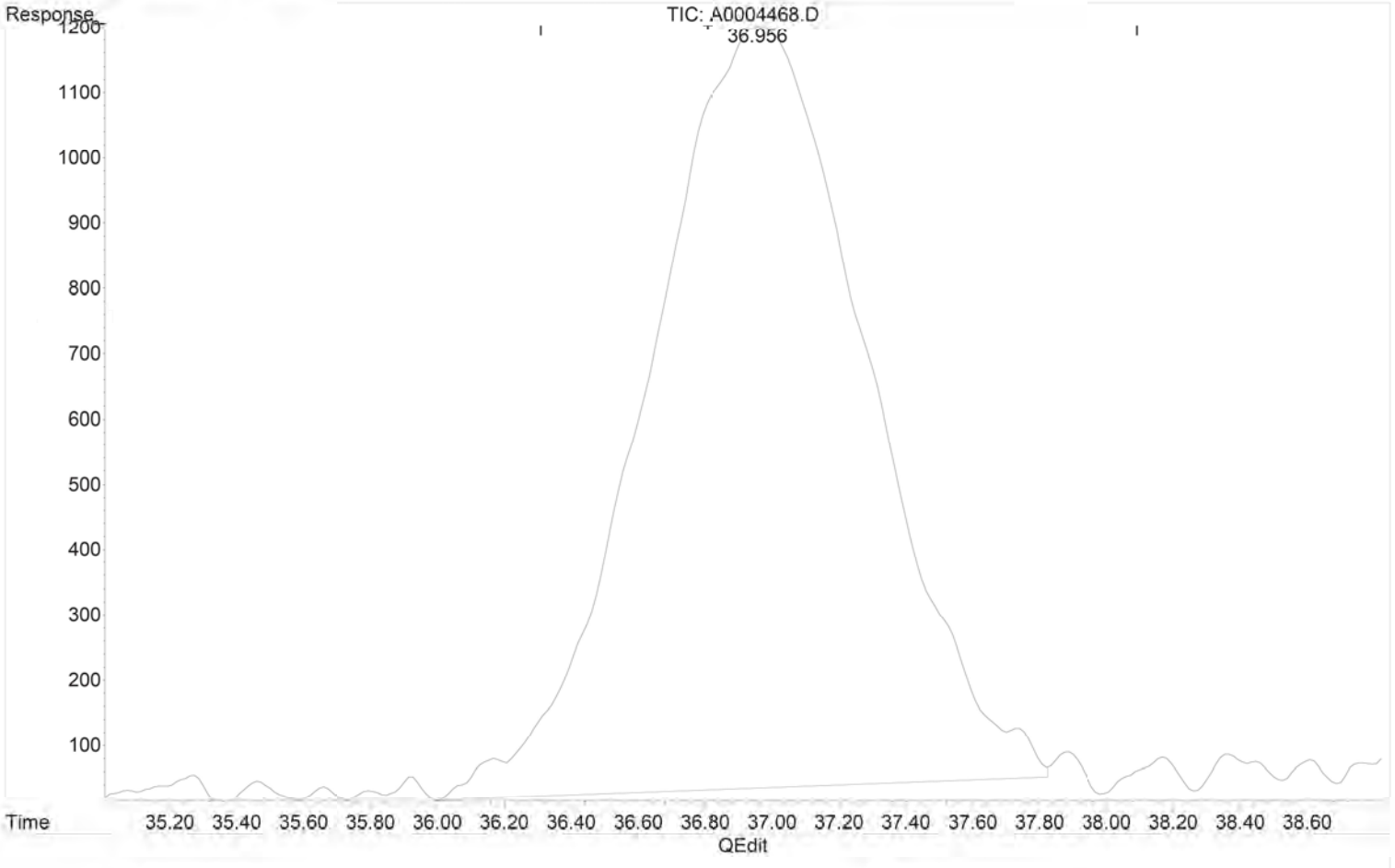
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.956min 10.111 ppm m

response 532016

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

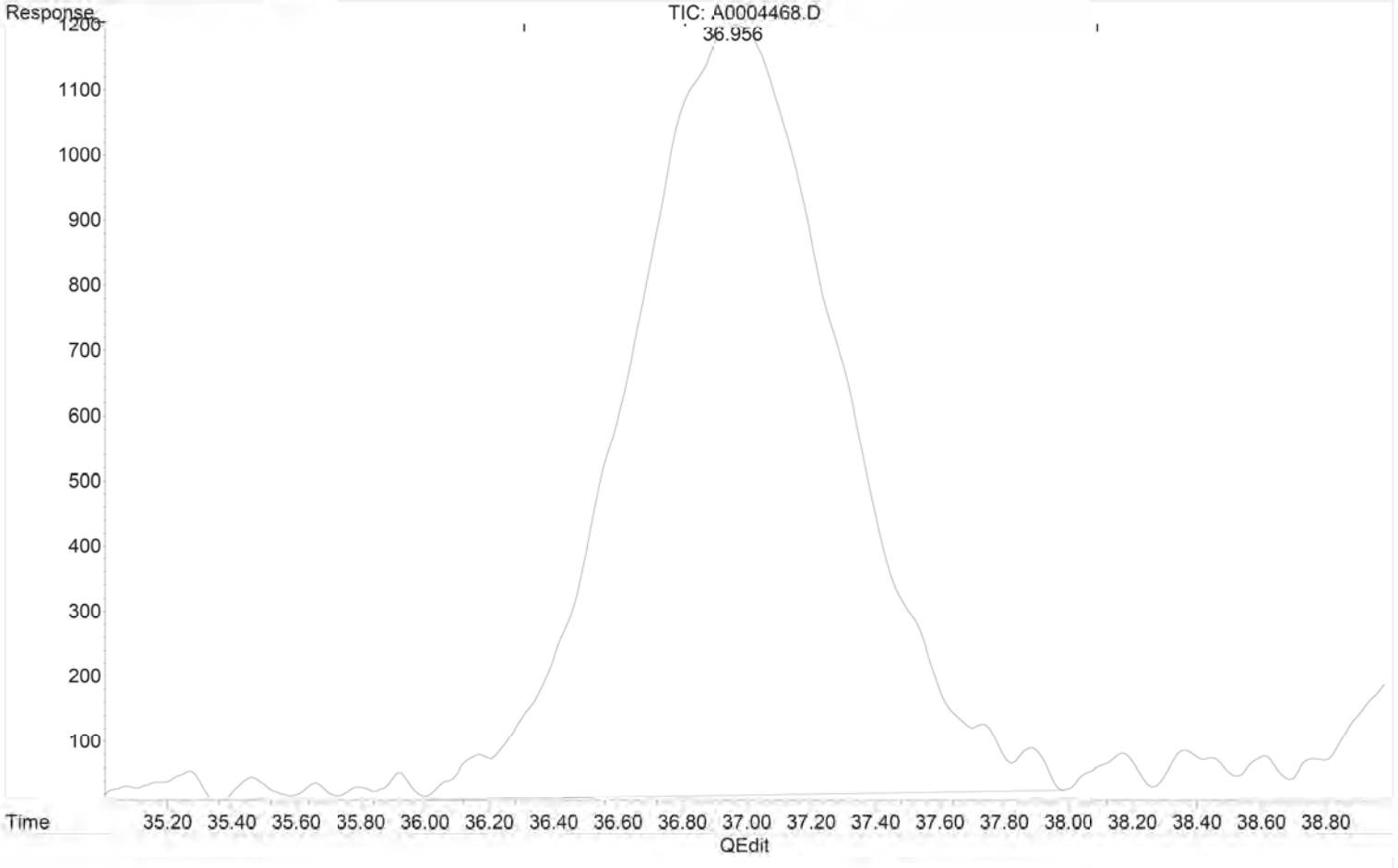
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.967min 10.515 ppm

response 553241

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.947	948710	10.368	ppm	m
2) T	Pyruvic acid	3.640	594304	1.020	ppm	m
3) T	Lactic Acid	4.126	564128	10.183	ppm	m
4) T	Acetic Acid	4.622	573121	10.271	ppm	
5) T	Propionic Acid	11.654	559828	10.190	ppm	
6) T	Butyric Acid	36.956	532016	10.111	ppm	m

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

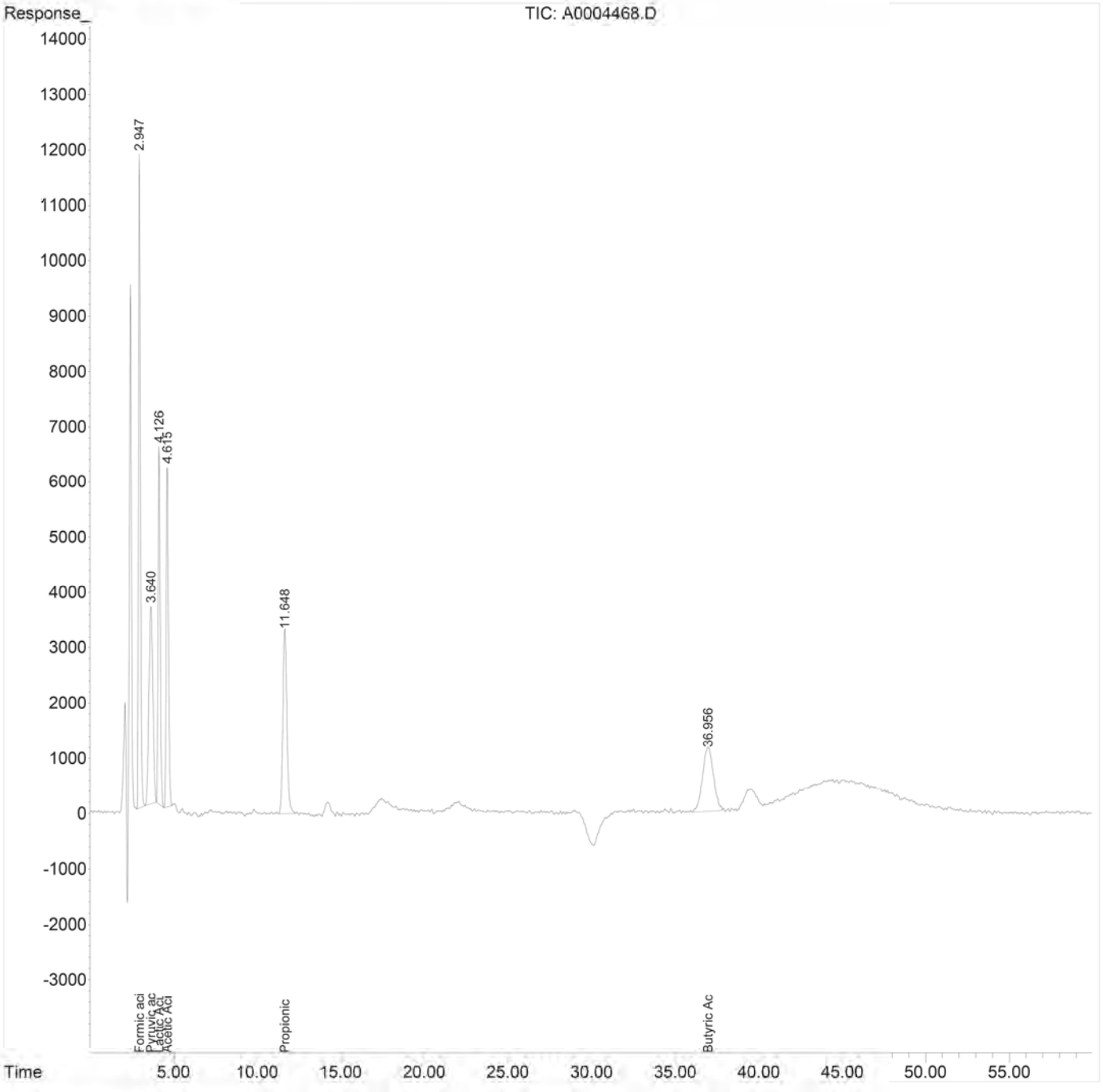
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



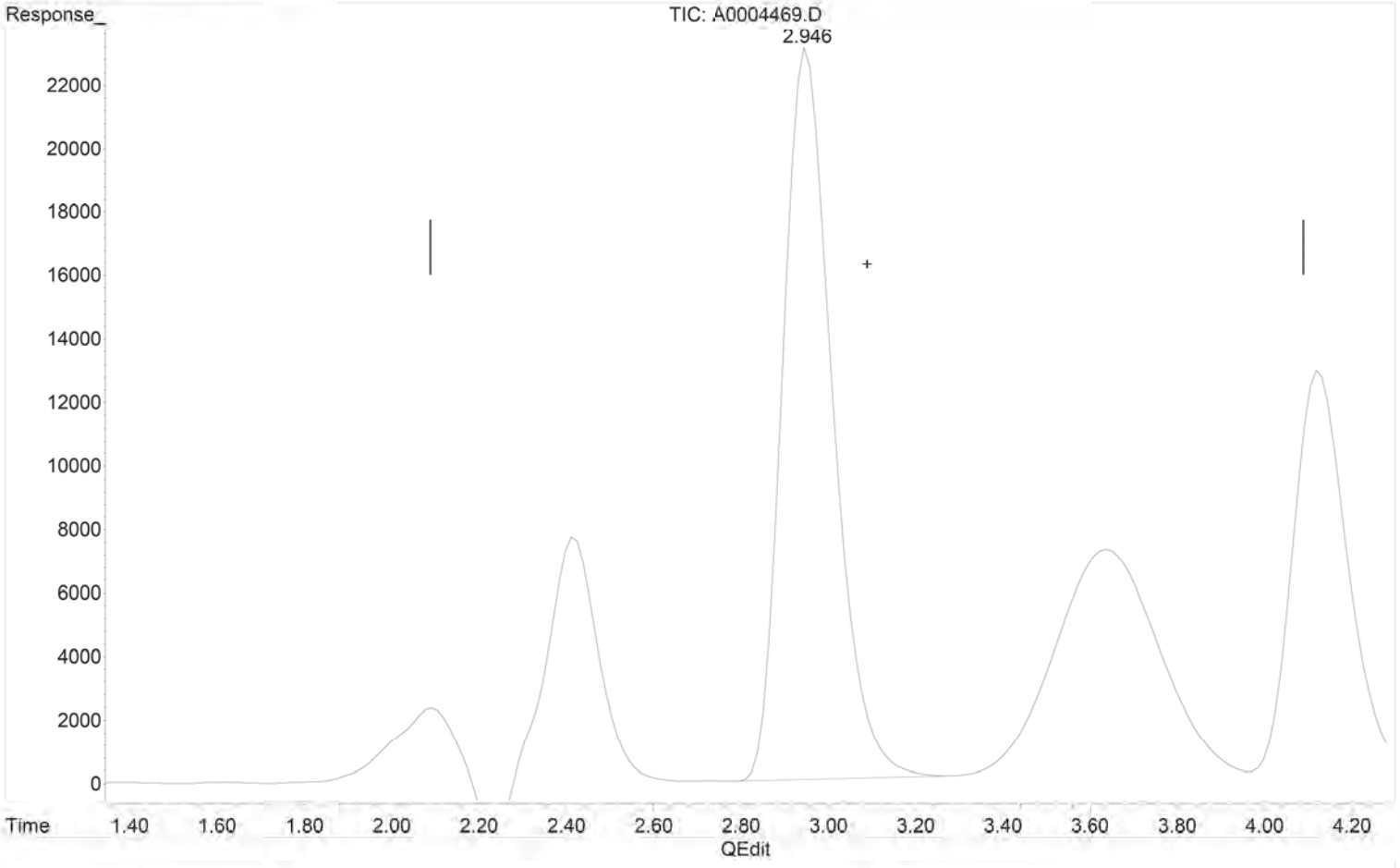
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.946min 19.154 ppm m

response 1830133

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

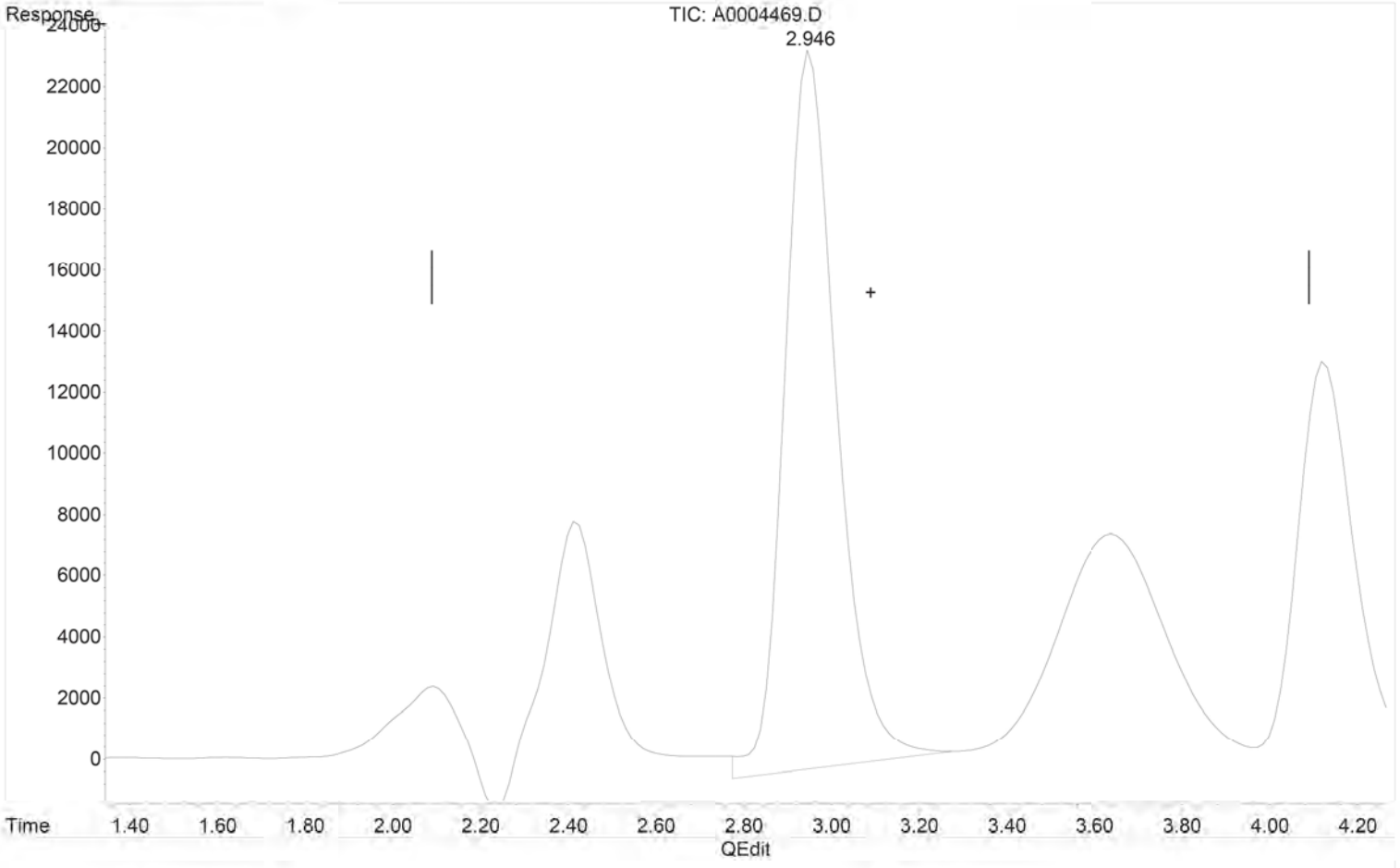
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.953min 20.256 ppm

response 1935353

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

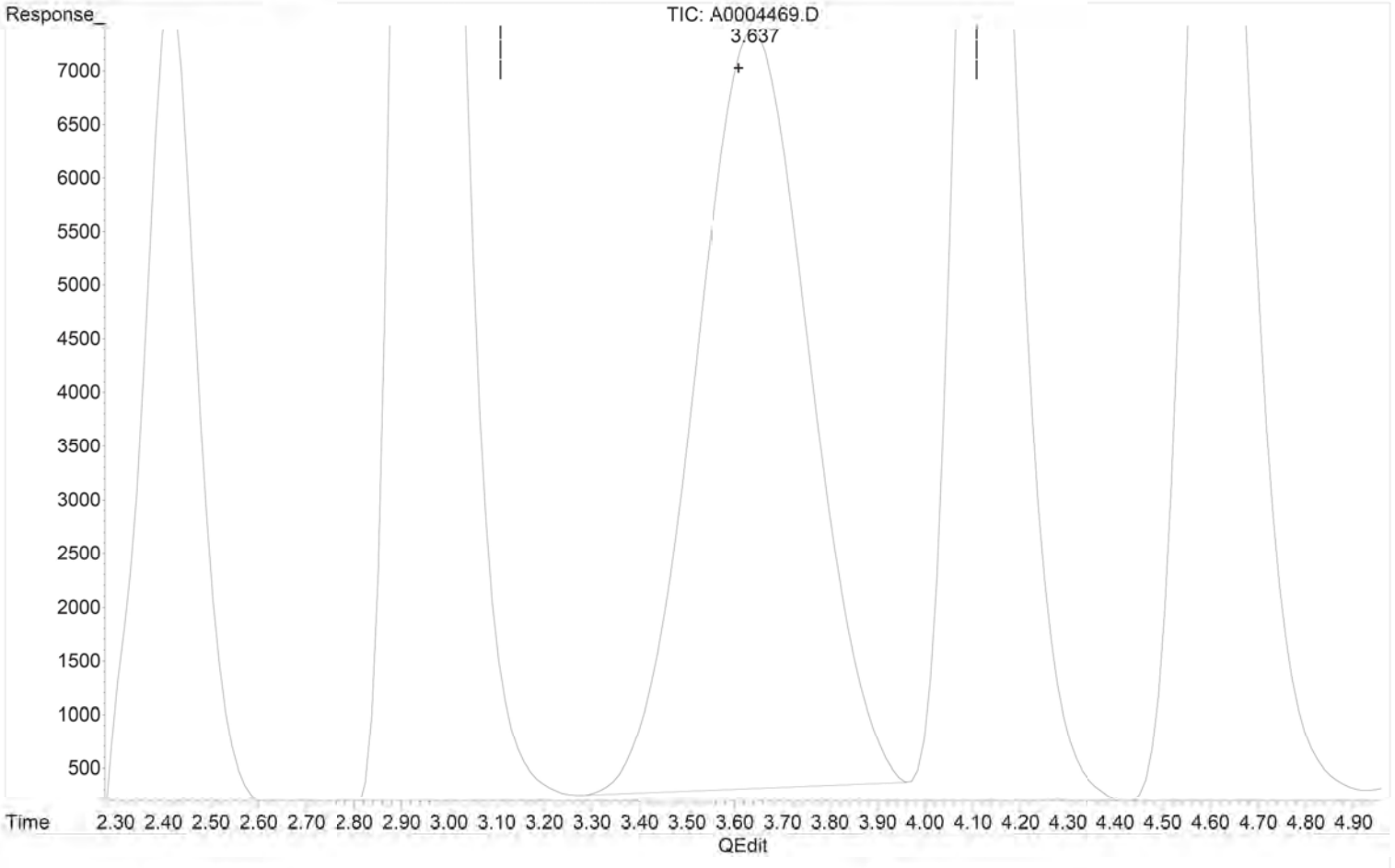
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.637min 2.190 ppm m
response 1165741

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:16:25 2020

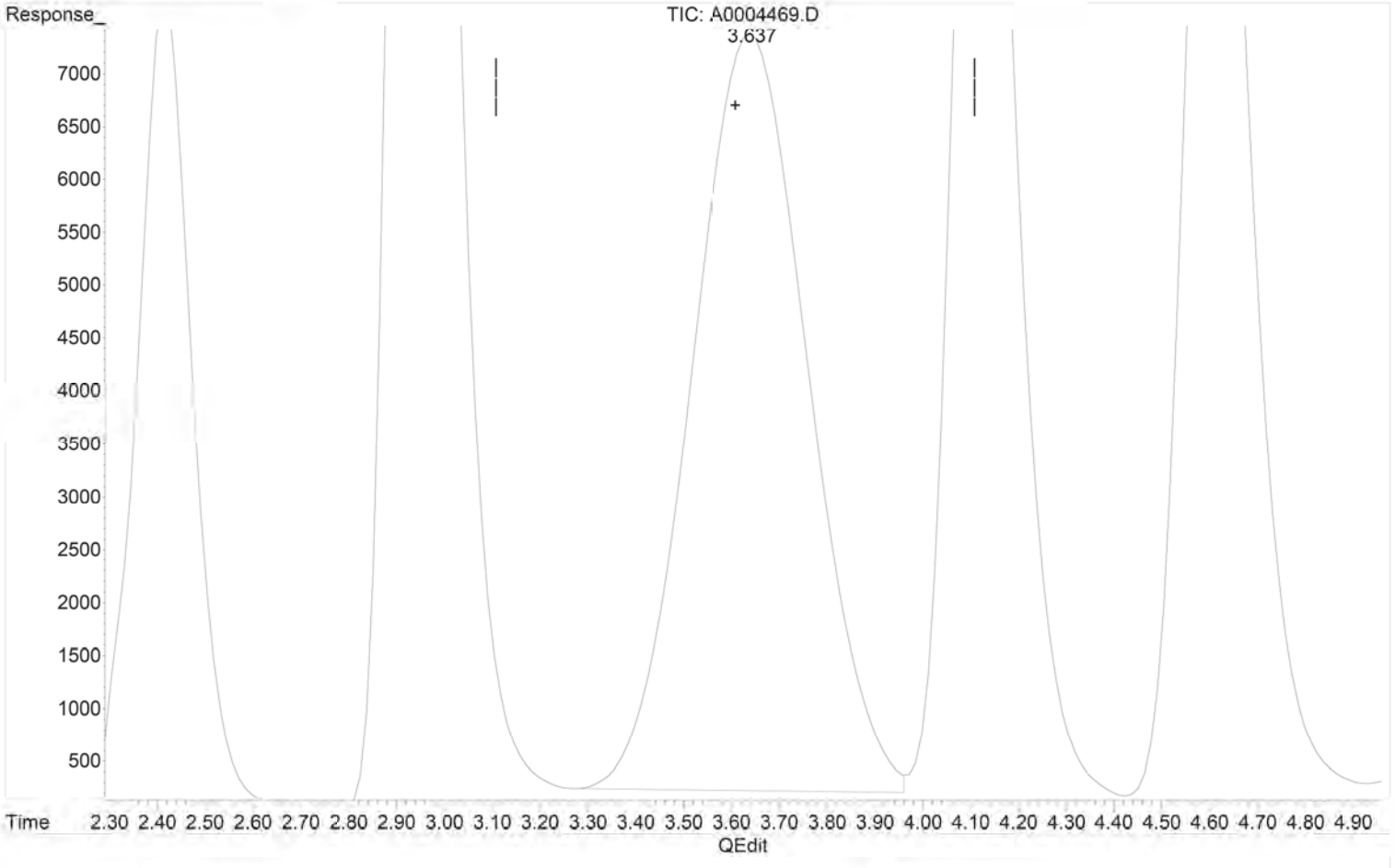
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.642min 2.250 ppm

response 1197650

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

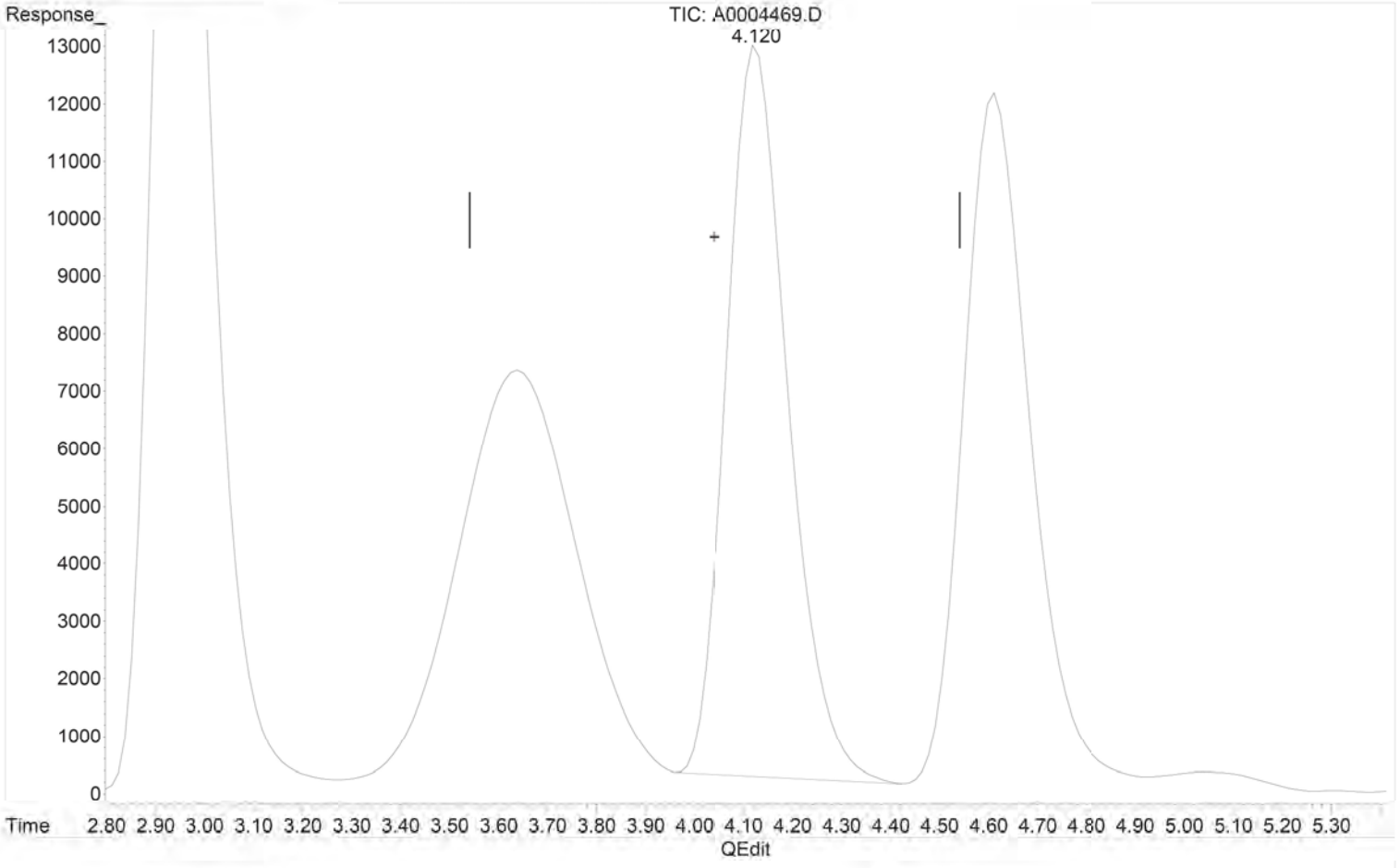
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.120min 21.482 ppm m

response 1107931

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

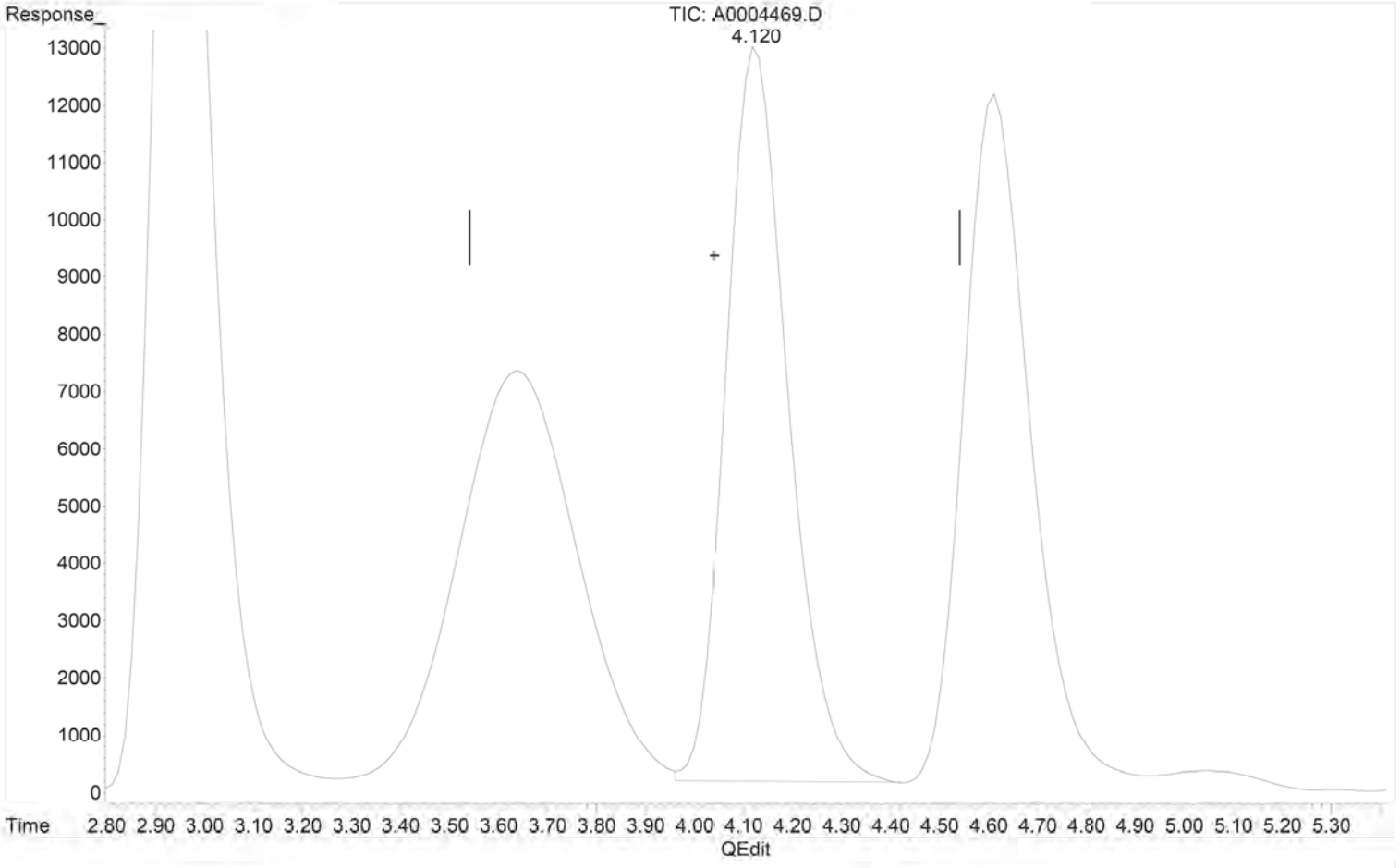
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.127min 21.898 ppm

response 1129421

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

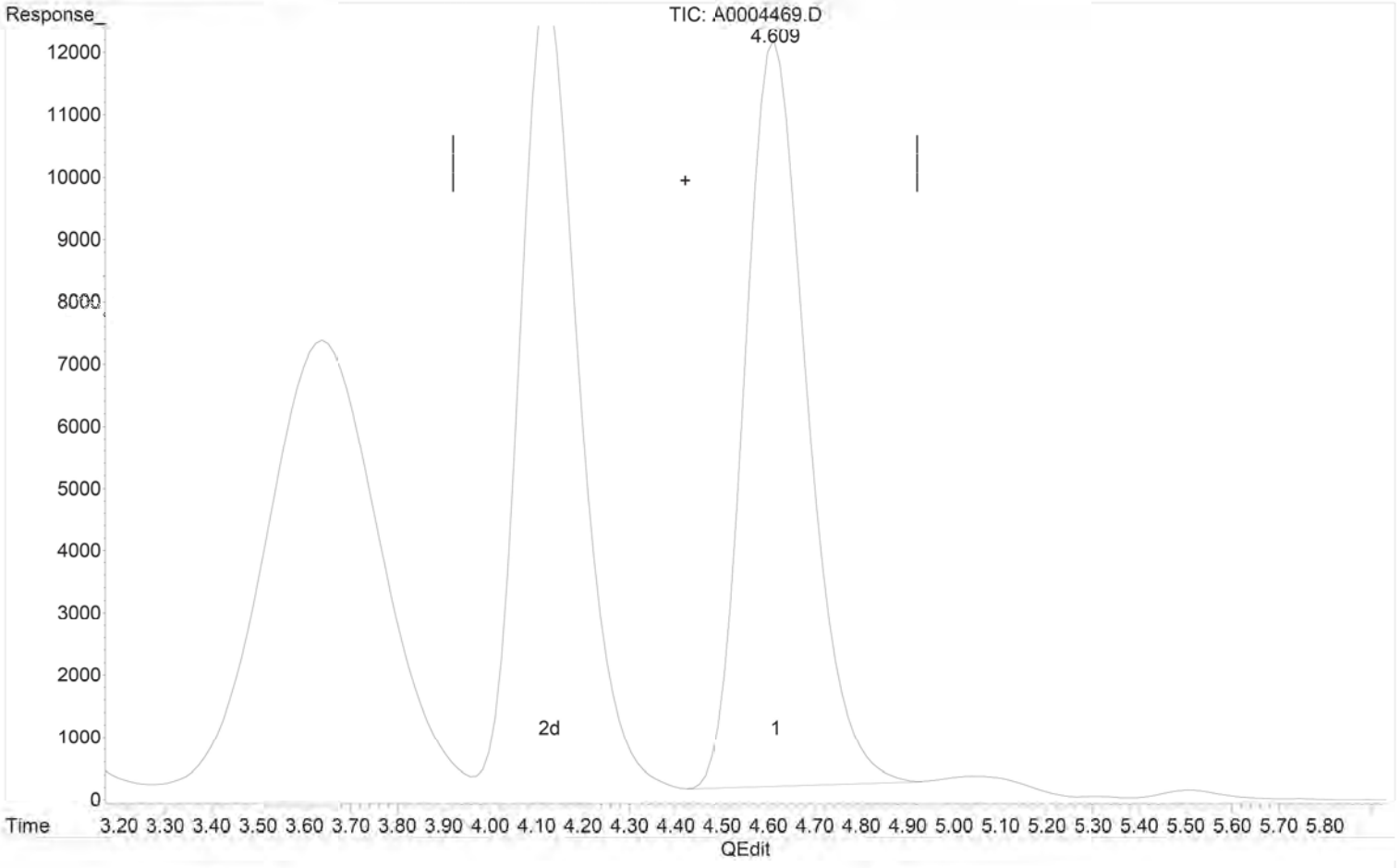
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.609min 19.276 ppm m
response 1115994

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:16:51 2020

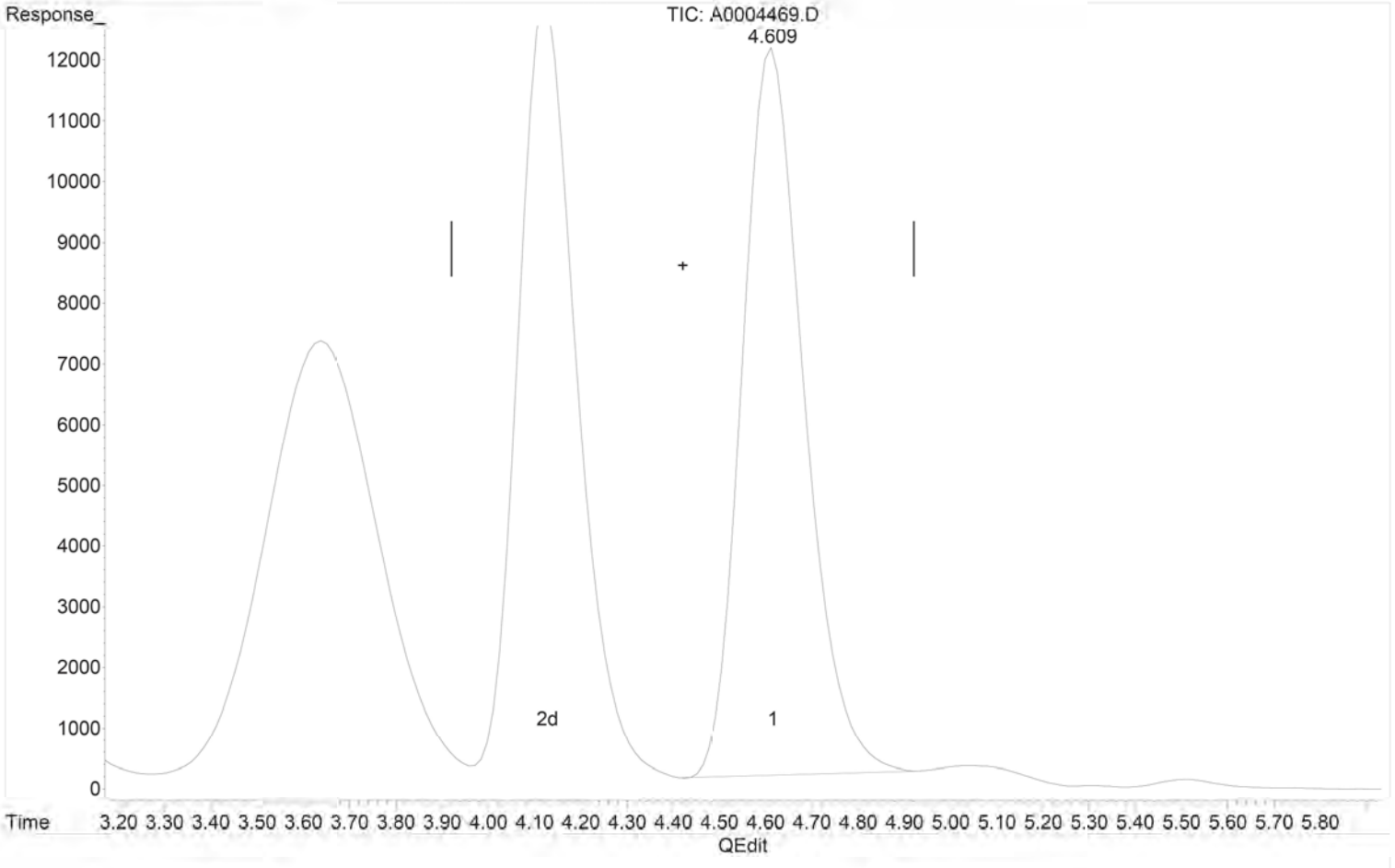
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.615min 19.234 ppm

response 1113595

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

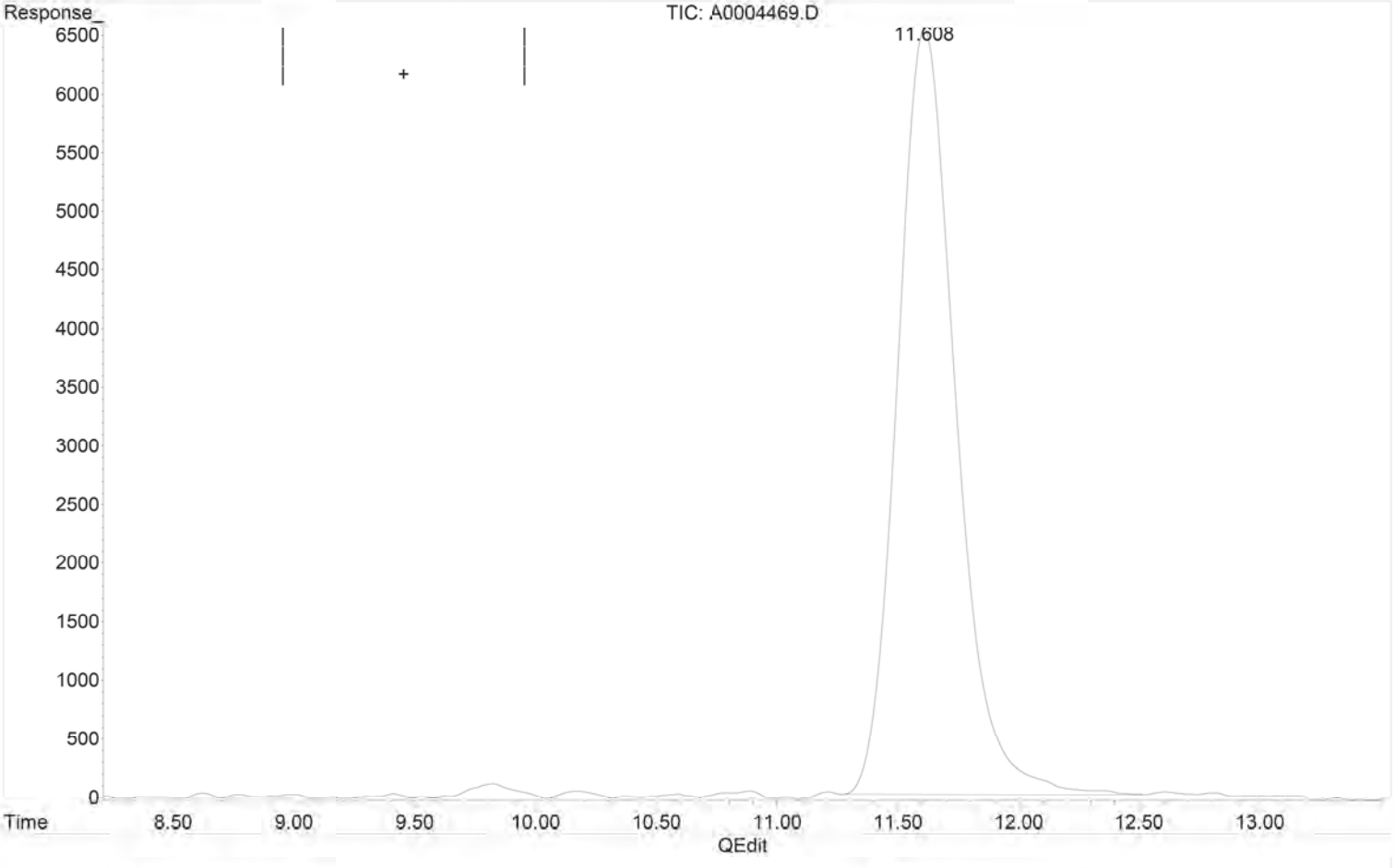
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.608min 19.595 ppm m
response 1098741

Manual Integration:
After
Peak not found.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:17:21 2020

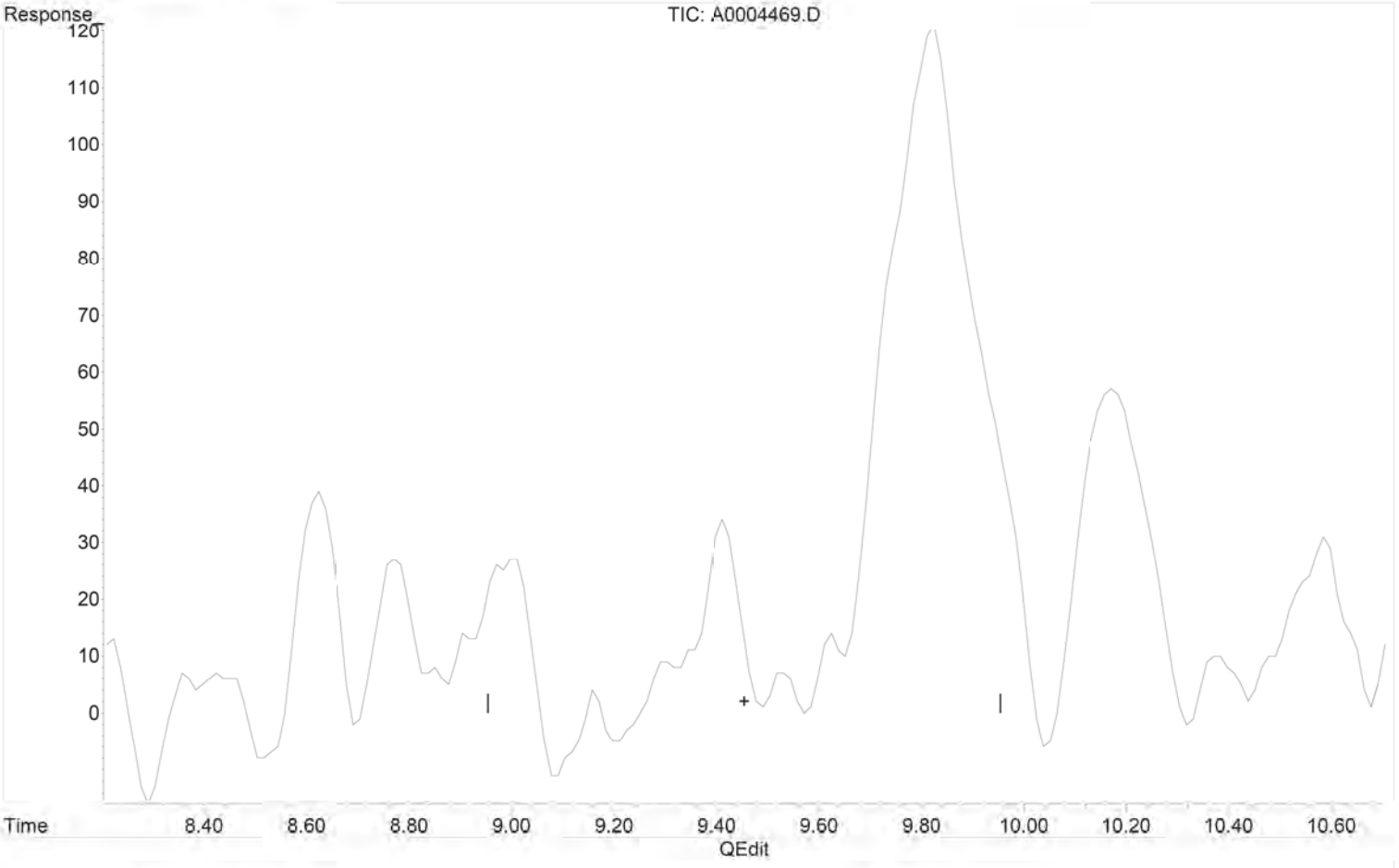
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
9.454min 0.000 ppm
response 0

Manual Integration:
Before

03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:16:55 2020

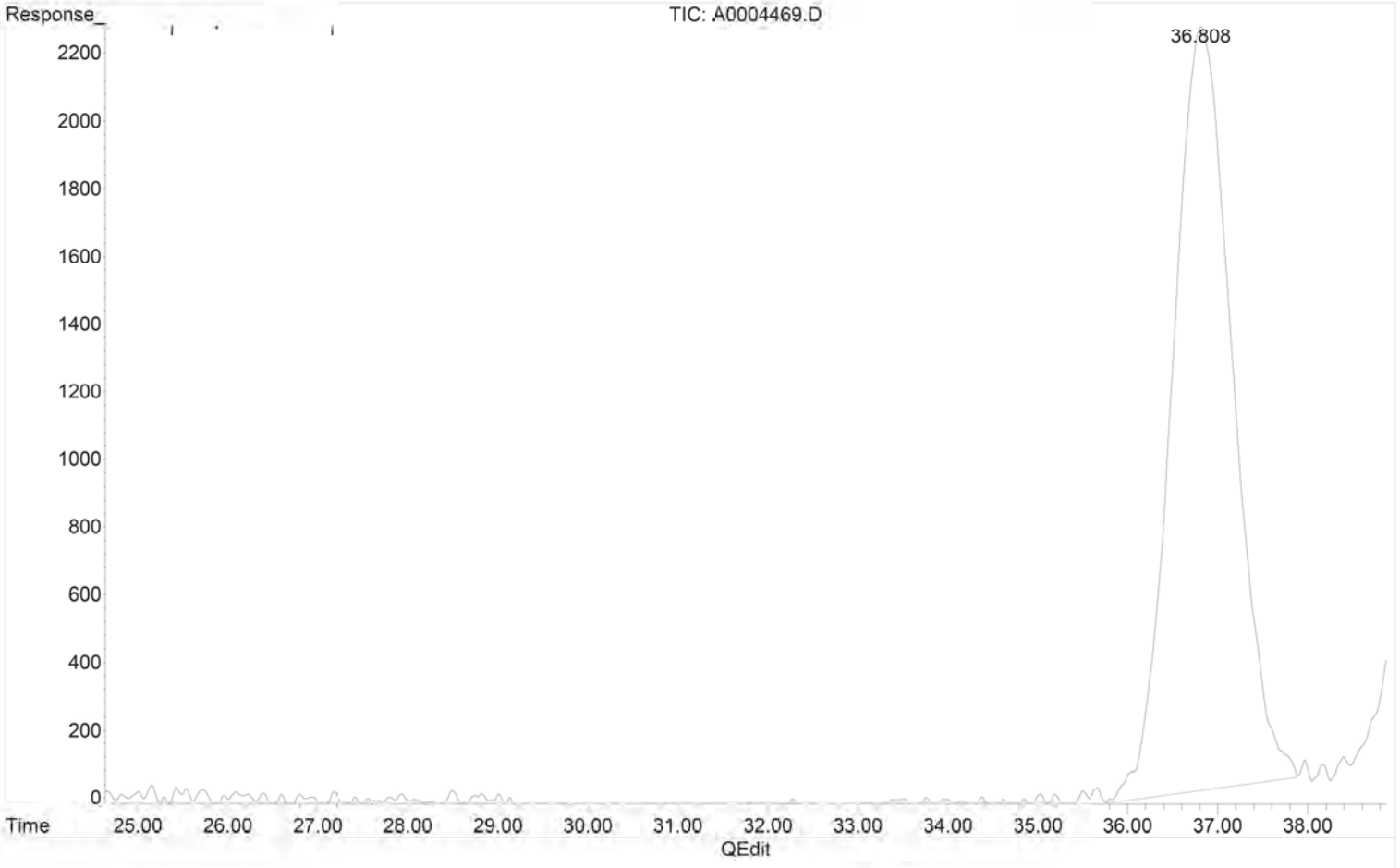
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.808min 19.370 ppm m

response 1052332

Manual Integration!

After

Peak not found.

03/16/20

(+) = Expected Retention Time

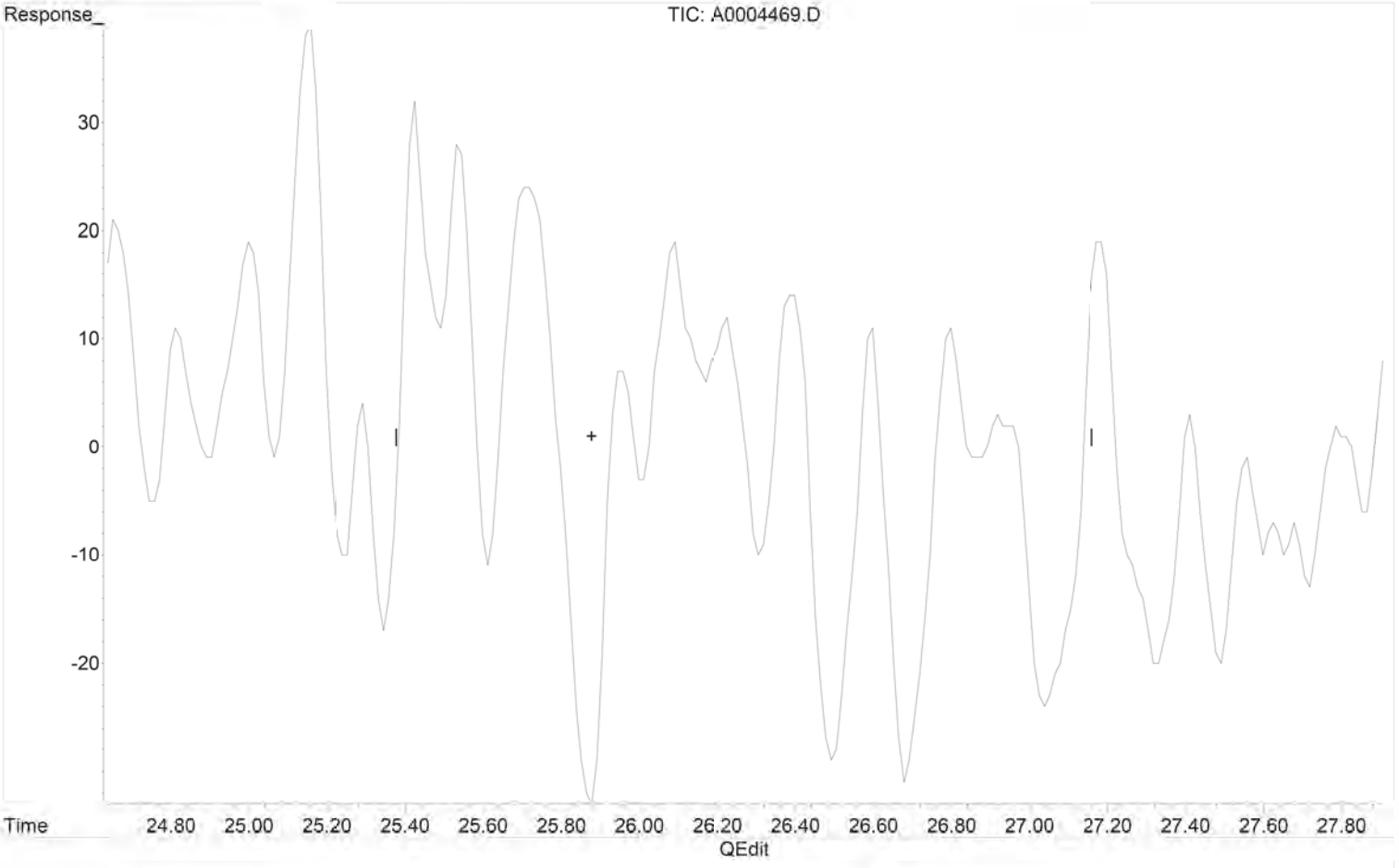
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

25.877min 0.000 ppm

response 0

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : ~~30-Dec-2000, 17:48:02~~ 12-Mar-2020, 16:48
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.946	1830133	19.154	ppm	m
2) T	Pyruvic acid	3.637	1165741	2.190	ppm	m
3) T	Lactic Acid	4.120	1107931	21.482	ppm	m
4) T	Acetic Acid	4.609	1115994	19.276	ppm	m
5) T	Propionic Acid	11.608f	1098741	19.595	ppm	m
6) T	Butyric Acid	36.808f	1052332	19.370	ppm	m

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

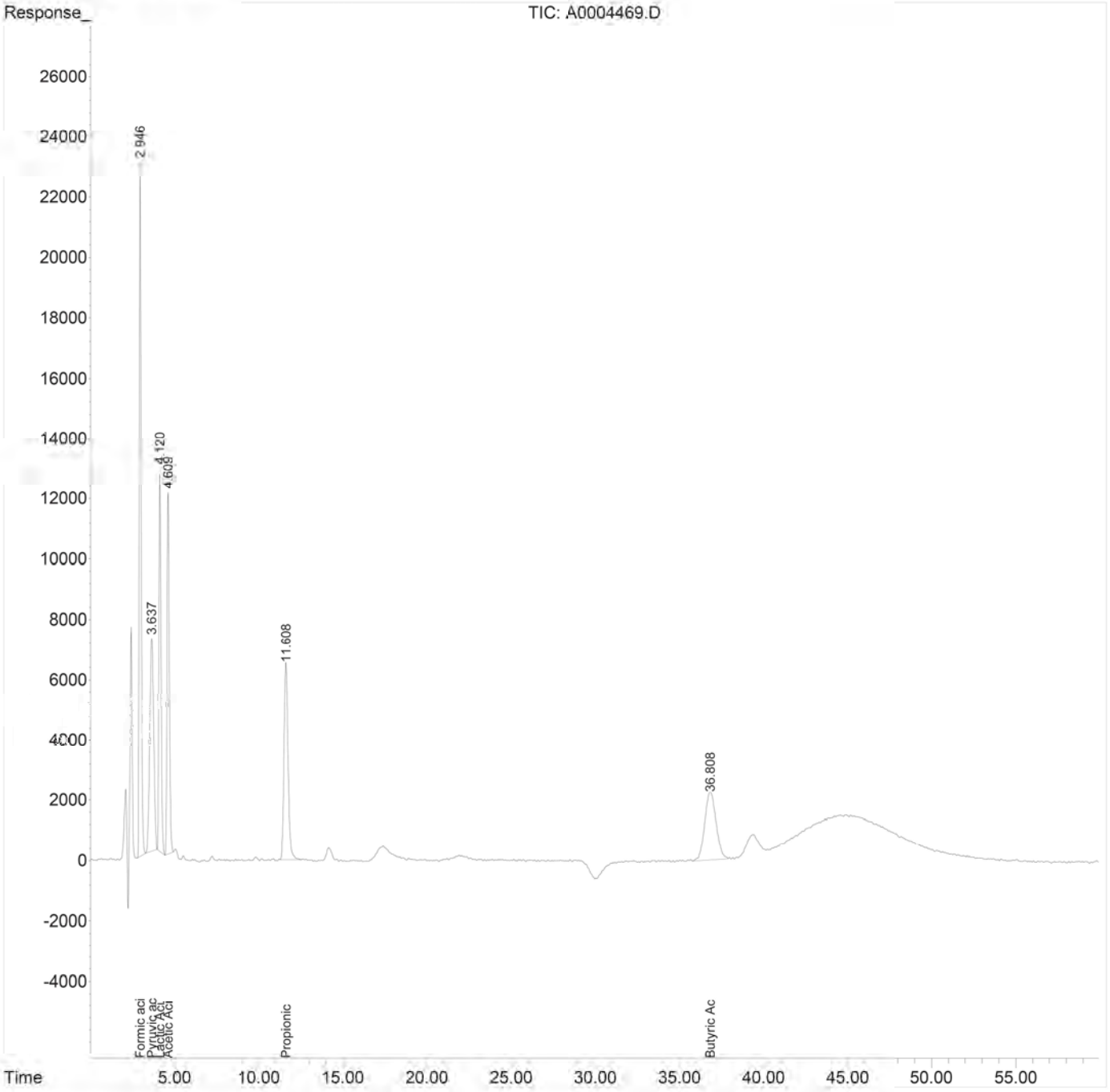
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



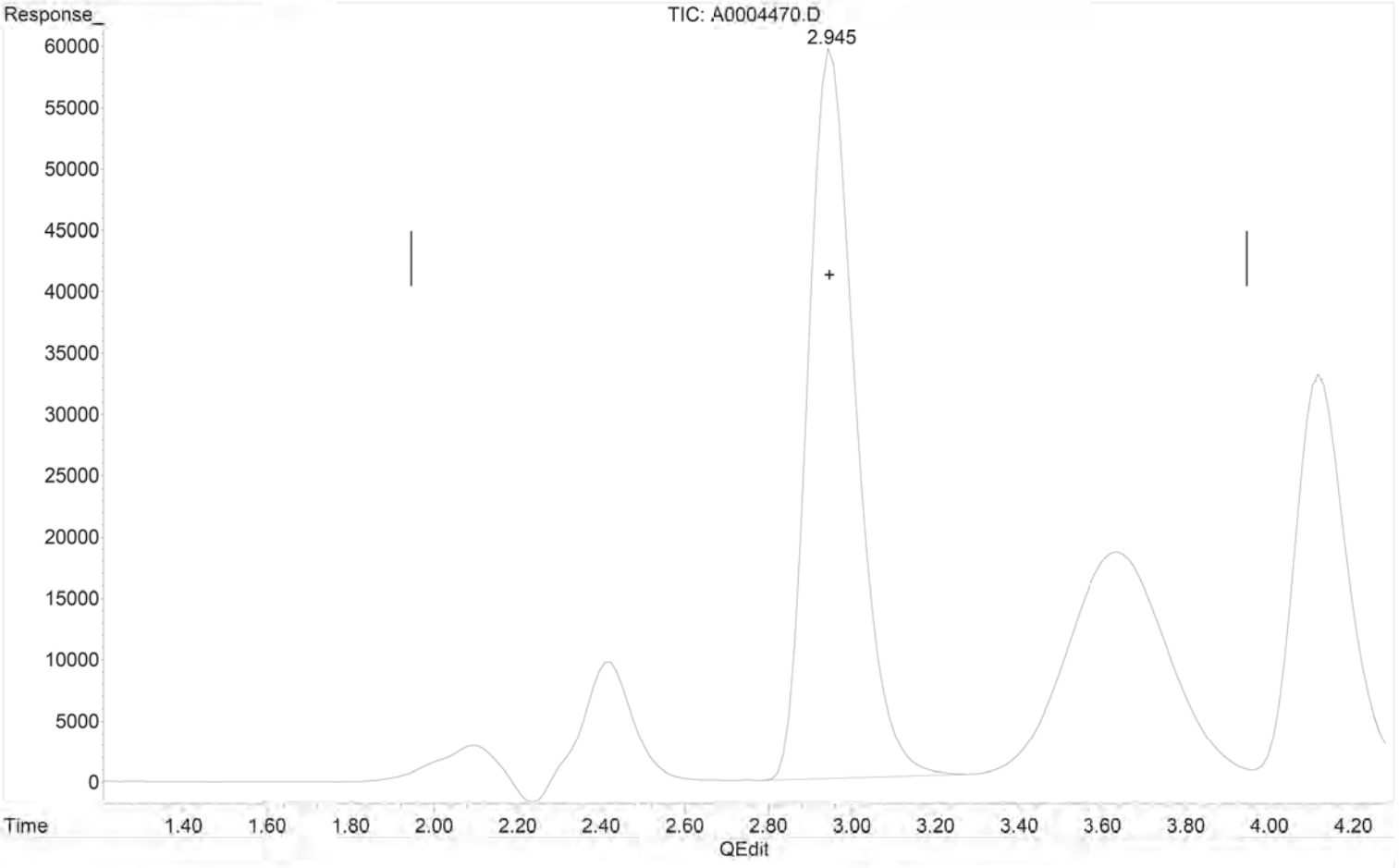
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.945min 51.436 ppm m

response 4706776

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

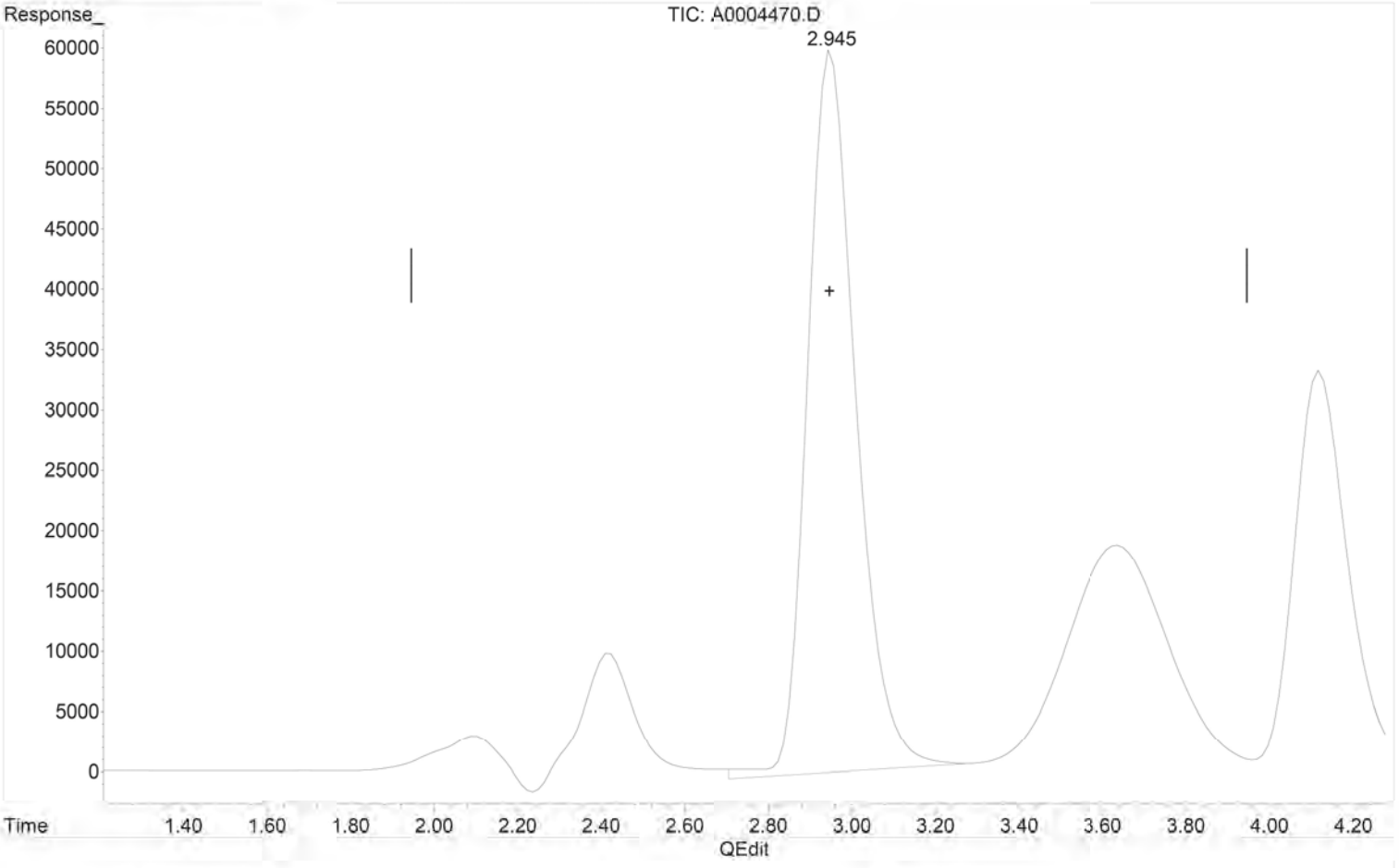
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.952min 52.682 ppm

response 4820746

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:25:34 2020

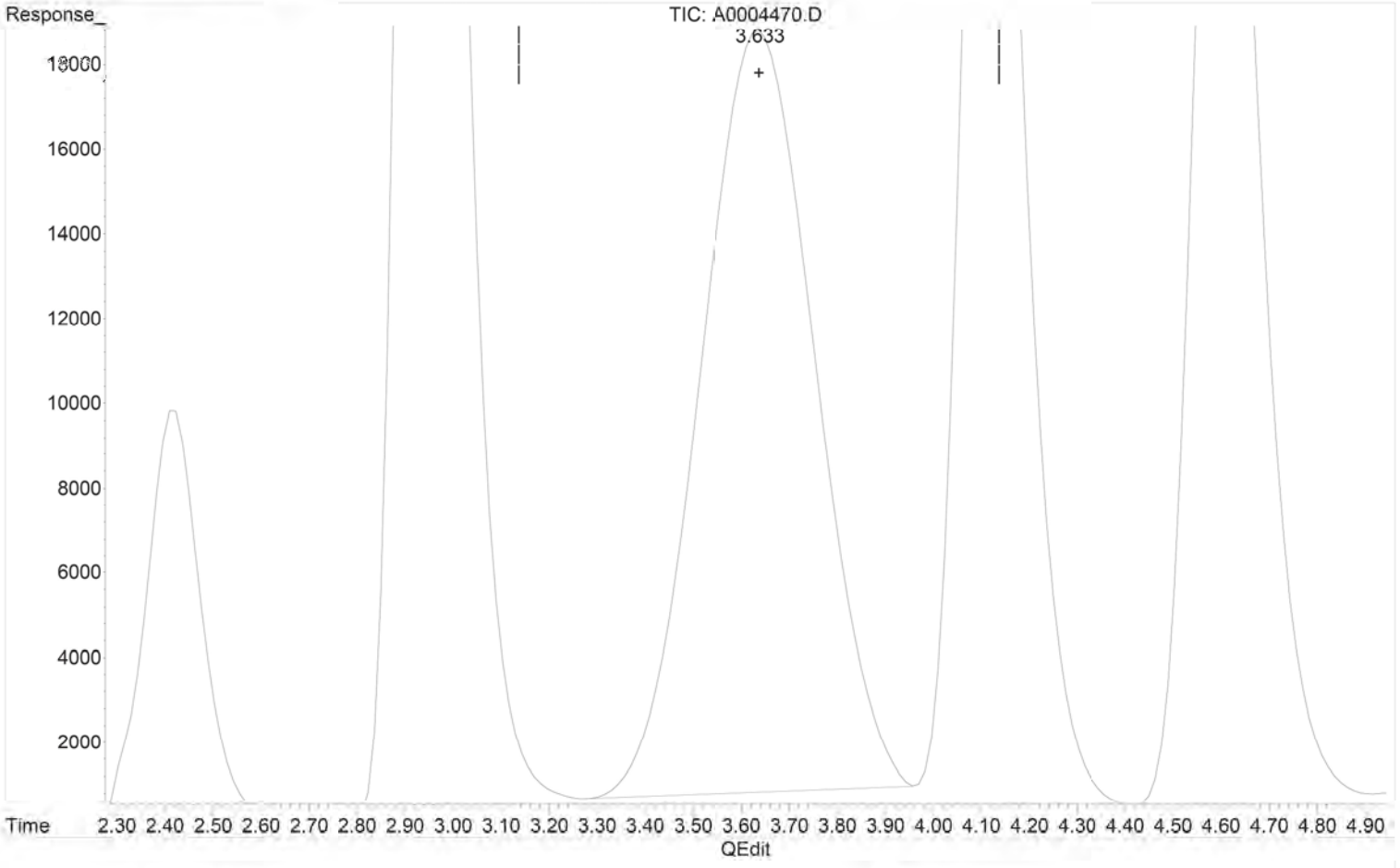
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.633min 5.066 ppm m

response 2952886

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:25:53 2020

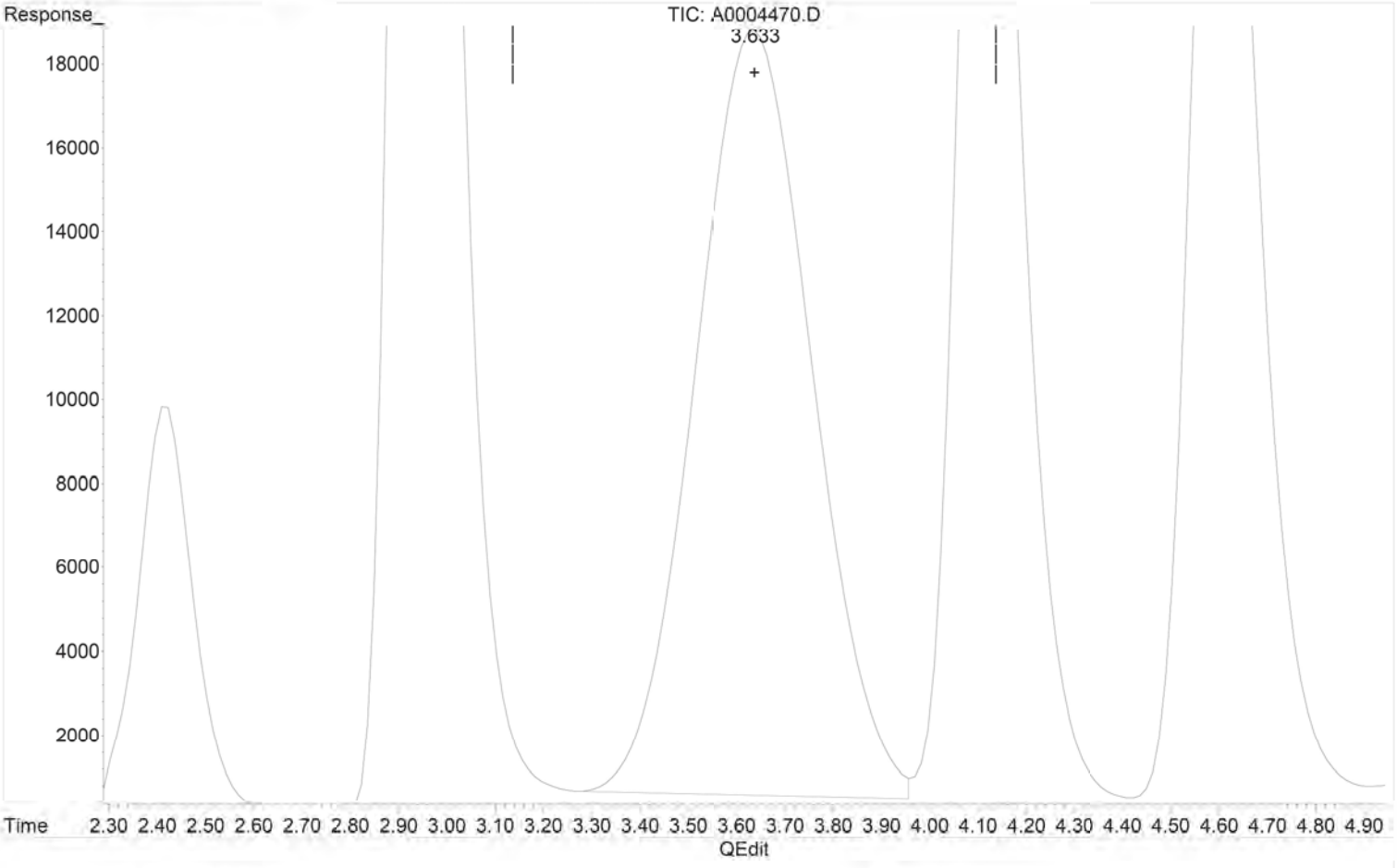
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.639min 5.230 ppm

response 3048306

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

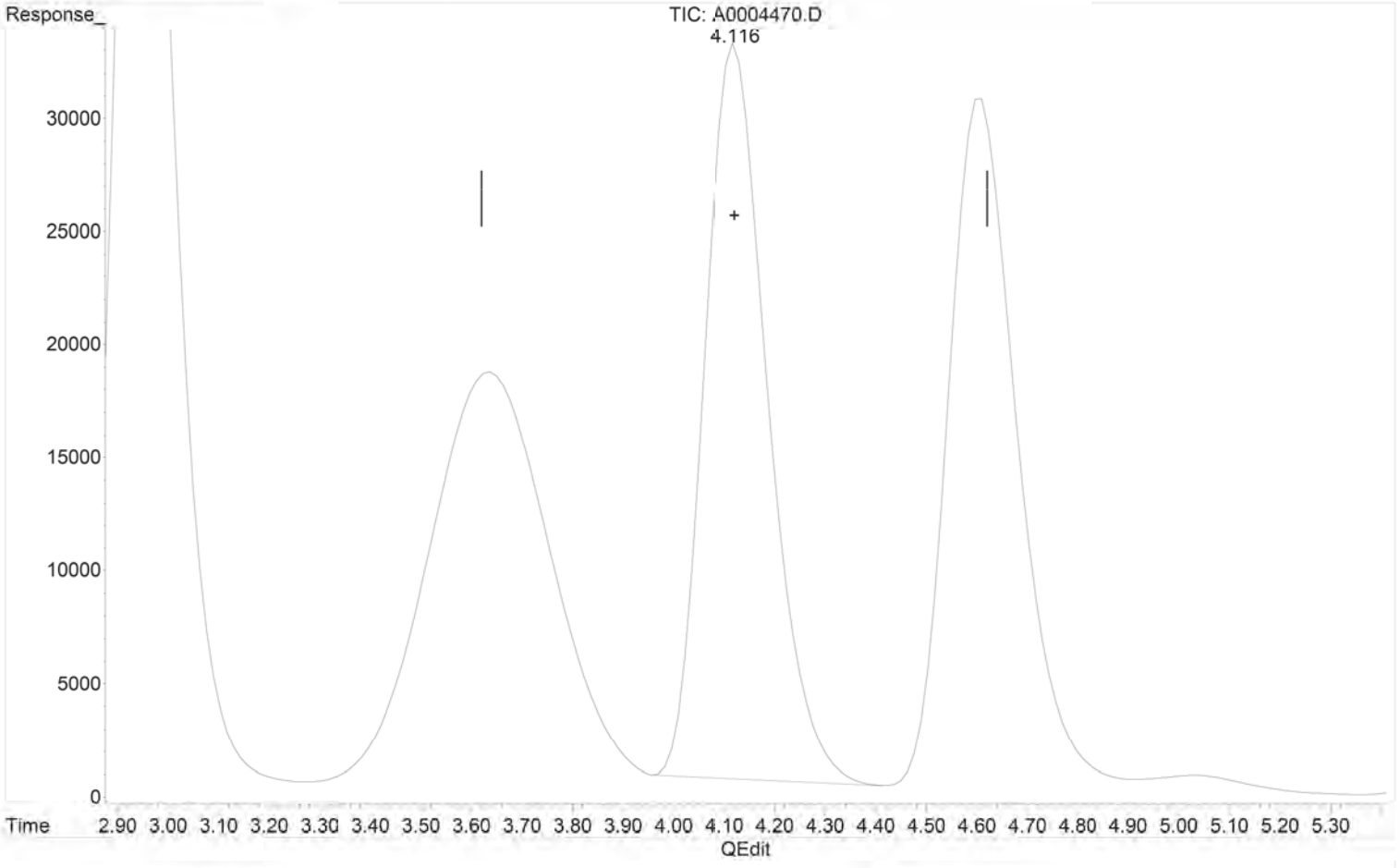
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.116min 50.780 ppm m

response 2813056

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:26:03 2020

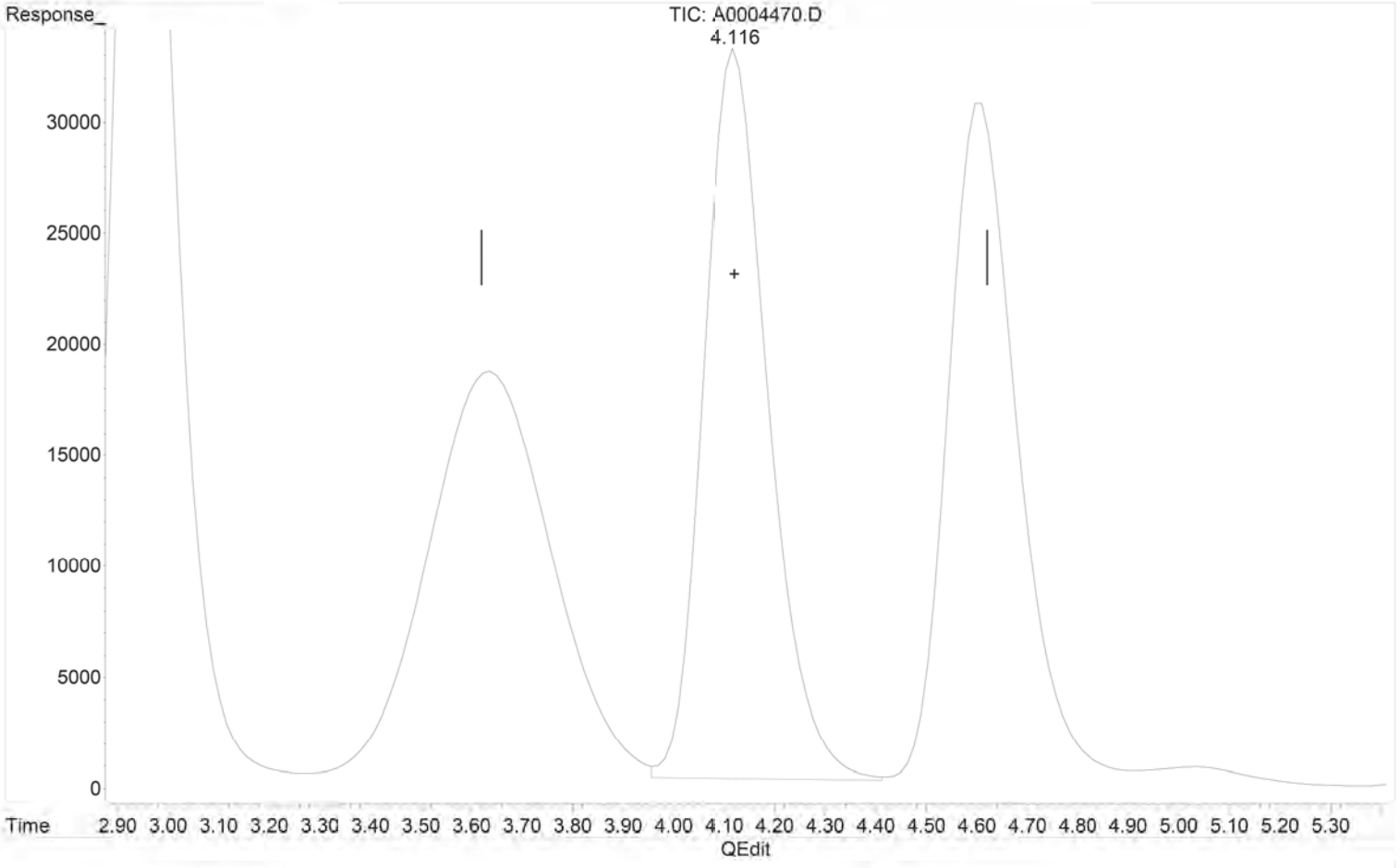
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.123min 52.344 ppm

response 2899673

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

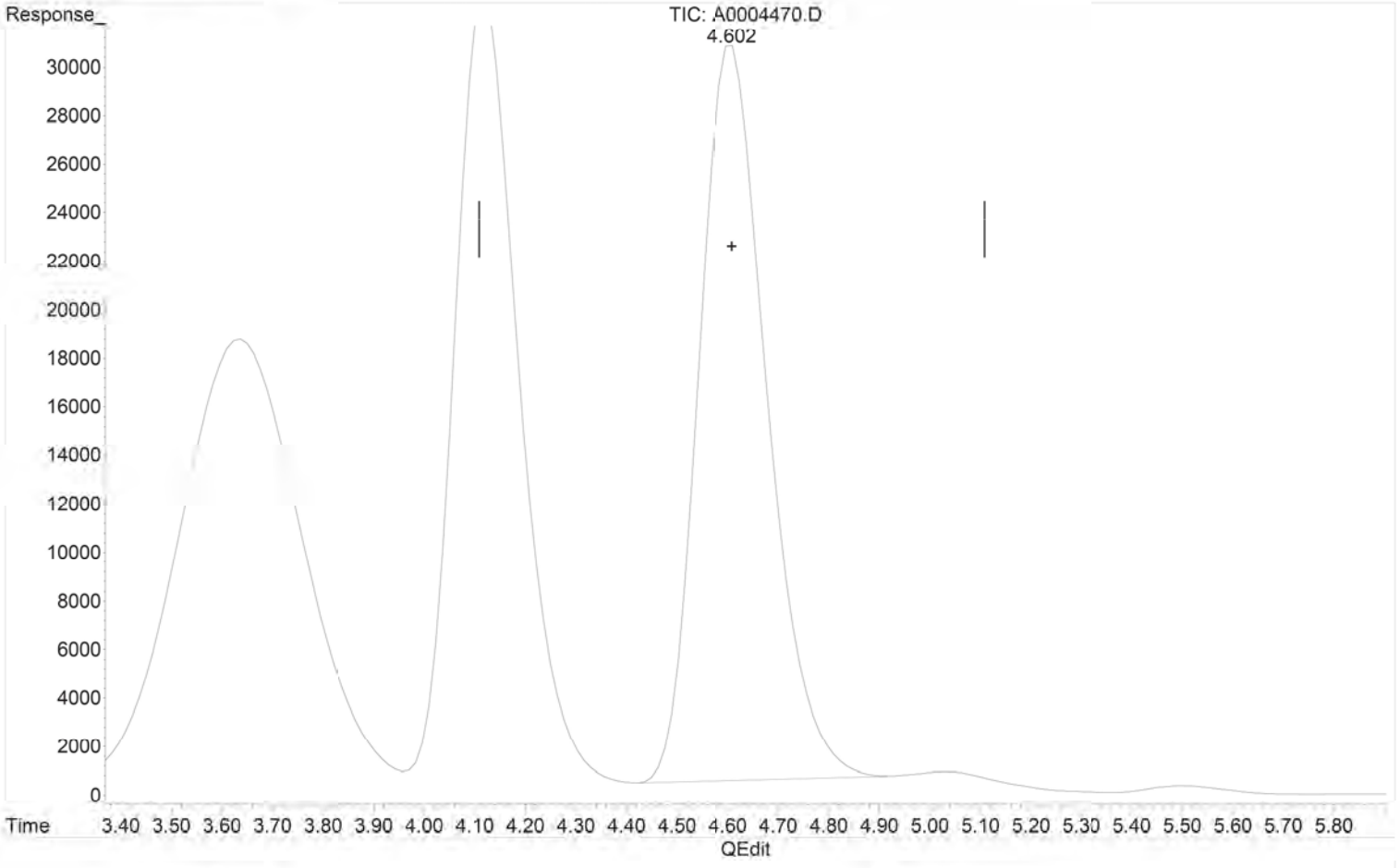
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.602min 50.675 ppm m
response 2827626

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:26:13 2020

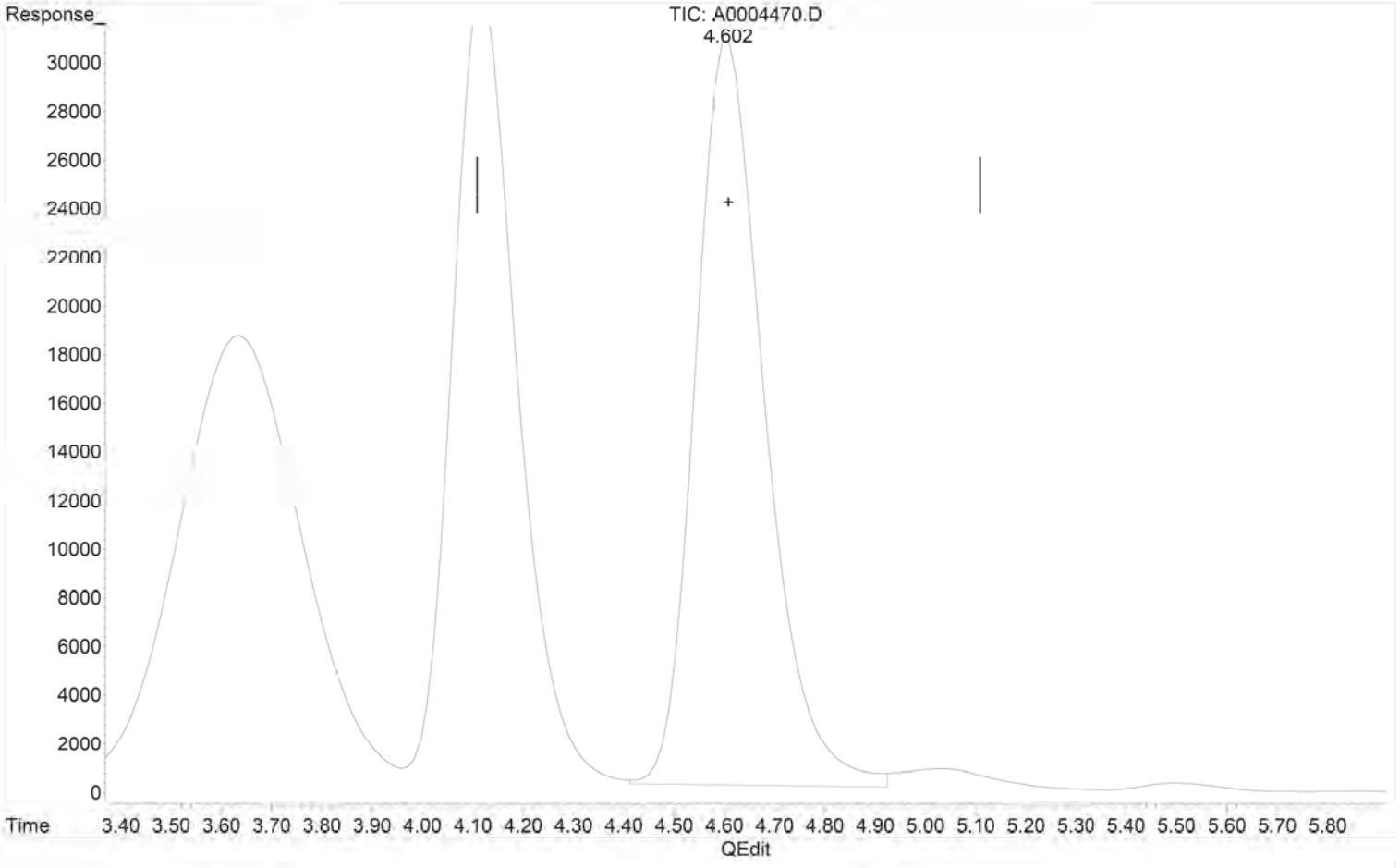
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.610min 52.537 ppm

response 2931536

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

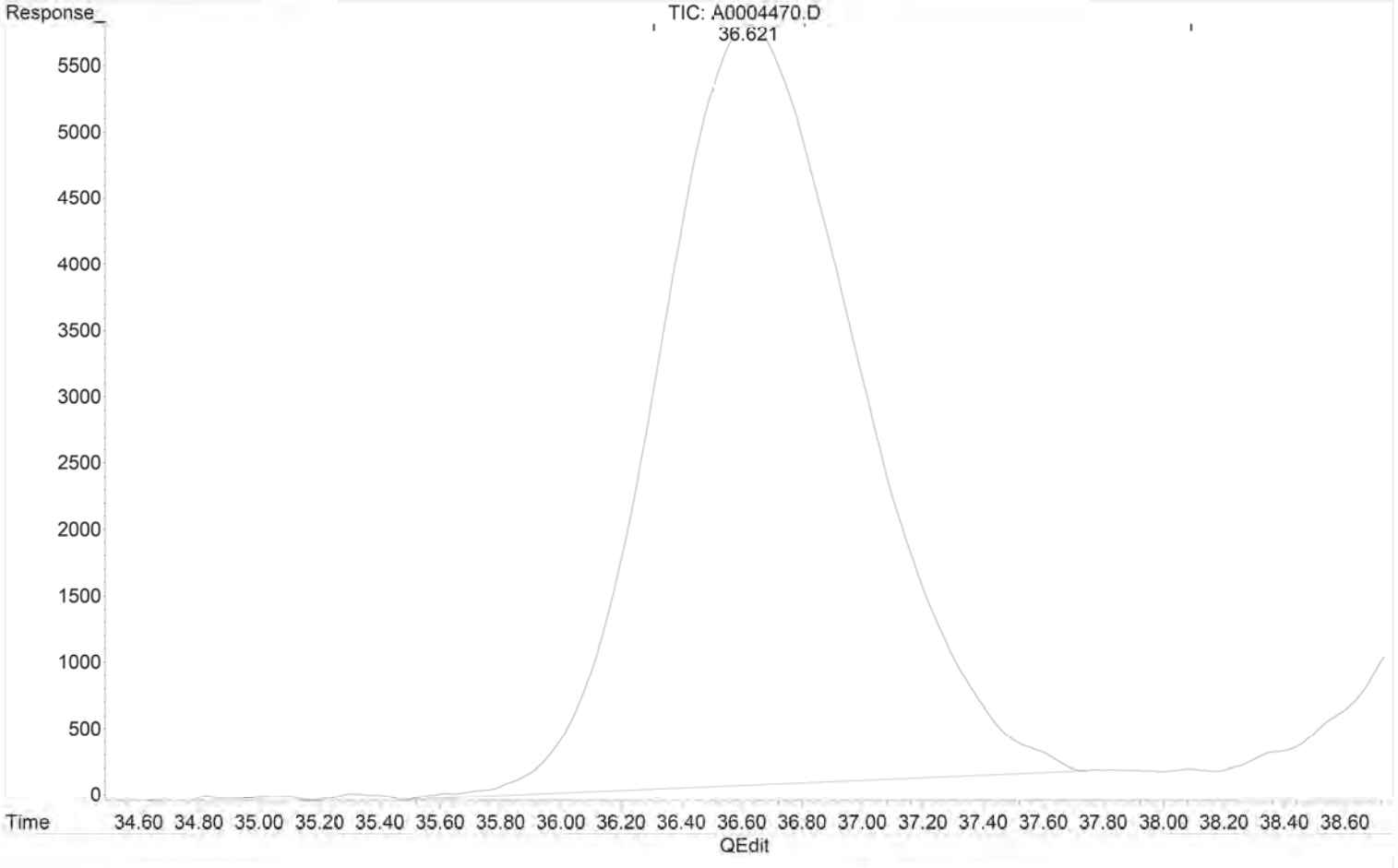
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.621min 50.484 ppm m

response 2656312

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

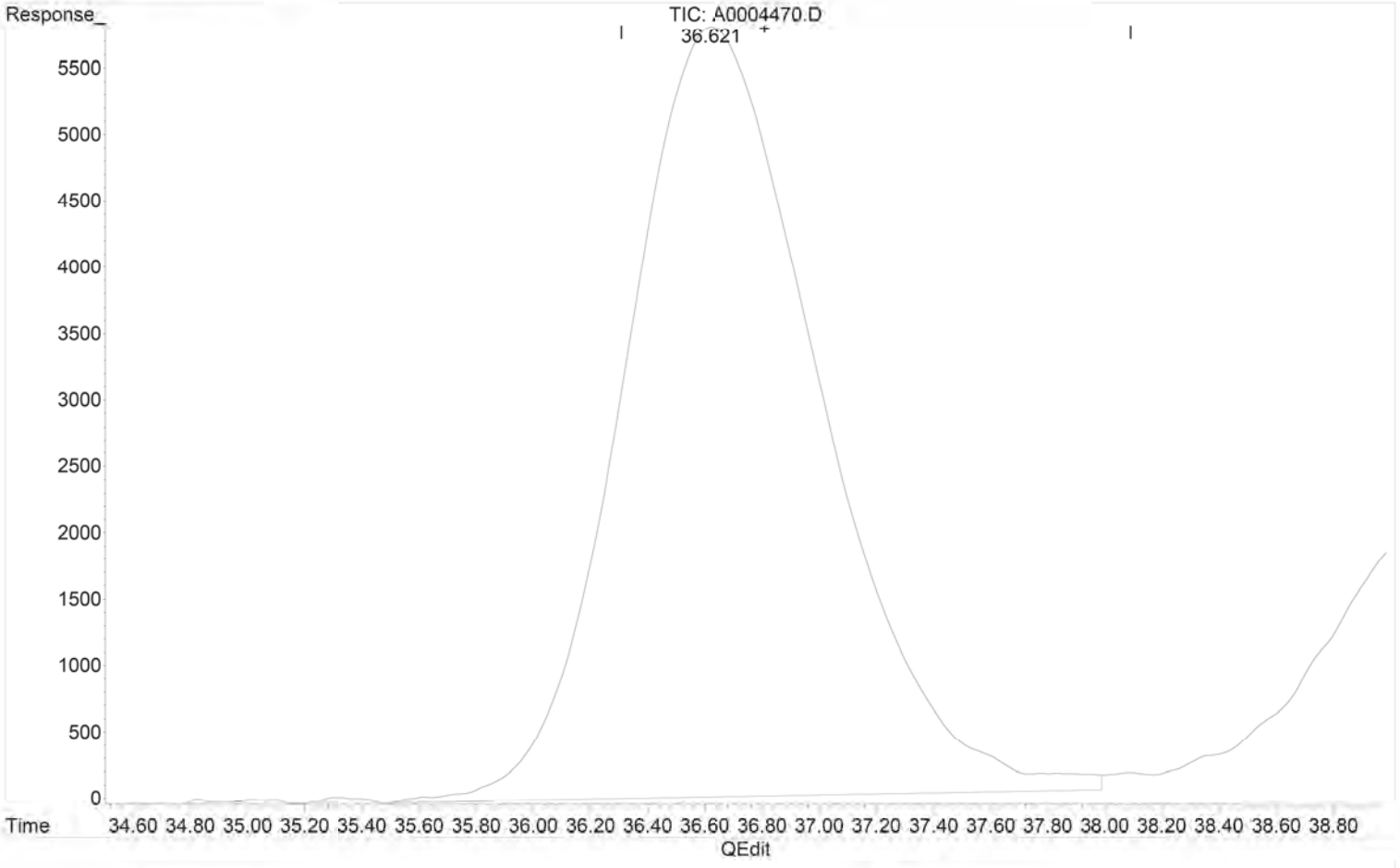
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.628min 52.351 ppm

response 2754505

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:26:20 2020

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : ~~30-Dec-2000, 17:47:58~~ 12-Mar-2020, 17:51
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.945	4706776	51.436	ppm	m
2) T	Pyruvic acid	3.633	2952886	5.066	ppm	m
3) T	Lactic Acid	4.116	2813056	50.780	ppm	m
4) T	Acetic Acid	4.602	2827626	50.675	ppm	m
5) T	Propionic Acid	11.574	2794775	50.872	ppm	
6) T	Butyric Acid	36.621	2656312	50.484	ppm	m

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

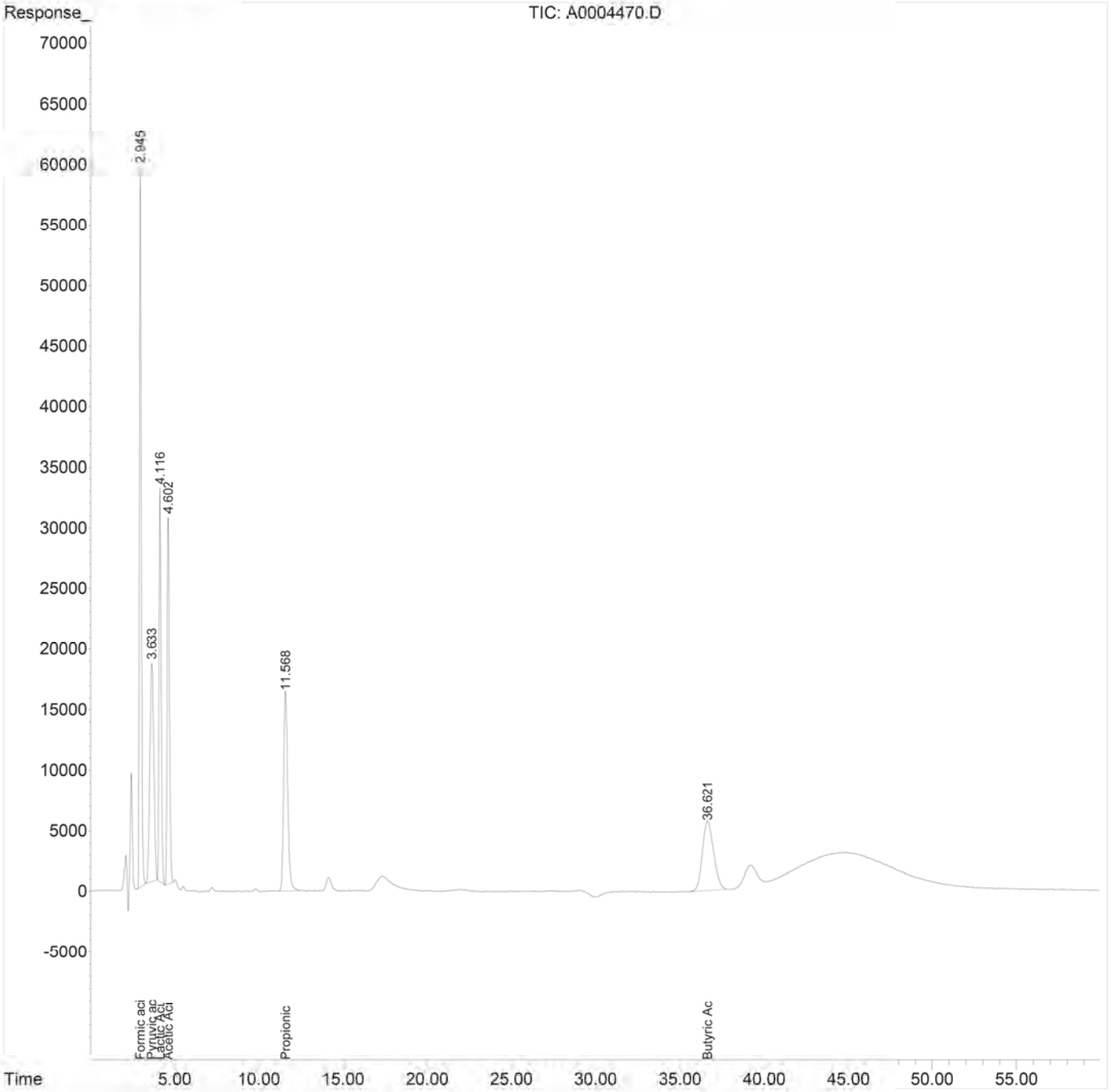
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



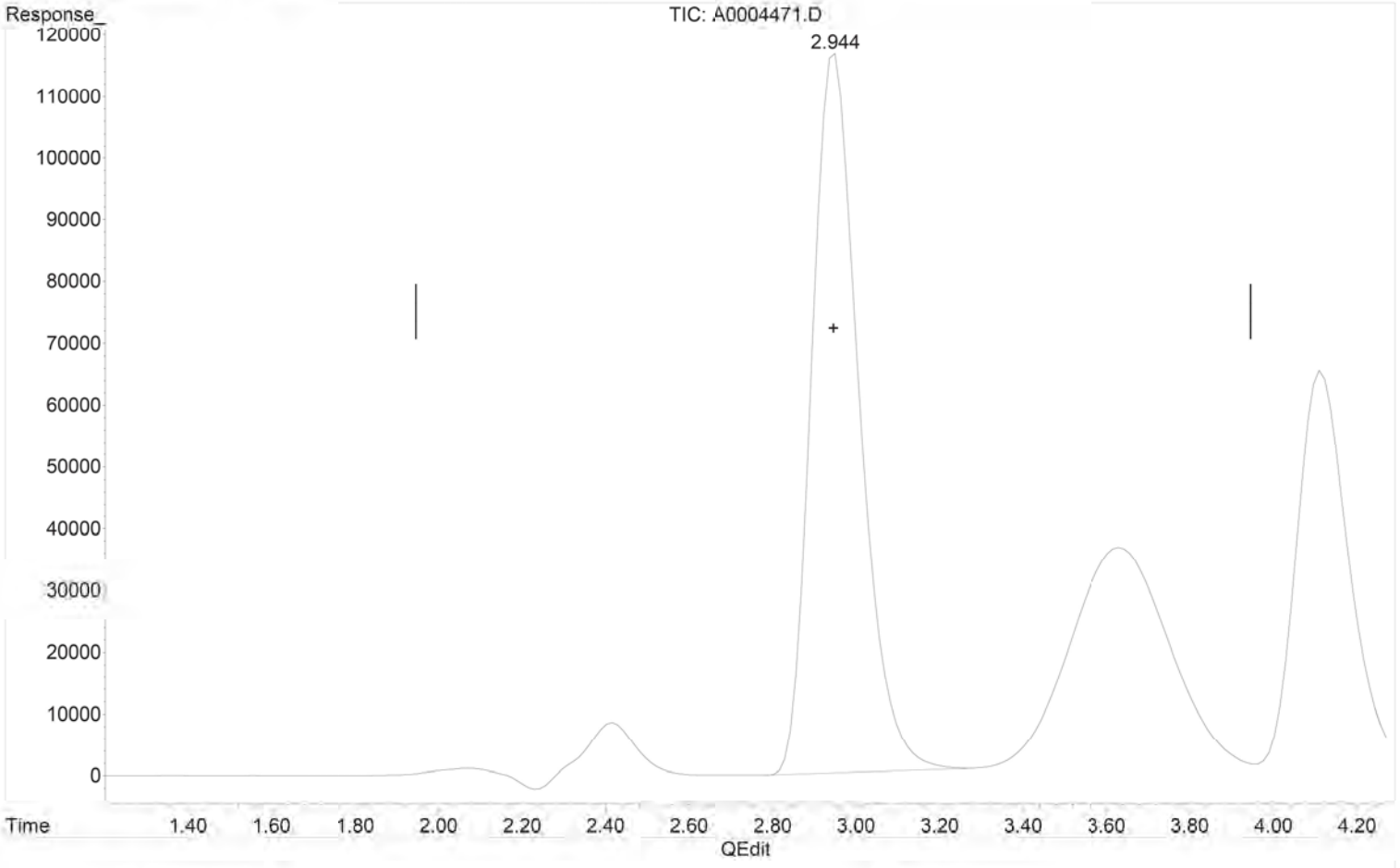
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.944min 101.099 ppm m

response 9251260

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:27:00 2020

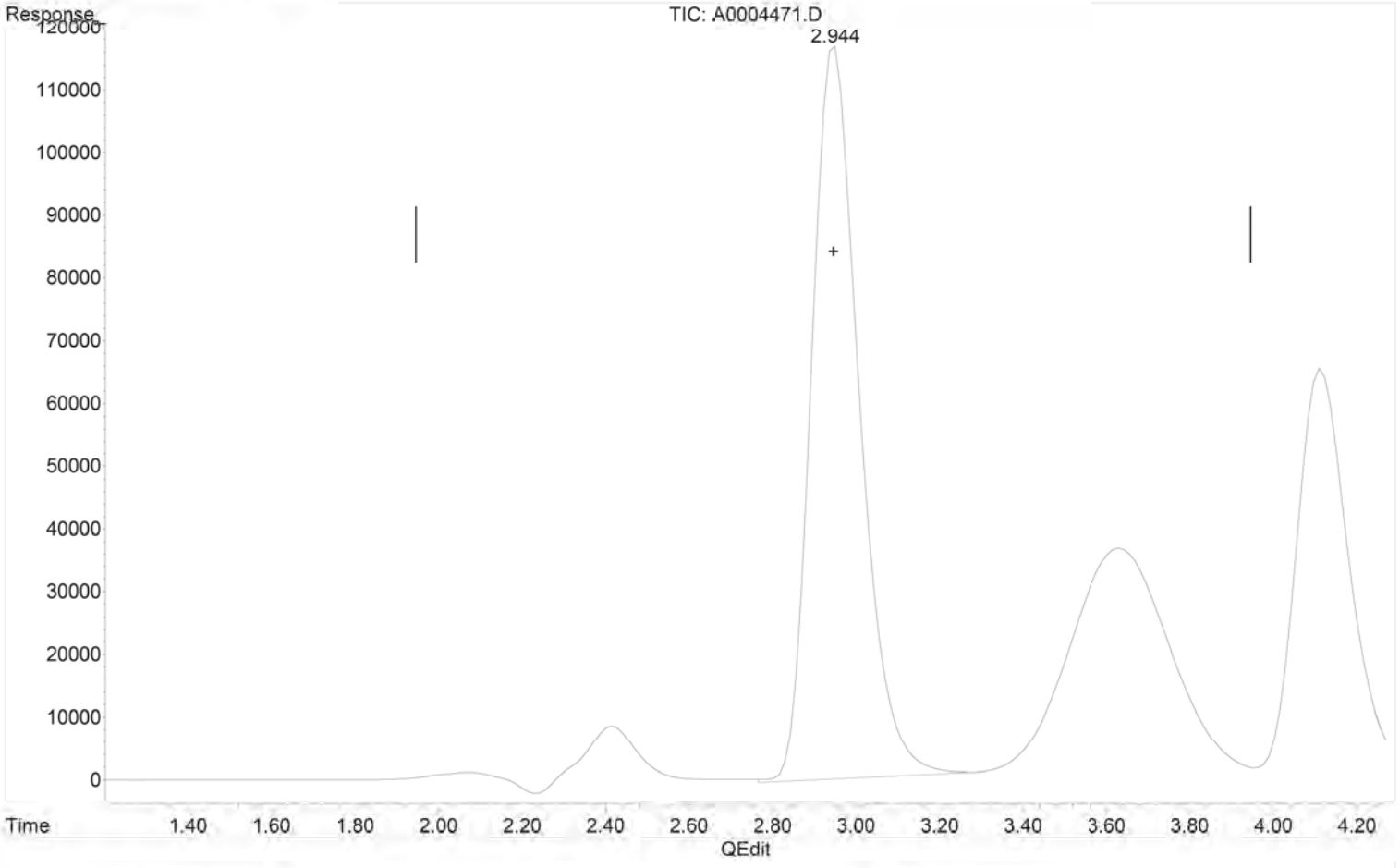
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.950min 101.826 ppm

response 9317801

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

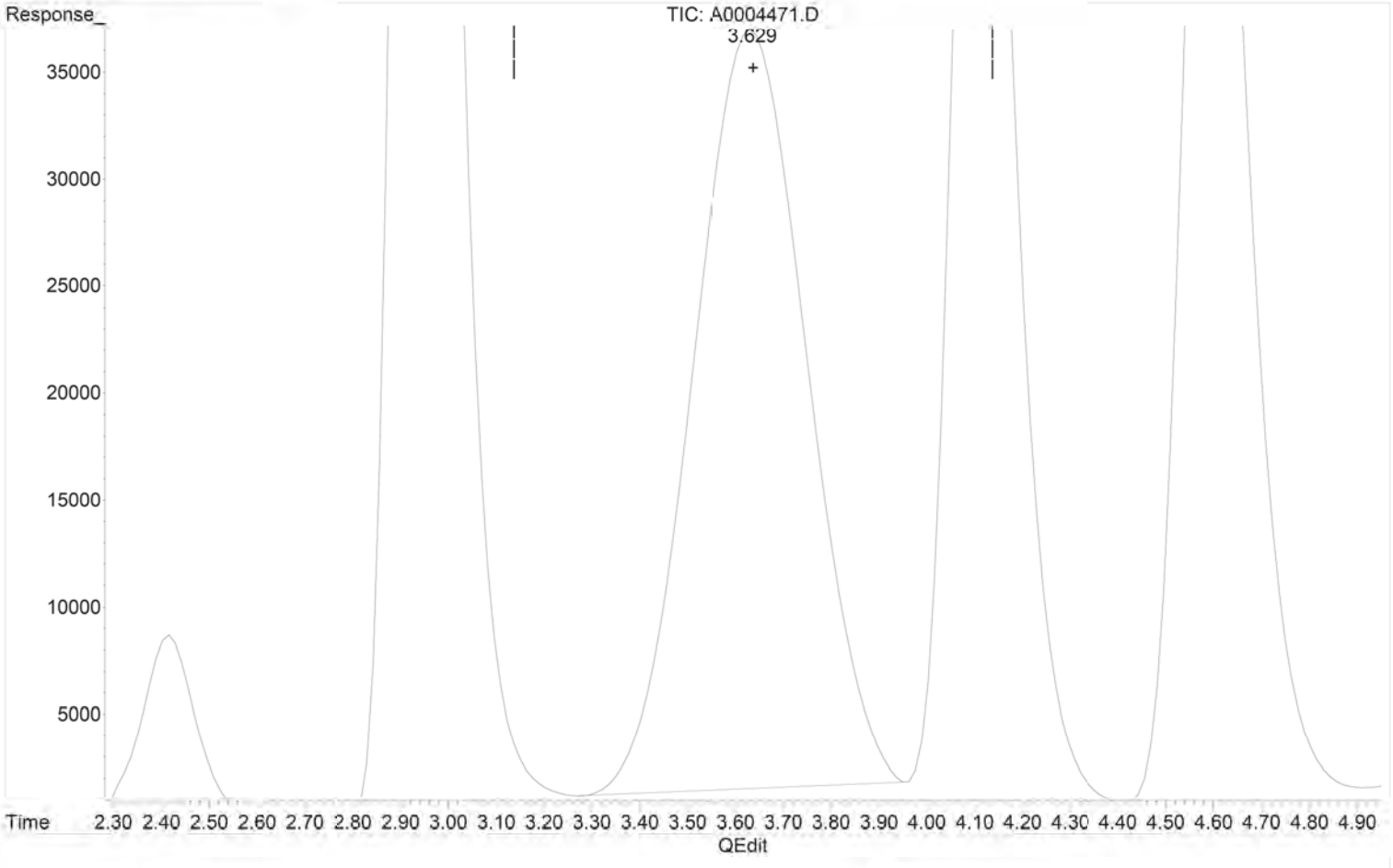
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.629min 9.964 ppm m
response 5807459

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:27:13 2020

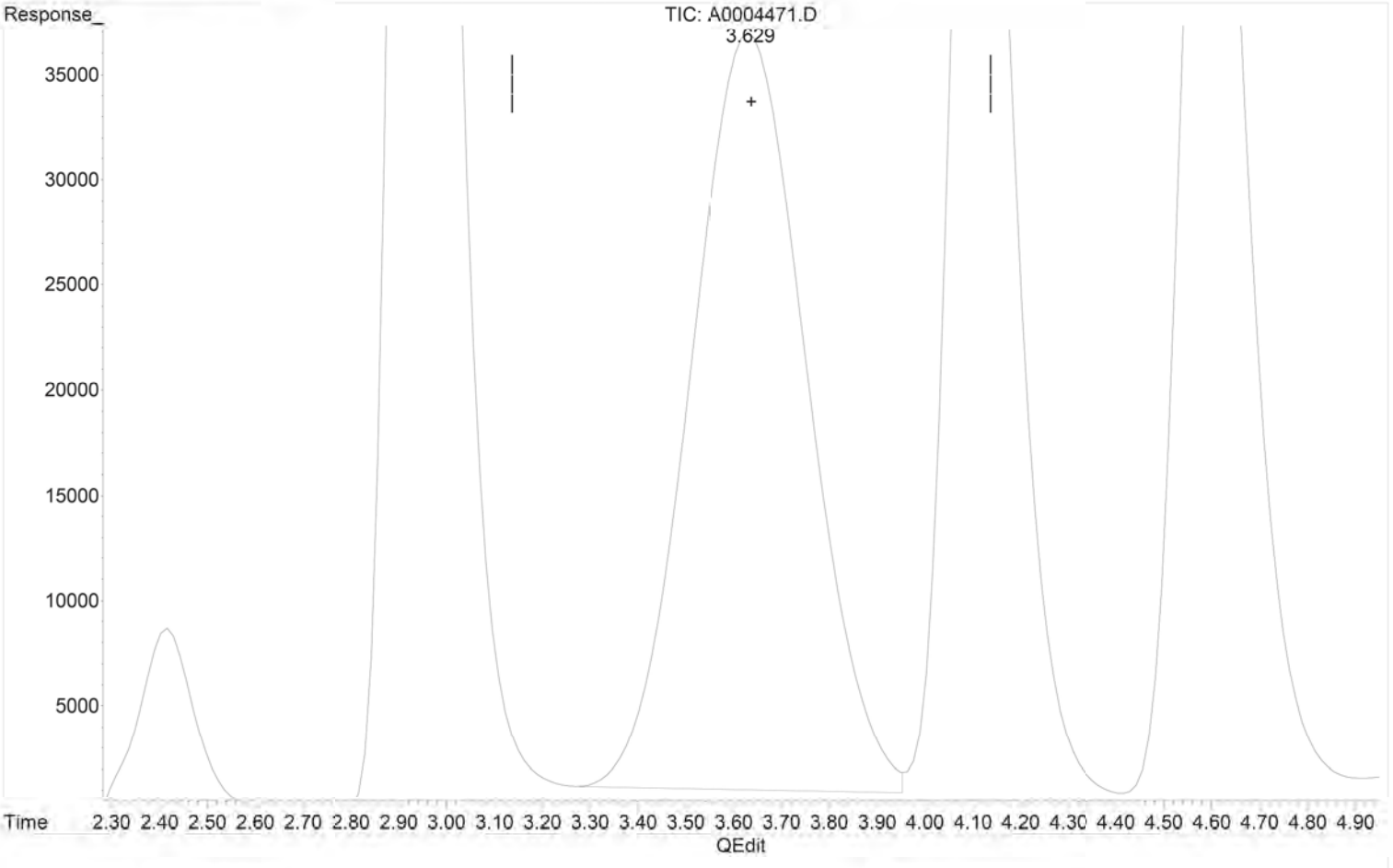
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.635min 10.292 ppm

response 5999073

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

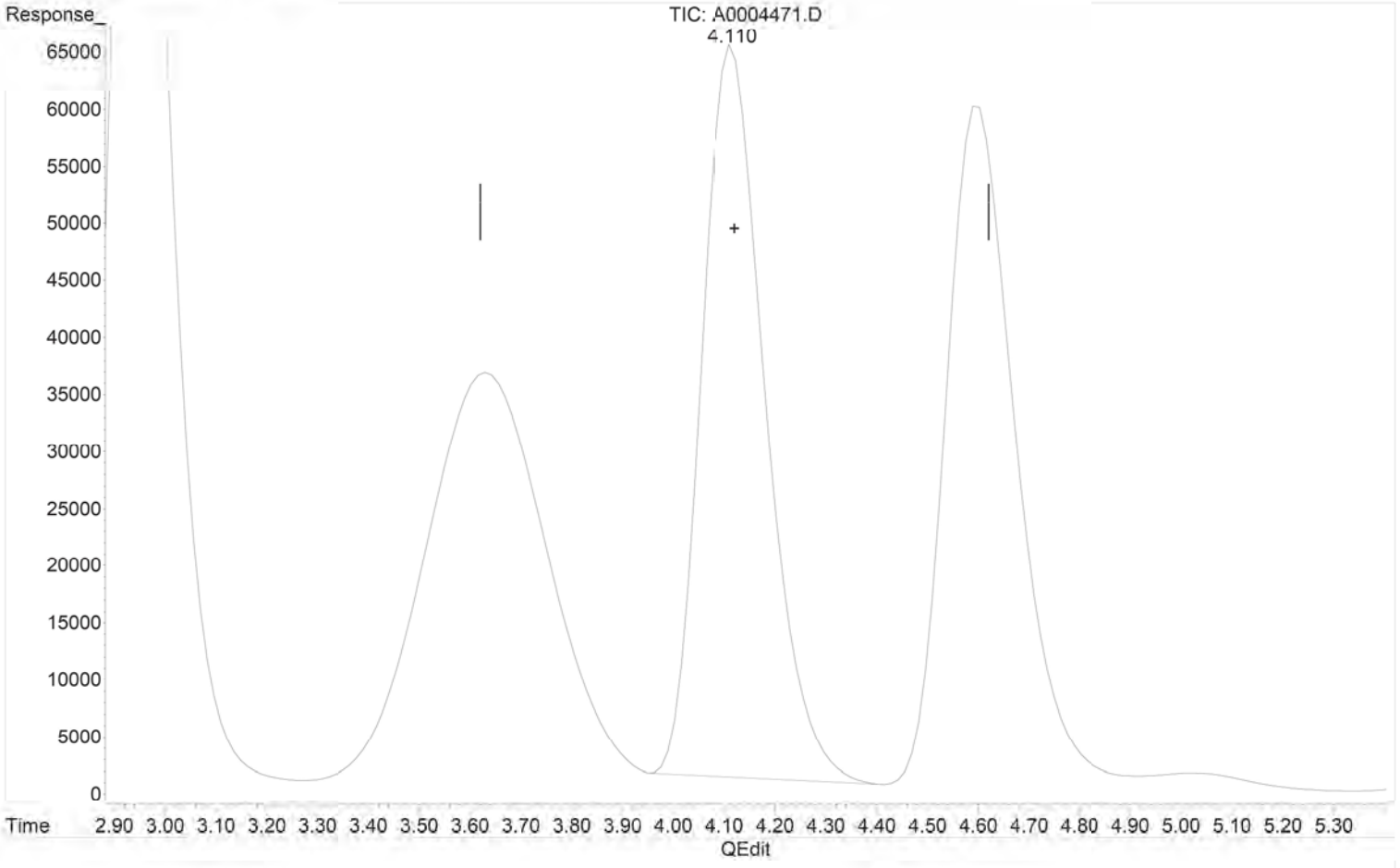
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.110min 100.101 ppm m

response 5545238

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

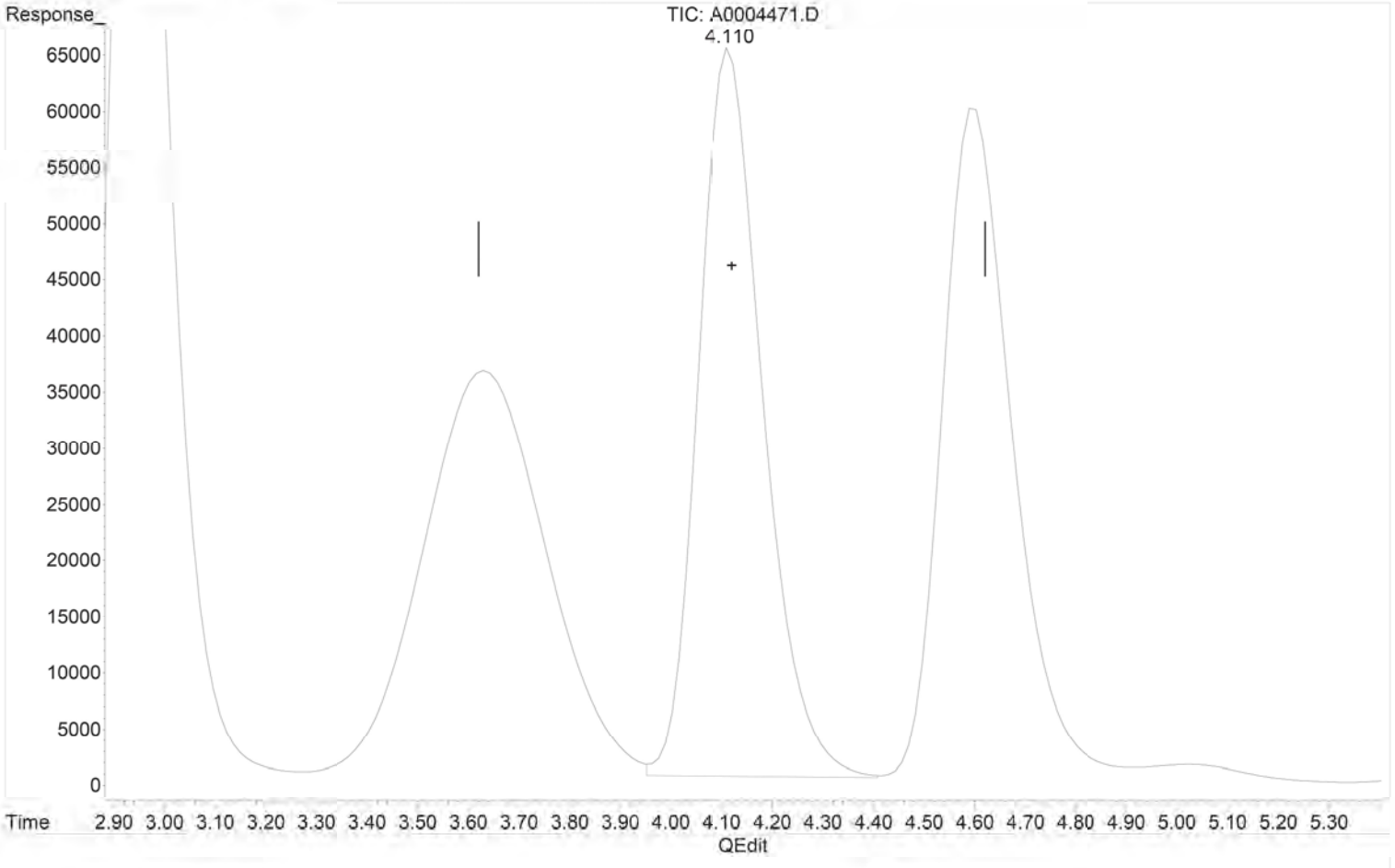
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.117min 102.879 ppm

response 5699157

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

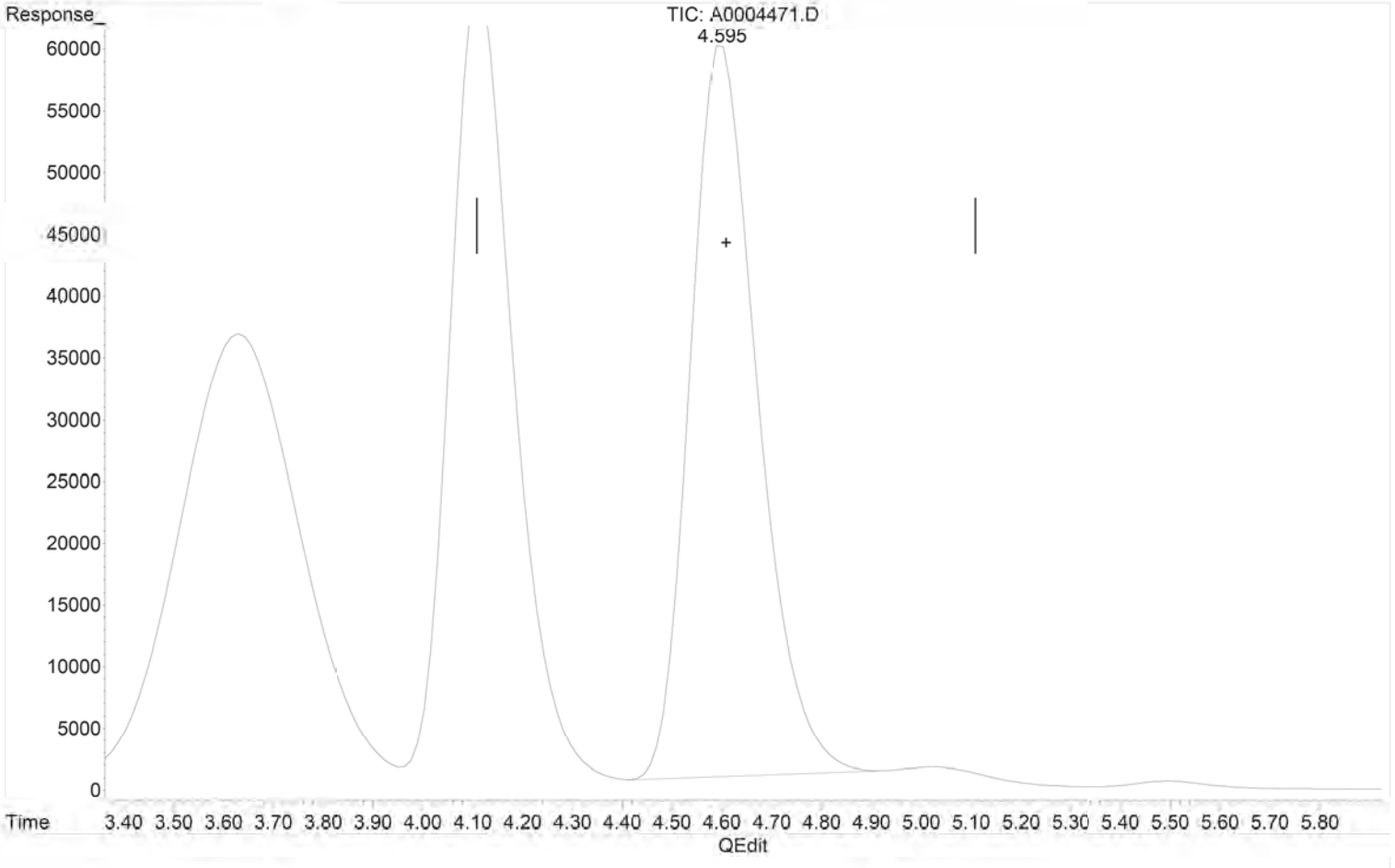
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.595min 99.609 ppm m
response 5558142

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:27:39 2020

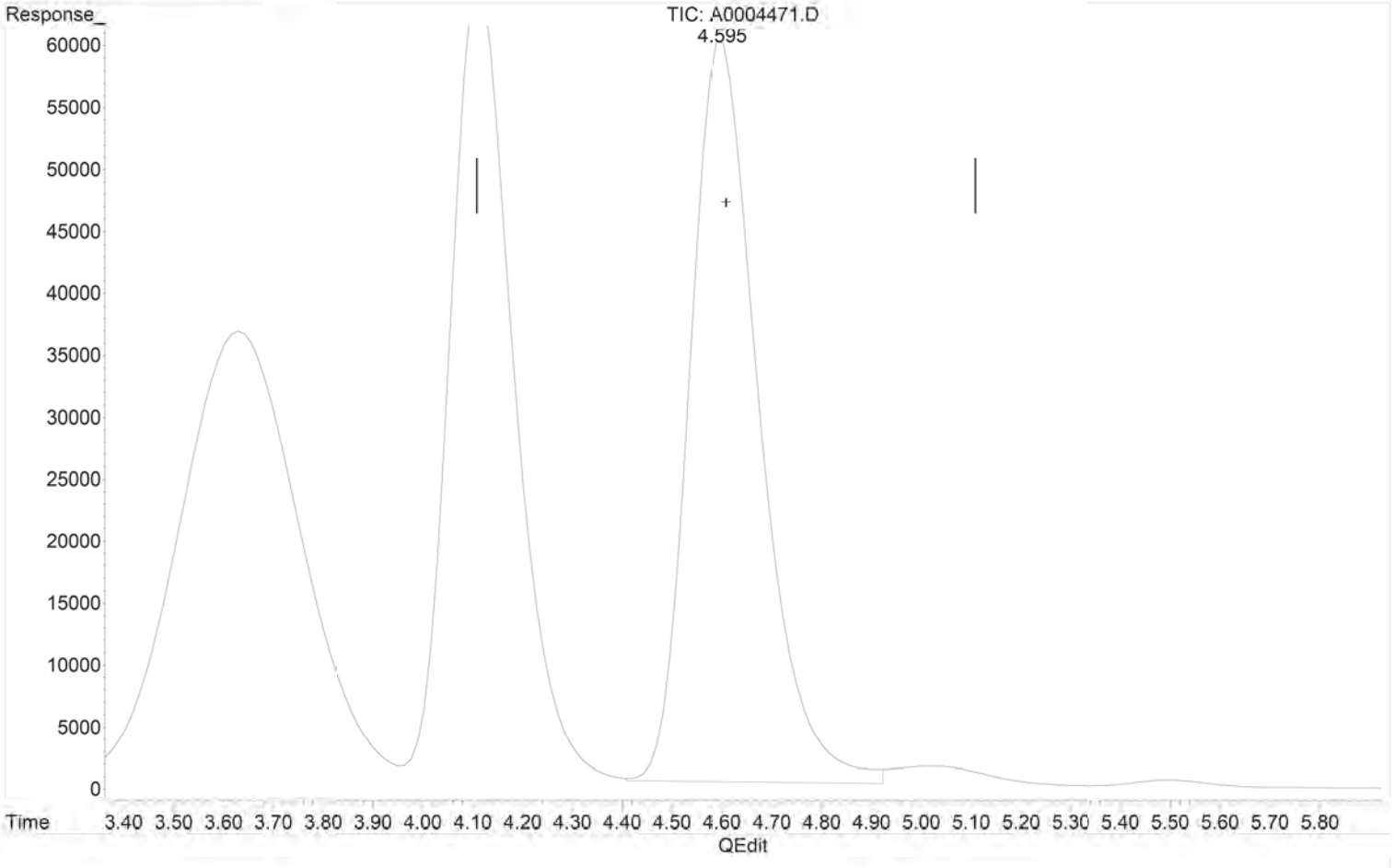
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.602min 103.031 ppm

response 5749108

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

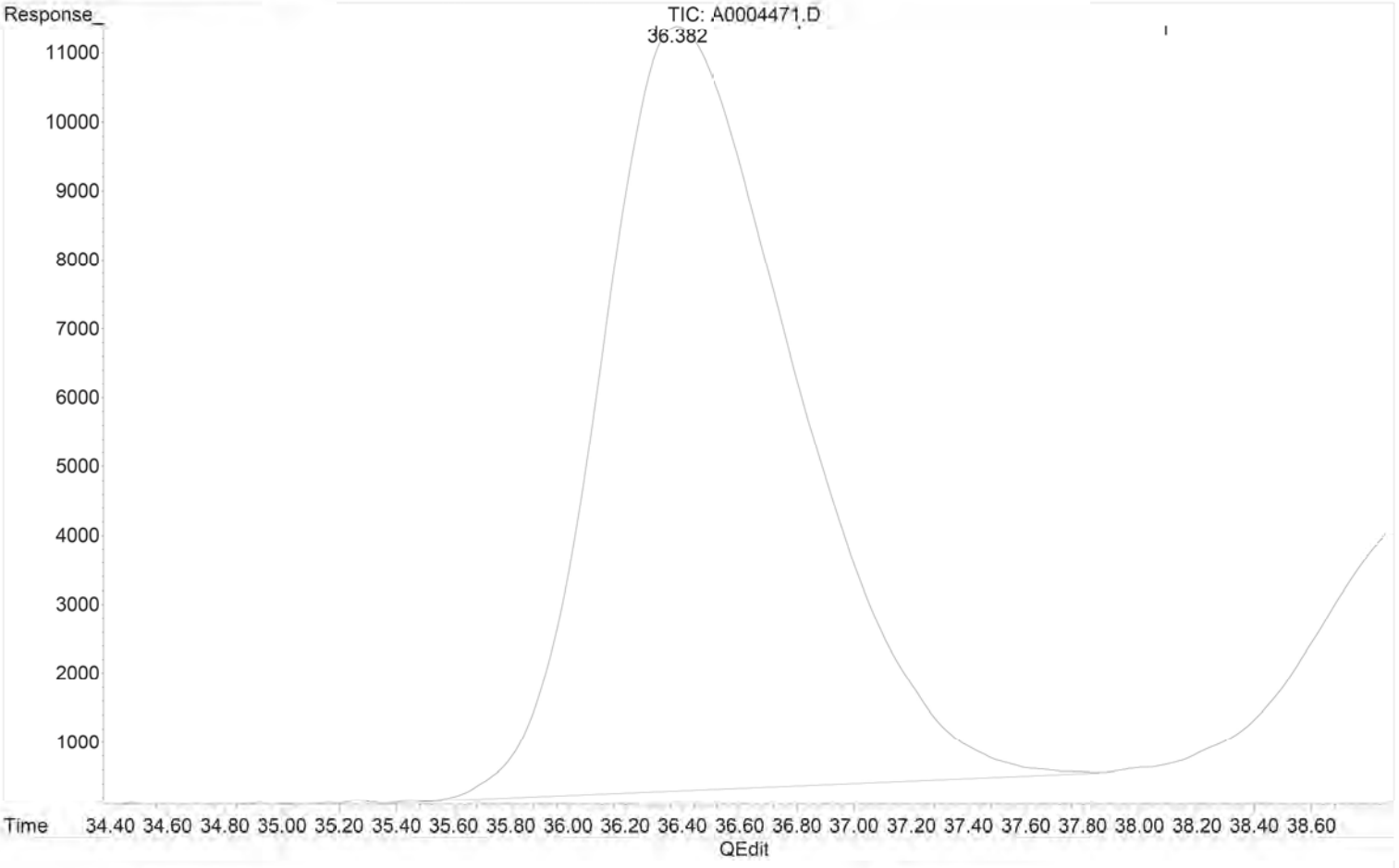
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.382min 99.663 ppm m

response 5243902

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

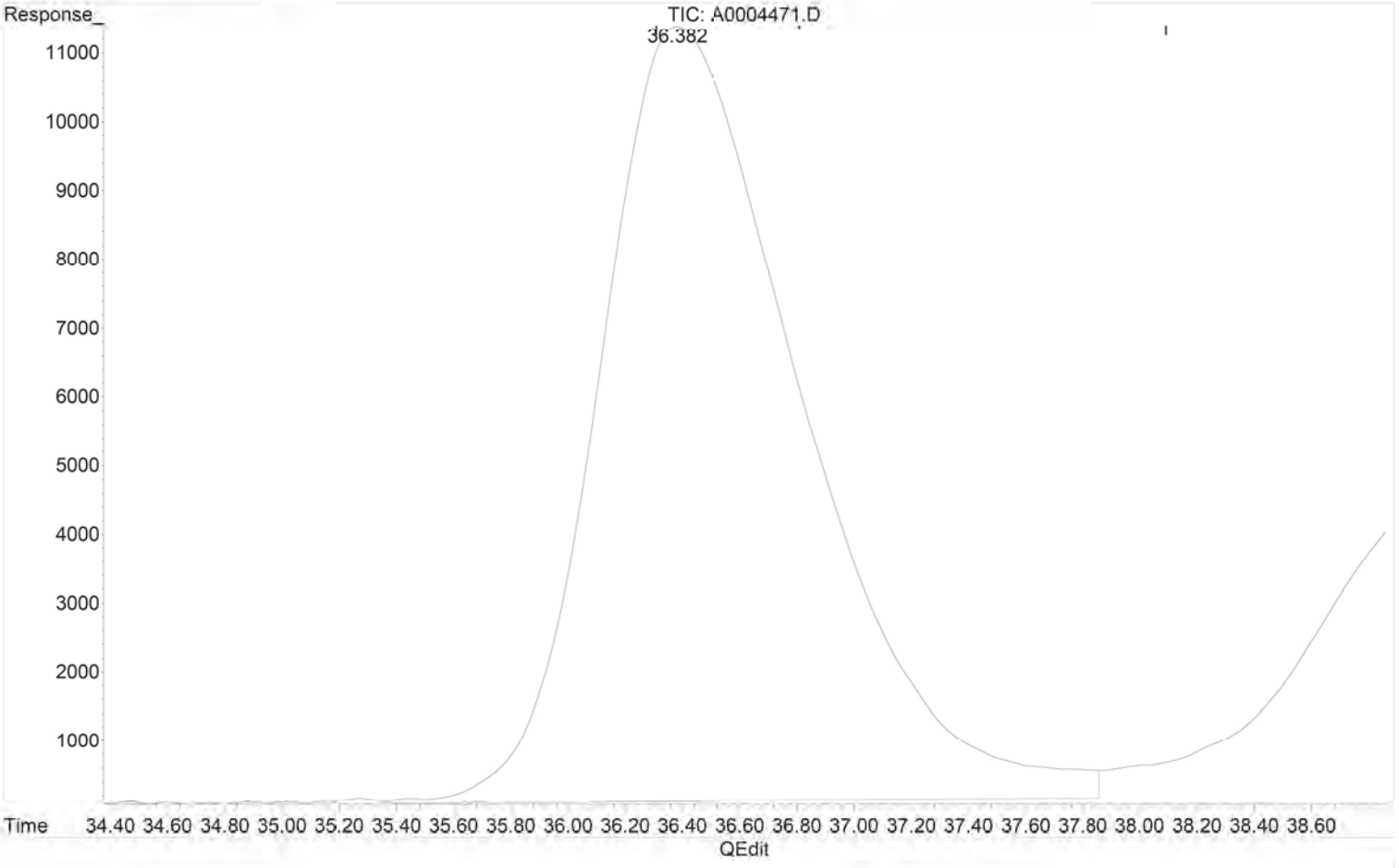
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.387min 105.508 ppm

response 5551464

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.944	9251260	101.099	ppm	m
2) T	Pyruvic acid	3.629	5807459	9.964	ppm	m
3) T	Lactic Acid	4.110	5545238	100.101	ppm	m
4) T	Acetic Acid	4.595	5558142	99.609	ppm	m
5) T	Propionic Acid	11.528	5536155	100.773	ppm	
6) T	Butyric Acid	36.382	5243902	99.663	ppm	m

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

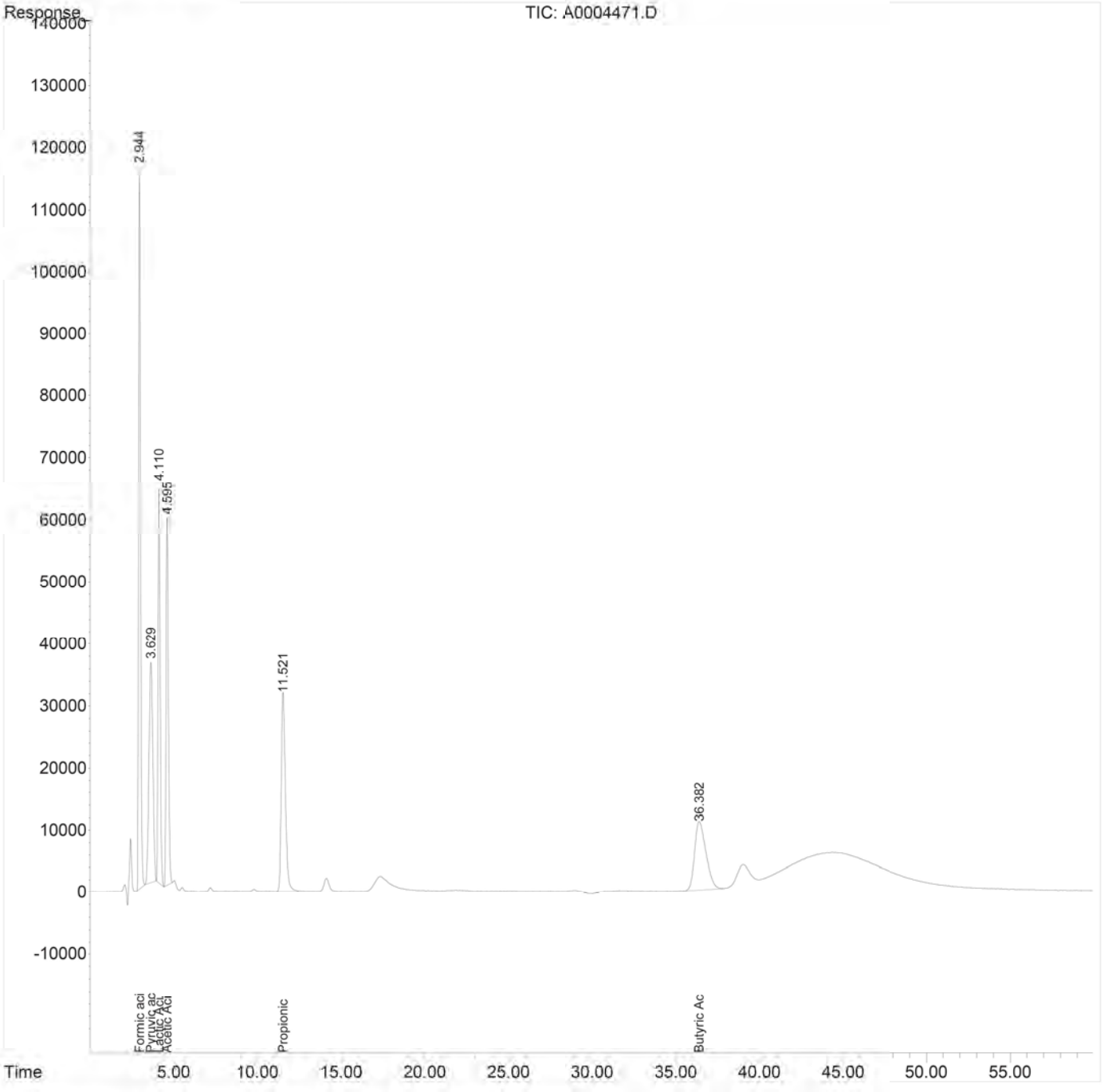
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



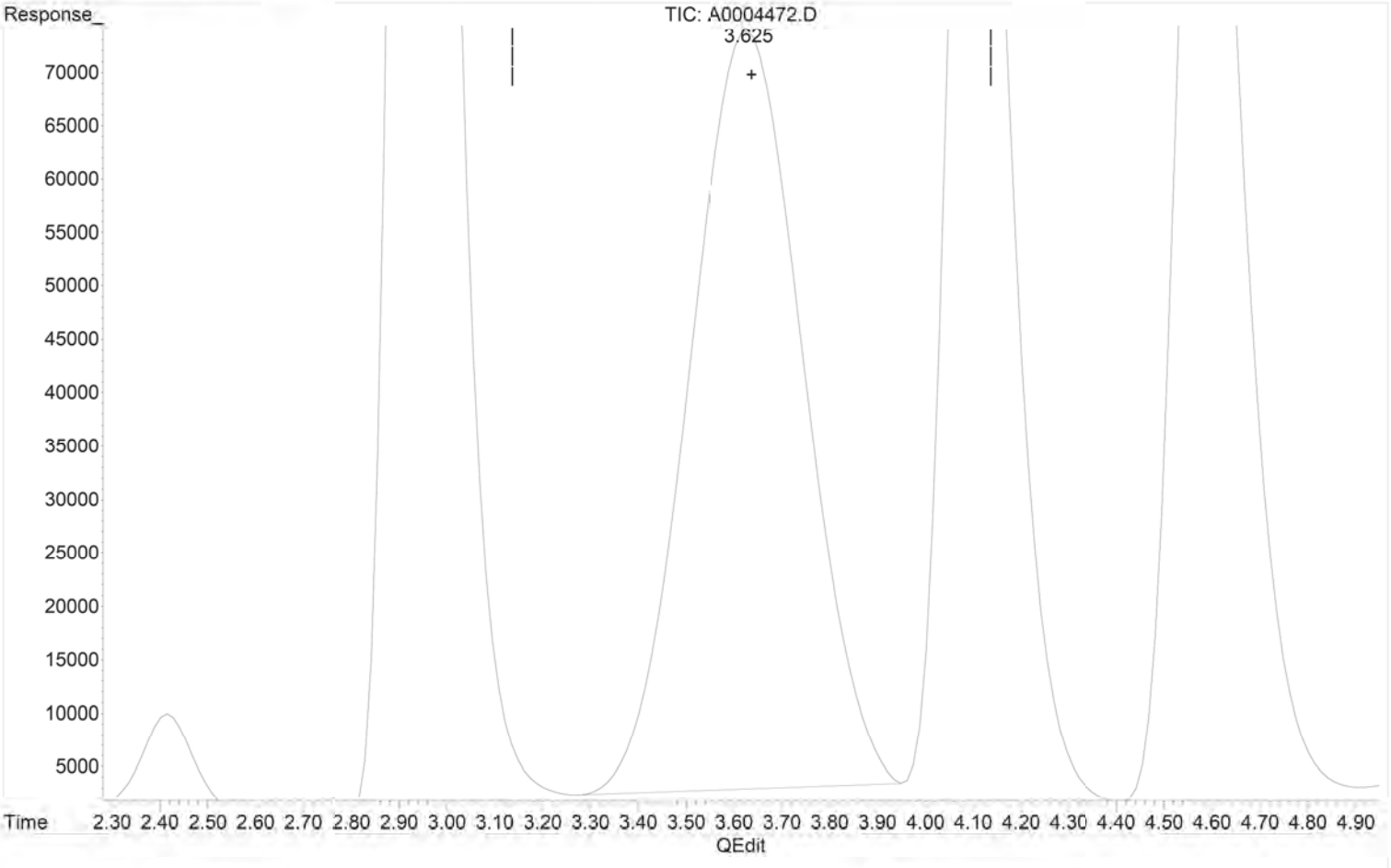
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.625min 19.912 ppm m

response 11605902

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

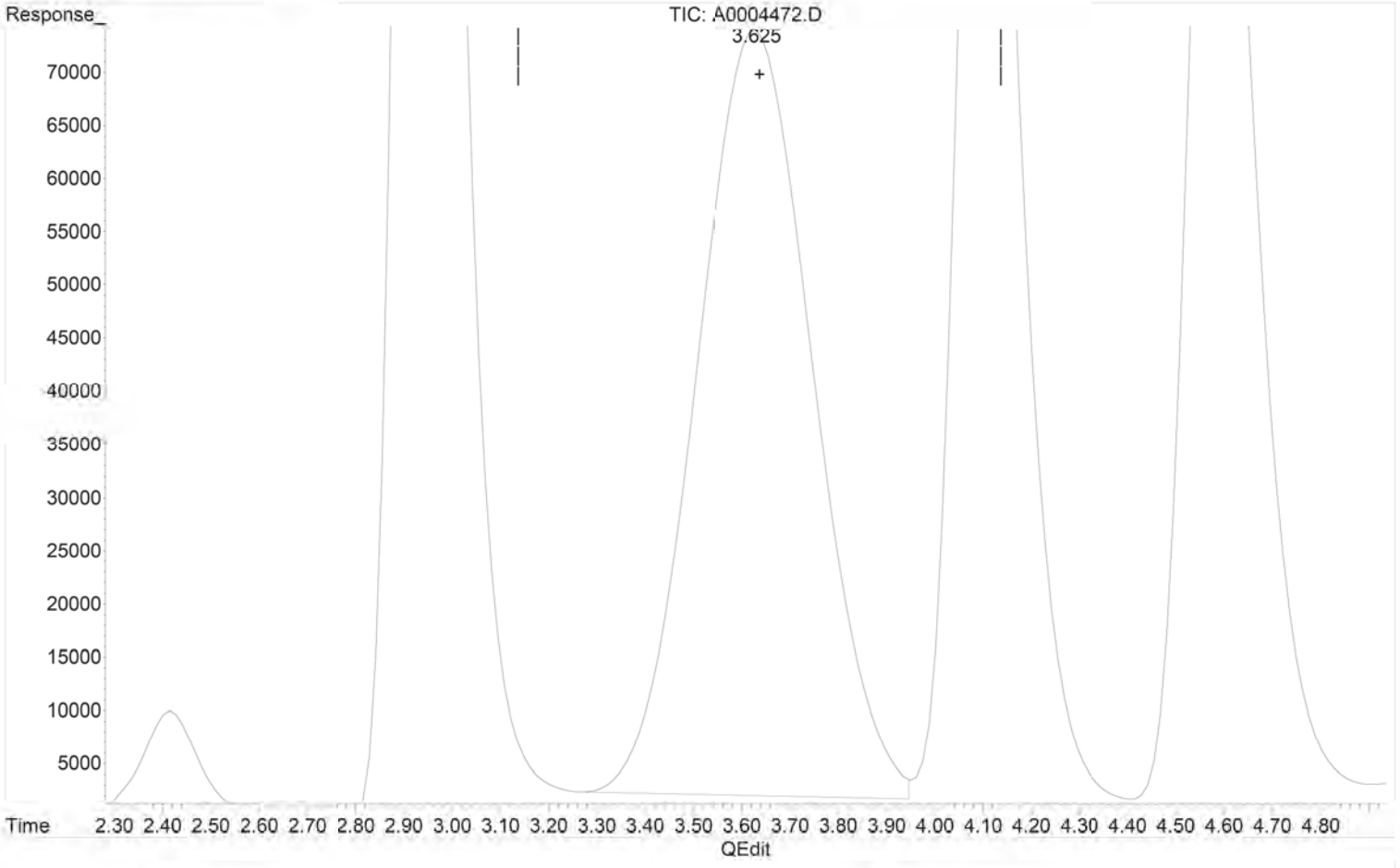
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.630min 20.492 ppm

response 11944441

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

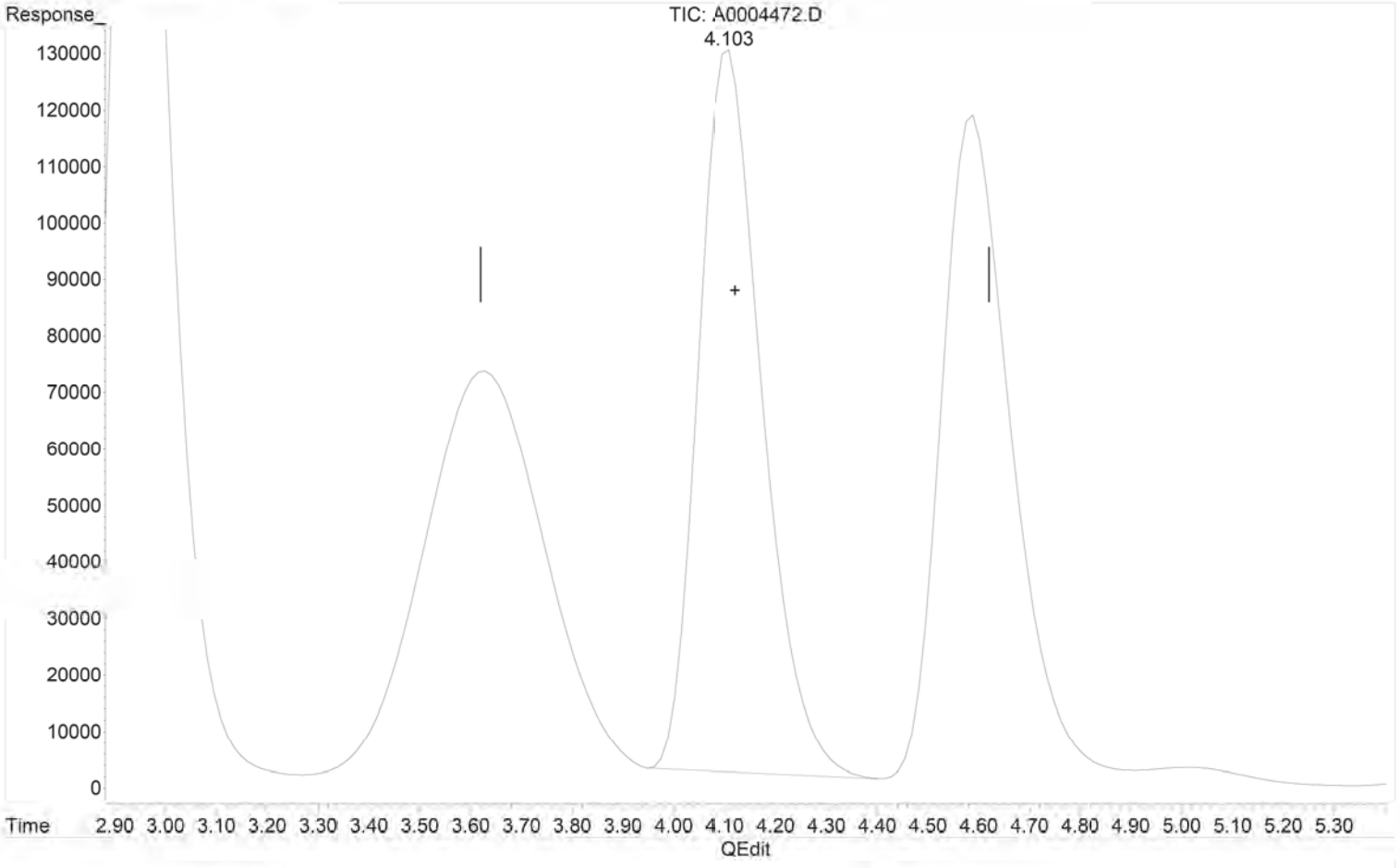
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.103min 199.720 ppm m

response 11063811

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:28:43 2020

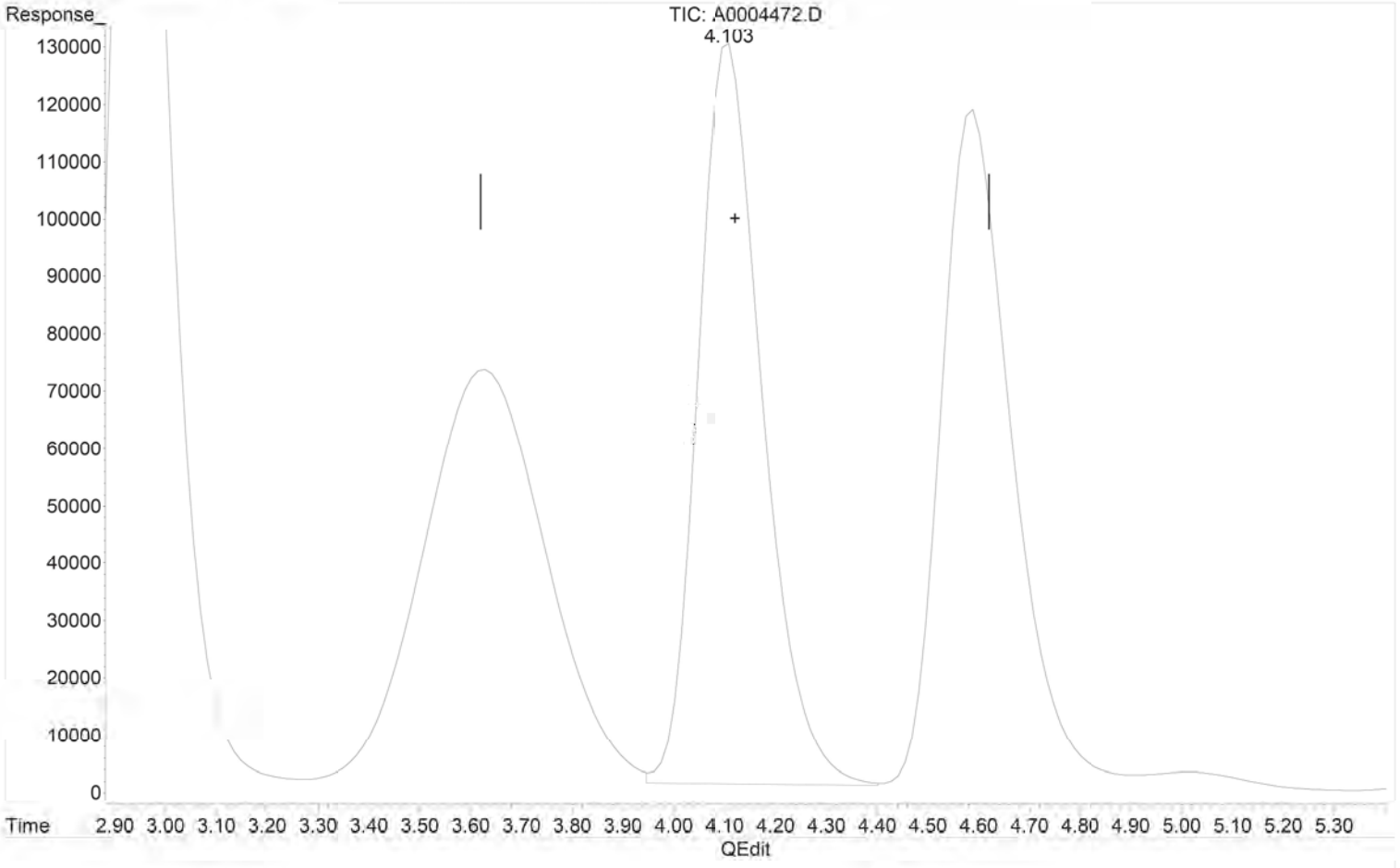
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.110min 205.006 ppm

response 11356650

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

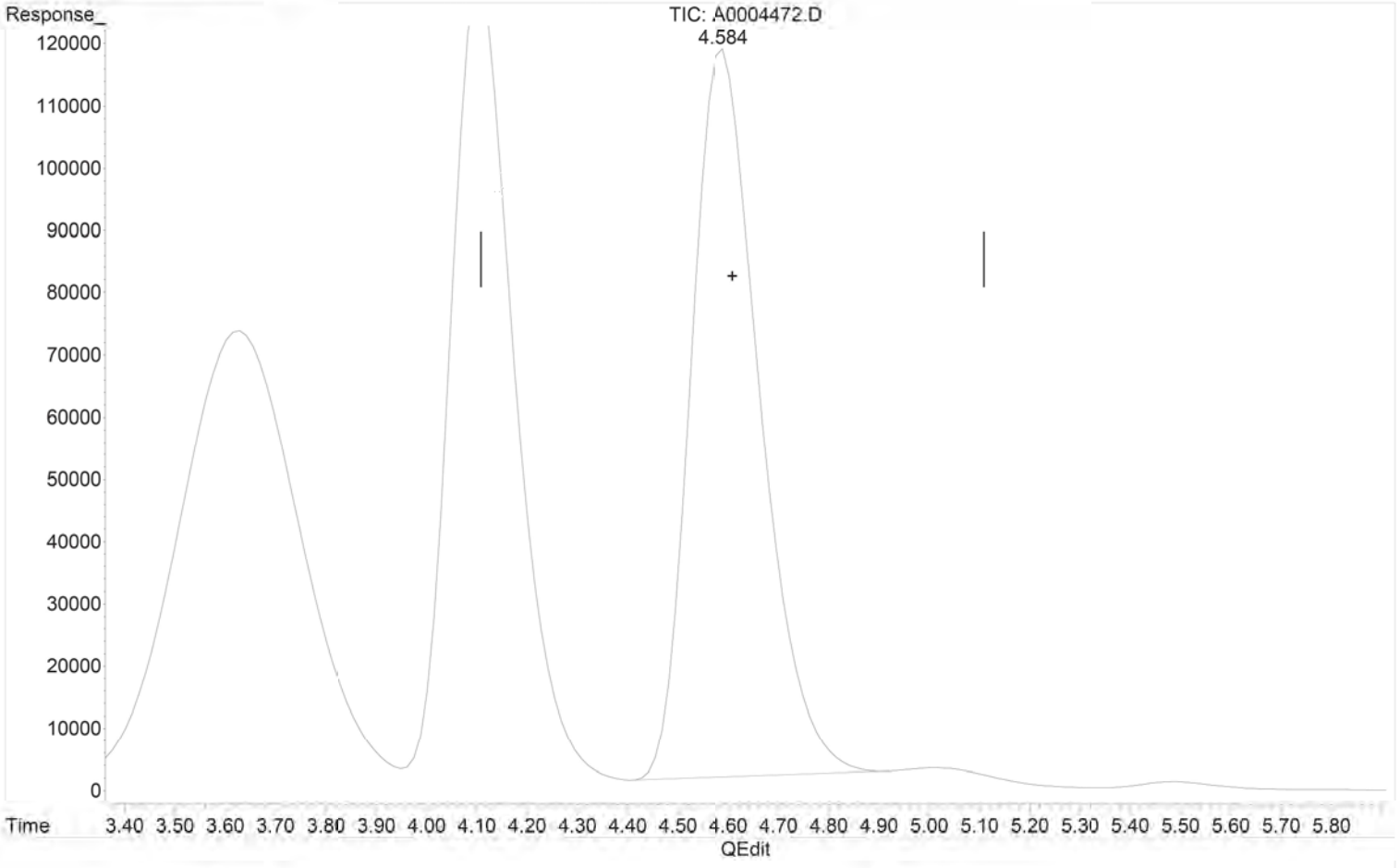
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.584min 197.987 ppm m

response 11047591

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

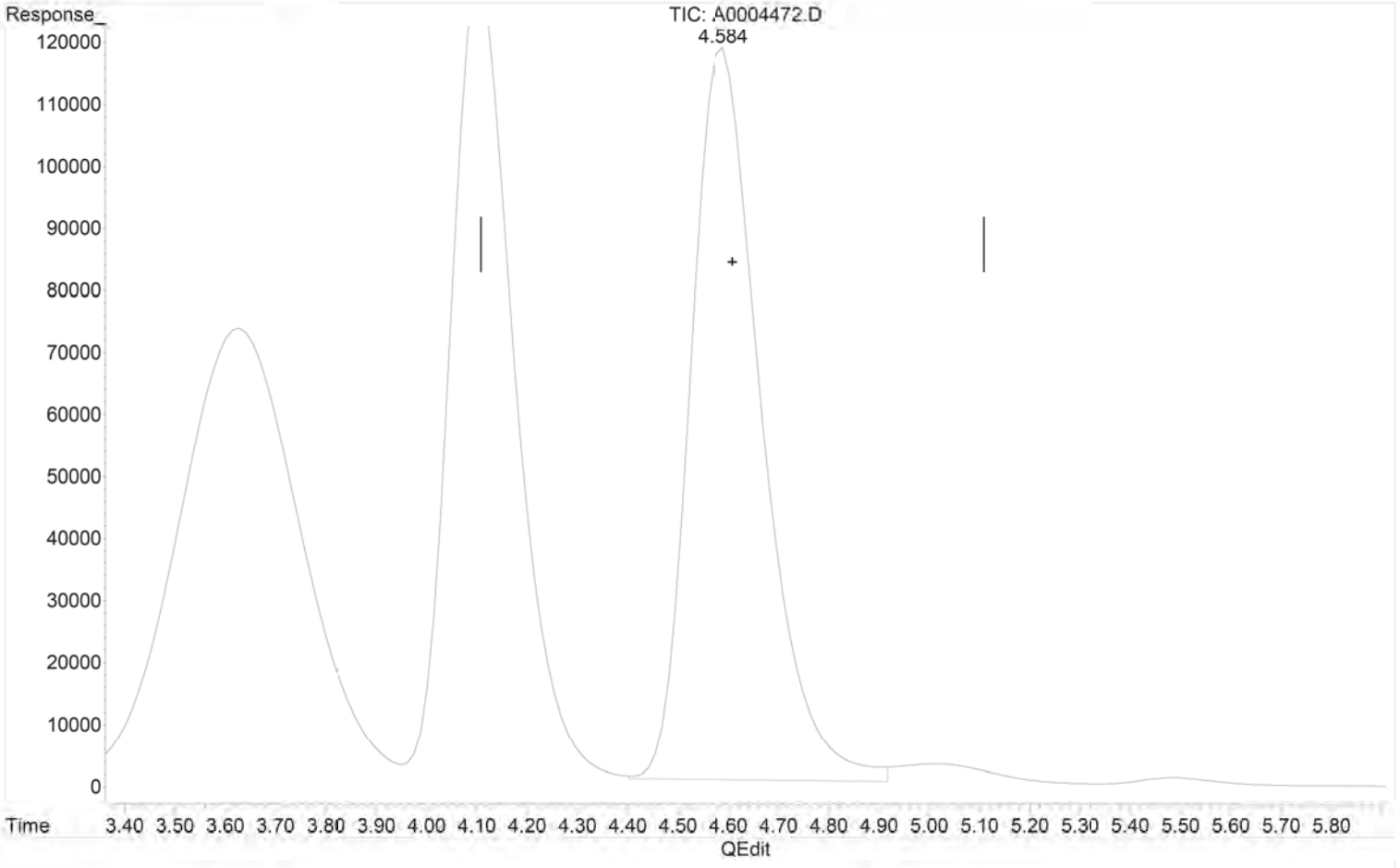
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.592min 205.148 ppm

response 11447174

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

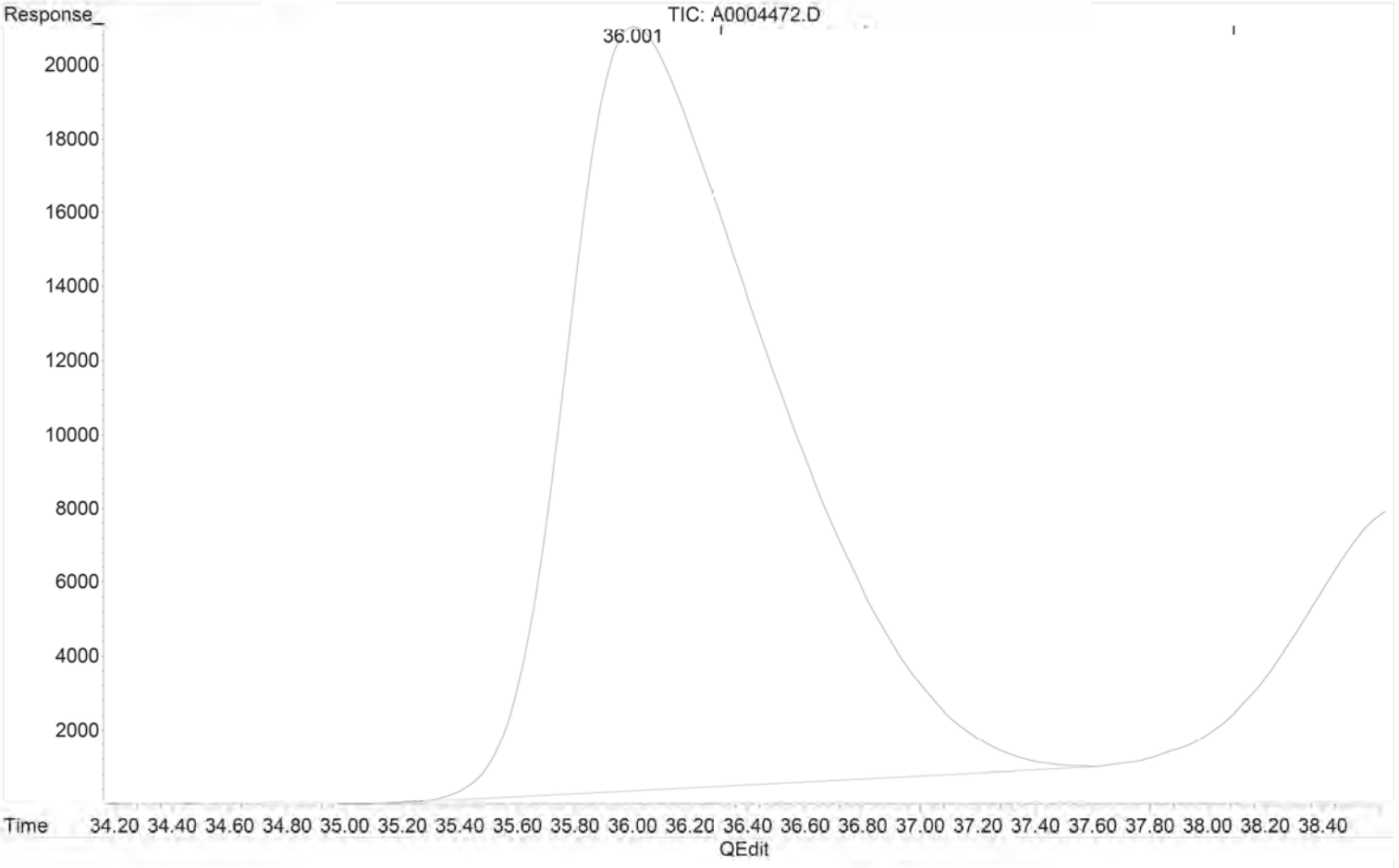
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.001min 196.253 ppm m

response 10326182

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:29:16 2020

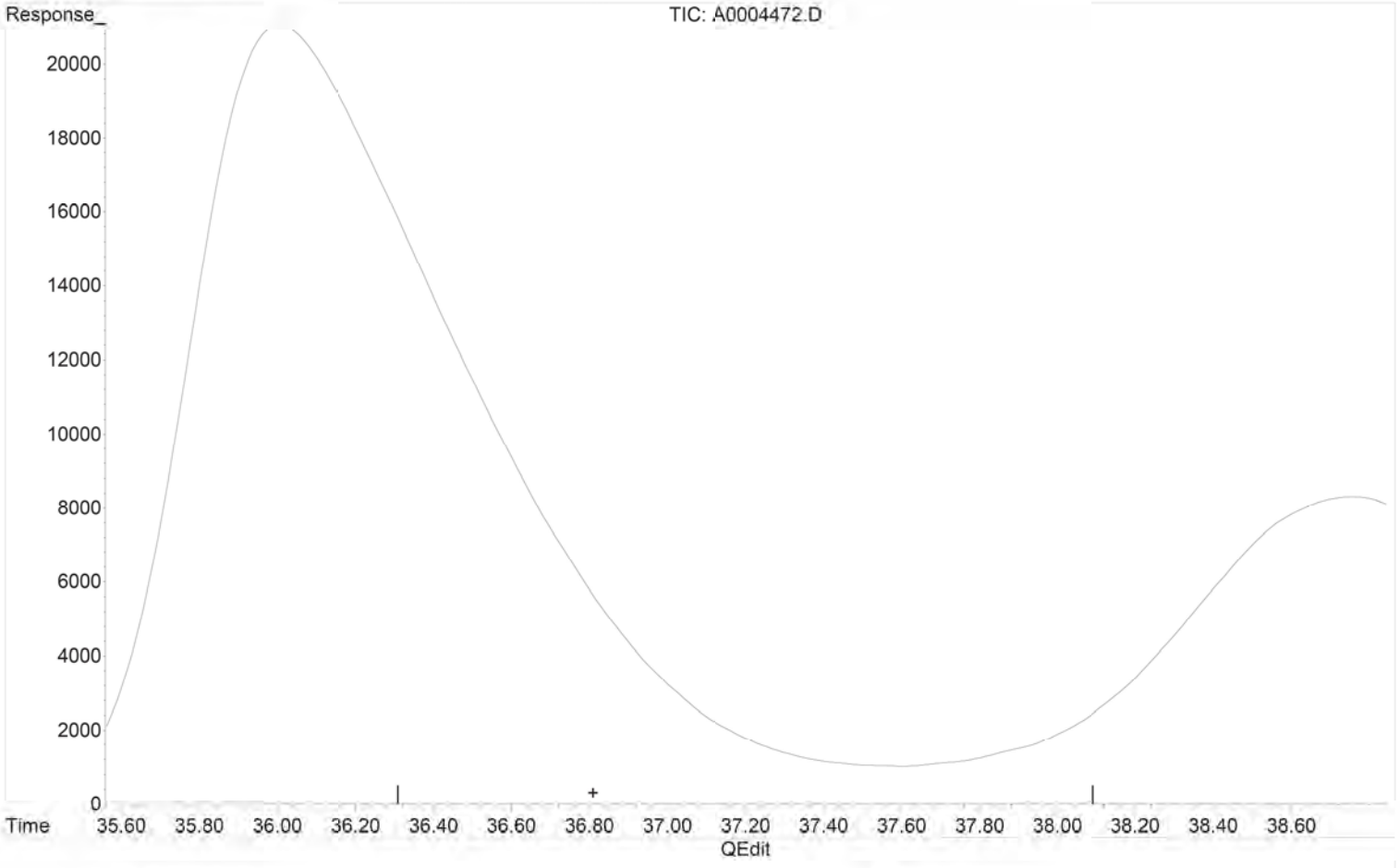
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.808min 0.000 ppm

response 0

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

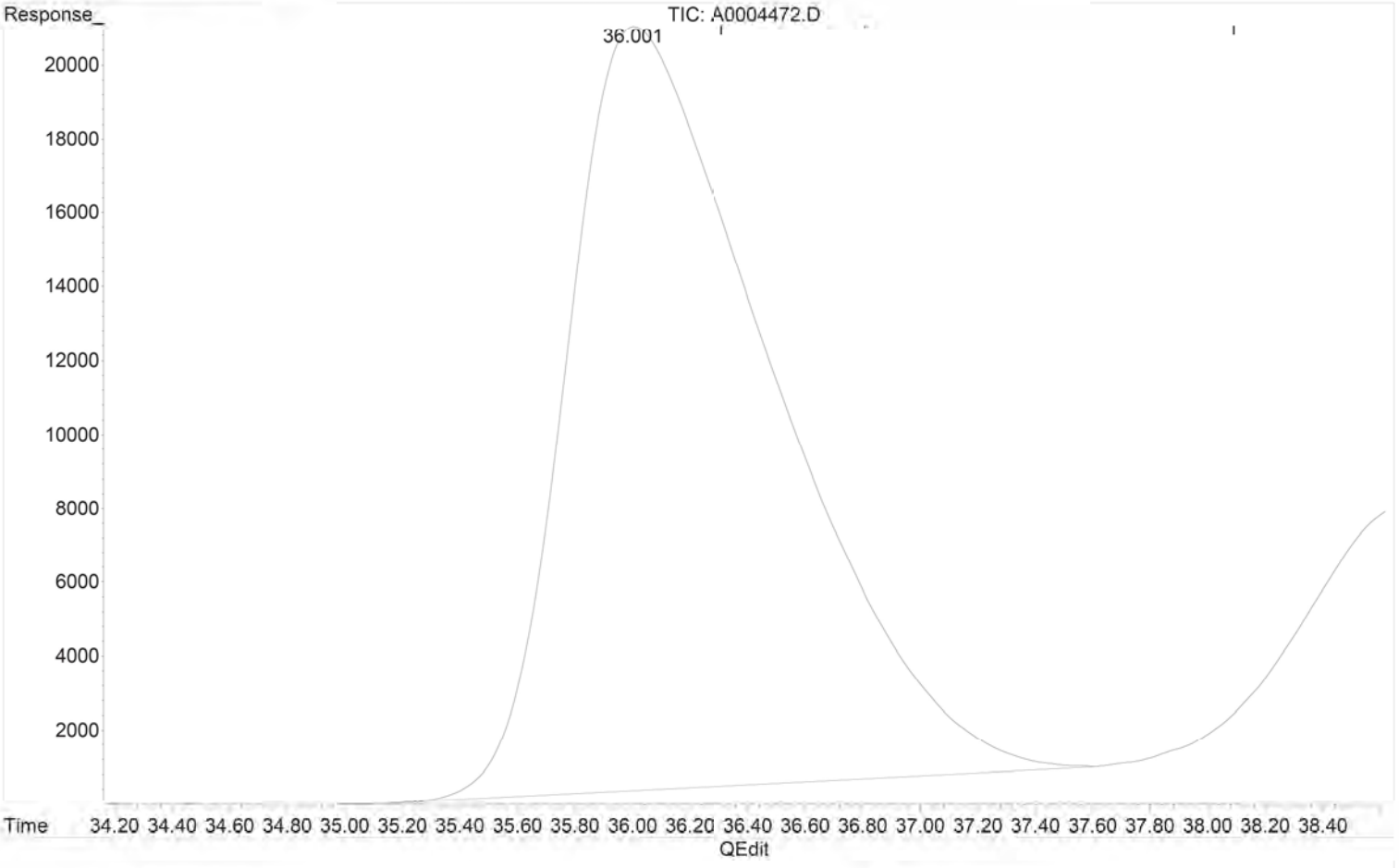
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.001min 196.253 ppm m

response 10326182

Manual Integration:

After

Peak not found.

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:29:21 2020

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58

Service Request: R2005353
Calibration Date: 12/30/2000

Initial Calibration Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Calibration ID: RC2000053
Instrument ID: R-HPLC-05

Signal ID: 1

#	Lab Code	Sample Name	File Location	Acquisition Date
01	RC2000053-01	STD 1	I:\ACQUDATA\hplc05\data\031220\A0004465.D	03/12/2020 12:39
02	RC2000053-02	STD 2	I:\ACQUDATA\hplc05\data\031220\A0004466.D	03/12/2020 13:42
04	RC2000053-04	STD 4	I:\ACQUDATA\hplc05\data\031220\A0004468.D	03/12/2020 15:48
07	RC2000053-07	STD 7	I:\ACQUDATA\hplc05\data\031220\A0004471.D	03/12/2020 18:57
08	RC2000053-08	STD 8	I:\ACQUDATA\hplc05\data\031220\A0004472.D	03/12/2020 20:00
03	RC2000053-03	STD 3	I:\ACQUDATA\hplc05\data\031220\A0004467.D	12/30/2000 02:48
06	RC2000053-06	STD 6	I:\ACQUDATA\hplc05\data\031220\A0004470.D	12/30/2000 17:47
05	RC2000053-05	STD 5	I:\ACQUDATA\hplc05\data\031220\A0004469.D	12/30/2000 17:48

Analyte

Acetic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1	5.521E4	02	2	5.659E4	03	5	5.611E4	04	10	5.731E4
05	20	5.58E4	06	50	5.655E4	07	100	5.558E4	08	200	5.524E4

Butanoic Acid (Butyric Acid)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1	5.323E4	02	2	5.338E4	03	5	5.087E4	04	10	5.32E4
05	20	5.262E4	06	50	5.313E4	07	100	5.244E4	08	200	5.163E4

Lactic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1	6.266E4	02	2	5.467E4	03	5	5.515E4	04	10	5.641E4
05	20	5.54E4	06	50	5.626E4	07	100	5.545E4	08	200	5.532E4

Propionic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1	5.153E4	02	2	5.435E4	03	5	5.182E4	04	10	5.598E4
05	20	5.494E4	06	50	5.59E4	07	100	5.536E4	08	200	5.497E4

Pyruvic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	.1	6.507E5	02	.2	5.665E5	03	.5	5.865E5	04	1	5.943E5
05	2	5.829E5	06	5	5.906E5	07	10	5.807E5	08	20	5.803E5

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58

Service Request: R2005353
Calibration Date: 12/30/2000

Initial Calibration Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Calibration ID: RC2000053
Instrument ID: R-HPLC-05

Signal ID: 1

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Acetic Acid	TRG	Average RF	% RSD	1.3	≤	5.605E4	
Butanoic Acid (Butyric Acid)	TRG	Average RF	% RSD	1.7	≤	5.256E4	
Lactic Acid	TRG	Average RF	% RSD	4.6	≤	5.642E4	
Propionic Acid	TRG	Average RF	% RSD	3.2	≤	5.436E4	
Pyruvic Acid	TRG	Average RF	% RSD	4.3	≤	5.916E5	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** R2005353
Project: LHAAP / Site 58 **Calibration Date:** 12/30/2000

Initial Calibration Verification Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Calibration ID: RC2000053 **Signal ID:** 1
Instrument ID: R-HPLC-05

#	Lab Code	Sample Name	File Location	Acquisition Date
09	RC2000053-09	ICV	I:\ACQUDATA\hplc05\data\031620\A0004777.D	12/30/2000 00:01

Analyte Name	Expected	Result	Average RF	SSV RF	Rec.	Criteria	Curve Fit
Pyruvic Acid	2.00	1.80	5.916E5	5.334E5	90.0	85-115	Average RF
Acetic Acid	20.0	18.9	5.605E4	5.295E4	94.5	85-115	Average RF
Butanoic Acid (Butyric Acid)	20.0	19.4	5.256E4	5.089E4	97.0	85-115	Average RF
Lactic Acid	20.0	18.8	5.642E4	5.298E4	94.0	85-115	Average RF
Propionic Acid	20.0	20.4	5.436E4	5.533E4	102	85-115	Average RF

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58

Service Request: R2005353
Date Analyzed: 07/01/20 13:56

Continuing Calibration Verification (CCV) Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids
File ID: I:\ACQUDATA\hplc05\data\070120\A0005448.D\
Signal ID: 1

Calibration Date: 12/30/2000
Calibration ID: RC2000053
Analysis Lot: 686010
Units: mg/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Pyruvic Acid	5.00	5.23	5.916E5	6.194E5	4.7	NA	±15	Average RF
Acetic Acid	50.0	49.7	5.605E4	5.568E4	-0.7	NA	±15	Average RF
Butanoic Acid (Butyric Acid)	50.0	49.0	5.256E4	5.154E4	-1.9	NA	±15	Average RF
Lactic Acid	50.0	47.0	5.642E4	5.305E4	-6.0	NA	±15	Average RF
Propionic Acid	50.0	49.6	5.436E4	5.387E4	-0.9	NA	±15	Average RF

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58

Service Request: R2005353
Date Analyzed: 07/01/20 20:11

Continuing Calibration Verification (CCV) Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids
File ID: I:\ACQUDATA\hplc05\data\070120\A0005454.D\
Signal ID: 1

Calibration Date: 12/30/2000
Calibration ID: RC2000053
Analysis Lot: 686010
Units: mg/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Pyruvic Acid	5.00	5.20	5.916E5	6.161E5	4.2	NA	±15	Average RF
Acetic Acid	50.0	49.6	5.605E4	5.559E4	-0.8	NA	±15	Average RF
Butanoic Acid (Butyric Acid)	50.0	47.2	5.256E4	4.962E4	-5.6	NA	±15	Average RF
Lactic Acid	50.0	47.4	5.642E4	5.345E4	-5.3	NA	±15	Average RF
Propionic Acid	50.0	49.2	5.436E4	5.343E4	-1.7	NA	±15	Average RF

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58

Service Request: R2005353
Date Analyzed: 07/02/20 02:32

Continuing Calibration Verification (CCV) Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids
File ID: I:\ACQUDATA\hplc05\data\070120\A0005460.D\
Signal ID: 1

Calibration Date: 12/30/2000
Calibration ID: RC2000053
Analysis Lot: 686010
Units: mg/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Pyruvic Acid	5.00	5.23	5.916E5	6.187E5	4.6	NA	±15	Average RF
Acetic Acid	50.0	49.6	5.605E4	5.552E4	-0.9	NA	±15	Average RF
Butanoic Acid (Butyric Acid)	50.0	48.2	5.256E4	5.077E4	-3.4	NA	±15	Average RF
Lactic Acid	50.0	47.5	5.642E4	5.362E4	-5.0	NA	±15	Average RF
Propionic Acid	50.0	48.9	5.436E4	5.313E4	-2.3	NA	±15	Average RF

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58

Service Request: R2005353
Date Analyzed: 07/02/20 08:50

Continuing Calibration Verification (CCV) Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids
File ID: I:\ACQUDATA\hplc05\data\070120\A0005466.D\
Signal ID: 1

Calibration Date: 12/30/2000
Calibration ID: RC2000053
Analysis Lot: 686010
Units: mg/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Pyruvic Acid	5.00	5.02	5.916E5	5.947E5	0.5	NA	±15	Average RF
Acetic Acid	50.0	48.6	5.605E4	5.439E4	-3.0	NA	±15	Average RF
Butanoic Acid (Butyric Acid)	50.0	49.7	5.256E4	5.232E4	-0.5	NA	±15	Average RF
Lactic Acid	50.0	46.8	5.642E4	5.278E4	-6.5	NA	±15	Average RF
Propionic Acid	50.0	48.7	5.436E4	5.289E4	-2.7	NA	±15	Average RF

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58

Service Request: R2005353
Date Analyzed: 07/02/20 15:08

Continuing Calibration Verification (CCV) Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids
File ID: I:\ACQUDATA\hplc05\data\070120\A0005472.D\
Signal ID: 1

Calibration Date: 12/30/2000
Calibration ID: RC2000053
Analysis Lot: 686010
Units: mg/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Pyruvic Acid	5.00	5.02	5.916E5	5.94E5	0.4	NA	±15	Average RF
Acetic Acid	50.0	48.5	5.605E4	5.431E4	-3.1	NA	±15	Average RF
Butanoic Acid (Butyric Acid)	50.0	49.7	5.256E4	5.231E4	-0.5	NA	±15	Average RF
Lactic Acid	50.0	47.0	5.642E4	5.308E4	-5.9	NA	±15	Average RF
Propionic Acid	50.0	49.5	5.436E4	5.375E4	-1.1	NA	±15	Average RF

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**R2005353
Project: LHAAP / Site 58

Analysis Run Log
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids **Analysis Lot:**686010
Instrument ID:R-HPLC-05

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
I:\ACQUDATA\hplc05\data\070120\A0005465.D\	Batch QC MS	RQ2007136-07	12/29/2000	23:47:48	
I:\ACQUDATA\hplc05\data\070120\A0005455.D\	ZZZZZZZ	ZZZZZZZ	12/29/2000	23:48:29	
I:\ACQUDATA\hplc05\data\070120\A0005461.D\	03WW01_062320	R2005353-001	12/30/2000	02:47:58	
I:\ACQUDATA\hplc05\data\070120\A0005456.D\	ZZZZZZZ	ZZZZZZZ	12/30/2000	16:48:33	
I:\ACQUDATA\hplc05\data\070120\A0005467.D\	Batch QC DMS	RQ2007136-08	12/30/2000	16:48:42	
I:\ACQUDATA\hplc05\data\070120\A0005449.D\	Method Blank	RQ2007136-02	12/31/2000	02:48:24	
I:\ACQUDATA\hplc05\data\070120\A0005454.D\	Continuing Calibration Verification	RQ2007136-05	12/31/2000	02:48:28	
I:\ACQUDATA\hplc05\data\070120\A0005469.D\	ZZZZZZZ	ZZZZZZZ	12/31/2000	02:48:33	
I:\ACQUDATA\hplc05\data\070120\A0005471.D\	ZZZZZZZ	ZZZZZZZ	12/31/2000	02:48:34	
I:\ACQUDATA\hplc05\data\070120\A0005448.D\	Continuing Calibration Verification	RQ2007136-01	7/1/2020	13:56:19	
I:\ACQUDATA\hplc05\data\070120\A0005449.D\	Method Blank	RQ2007136-02	7/1/2020	14:56:00	
I:\ACQUDATA\hplc05\data\070120\A0005450.D\	Lab Control Sample	RQ2007136-03	7/1/2020	16:02:18	
I:\ACQUDATA\hplc05\data\070120\A0005451.D\	Duplicate Lab Control Sample	RQ2007136-04	7/1/2020	17:05:25	
I:\ACQUDATA\hplc05\data\070120\A0005452.D\	ZZZZZZZ	ZZZZZZZ	7/1/2020	18:08:24	
I:\ACQUDATA\hplc05\data\070120\A0005453.D\	ZZZZZZZ	ZZZZZZZ	7/1/2020	19:11:21	
I:\ACQUDATA\hplc05\data\070120\A0005454.D\	Continuing Calibration Verification	RQ2007136-05	7/1/2020	20:11:00	
I:\ACQUDATA\hplc05\data\070120\A0005455.D\	ZZZZZZZ	ZZZZZZZ	7/1/2020	21:14:00	
I:\ACQUDATA\hplc05\data\070120\A0005456.D\	ZZZZZZZ	ZZZZZZZ	7/1/2020	22:17:00	
I:\ACQUDATA\hplc05\data\070120\A0005460.D\	Continuing Calibration Verification	RQ2007136-06	7/2/2020	02:32:48	
I:\ACQUDATA\hplc05\data\070120\A0005461.D\	03WW01_062320	R2005353-001	7/2/2020	03:32:00	
I:\ACQUDATA\hplc05\data\070120\A0005462.D\	35AWW08_062320	R2005353-002	7/2/2020	04:38:45	
I:\ACQUDATA\hplc05\data\070120\A0005463.D\	35AWW11_062320	R2005353-003	7/2/2020	05:41:40	
I:\ACQUDATA\hplc05\data\070120\A0005464.D\	Batch QC	R2005464-001	7/2/2020	06:44:40	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**R2005353
Project: LHAAP / Site 58

Analysis Run Log
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids **Analysis Lot:**686010
Instrument ID:R-HPLC-05

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
I:\ACQUDATA\hplc05\data\070120\A0005465.D\	Batch QC MS	RQ2007136-07	7/2/2020	07:44:00	
I:\ACQUDATA\hplc05\data\070120\A0005466.D\	Continuing Calibration Verification	RQ2007136-09	7/2/2020	08:50:41	
I:\ACQUDATA\hplc05\data\070120\A0005467.D\	Batch QC DMS	RQ2007136-08	7/2/2020	09:50:00	
I:\ACQUDATA\hplc05\data\070120\A0005468.D\	ZZZZZZZ	ZZZZZZZ	7/2/2020	10:56:30	
I:\ACQUDATA\hplc05\data\070120\A0005469.D\	ZZZZZZZ	ZZZZZZZ	7/2/2020	11:56:00	
I:\ACQUDATA\hplc05\data\070120\A0005470.D\	ZZZZZZZ	ZZZZZZZ	7/2/2020	13:02:27	
I:\ACQUDATA\hplc05\data\070120\A0005471.D\	ZZZZZZZ	ZZZZZZZ	7/2/2020	14:02:00	
I:\ACQUDATA\hplc05\data\070120\A0005472.D\	Continuing Calibration Verification	RQ2007136-10	7/2/2020	15:08:24	

Analysis: Organic Acids Analyst: AFelix Run Method: NEUMETA.M
Date: 07/01/2020 Instr. HPLC05 Quant Method: MAD31220.M
LIMS Run#: 686010
Setup: Column: Synergi Hydro RP 150x4.6 Col.Temp: 35 Flow: 0.6 mL/min
Mobile Phase: 0.05M KH2PO4 pH 2.5 w/ H3PO4 ul Inj.: 50
Mobile Phase ID: O-766-77G

Pos.	Sample	Diln.	Stds. ID	File#	OK?	Comments
2	BLK			A0005446	—	
2	BLK			47	—	
1	CCV	100µL/1mL	209218	48	Y	
2	MB			49	Y	
3	LCS	100µL/1mL	208621	50	Y	
4	DLCS	〃	〃	51	Y	
5	R2005448-001			52	Y	
6	〃 -002			53	Y	
1	CCV	100µL/1mL	209218	54	Y	
7	R2005448-003			55	Y	
8	R2005449-001			56	Y	
9	〃 -002			57	N	>LR, repeat @ 1/2
10	〃 -002 MS		208621	58	N	
11	〃 -002 DMS		〃	59	N	
1	CCV	100µL/1mL	209218	60	Y	
12	R2005353-001			61	Y	
13	〃 -002			62	Y	
14	〃 -003			63	Y	
15	R2005464-001			64	Y	
16	〃 -001 MS		208621	65	Y	
1	CCV	100µL/1mL	209218	66	Y	
17	R2005464-001 DMS		208621	67	Y	Pyruvic 〃
18	〃 -002			68	Y	
19	〃 -003			69	Y	
20	〃 -004			70	Y	
21	〃 -005			71	Y	
1	CCV	100µL/1mL	209218	72	Y	

AFelix 07/06/2020

Primary: 209218 exp: 09/19/2020 Secondary: 208621 exp: 09/19/2020
pH Paper: 208628 Acid: 209896

Runlog HPLCr2
3/23/18

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July 10, 2020

Analytical Report for Service Request No: K2005295

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

RE: HS20061178

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory June 25, 2020
For your reference, these analyses have been assigned our service request number **K2005295.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - US
Project: HS20061178
Sample Matrix: Ground Water

Service Request: K2005295
Date Received: 06/25/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Four ground water samples were received for analysis at ALS Environmental on 06/25/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 07/10/2020

Chain of Custody

ALS Environmental—Kelso Laboratory
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K2005295

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Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **14188**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

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:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20061178
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20061178-01**	**35AWW09_062320**	**Groundwater**	**23 Jun 2020 10:05**
	TOC Analysis for DOD Level IV/Excel EDD			09 Jul 2020
2.	**HS20061178-02**	**03WW01_062320**	**Groundwater**	**23 Jun 2020 11:00**
	TOC Analysis for DOD Level IV/Excel EDD			09 Jul 2020
3.	**HS20061178-03**	**35AWW08_062320**	**Groundwater**	**23 Jun 2020 12:05**
	TOC Analysis for DOD Level IV/Excel EDD			09 Jul 2020
4.	**HS20061178-04**	**35AWW11_062320**	**Groundwater**	**23 Jun 2020 13:25**
	TOC Analysis for DOD Level IV/Excel EDD			09 Jul 2020

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

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 6/24/2020 1800

Received By: _____ Date/Time: 6/25/20 0935

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

PC KL

Cooler Receipt and Preservation Form

Client AIR - HOUSTON Service Request K20 0529 5

Received: 6/25/20 Opened: 6/25/20 By: BR Unloaded: 6/25/20 By: BR

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? ~~NA~~ Y N If yes, how many and where? 2 front

   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID NA	Tracking Number NA	Filed
1.3	—	—	—	—	18.02		189188778603	

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly ~~filled out~~ (ink, signed, etc.)? NA Y N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA Y N

   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry

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ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2005295
Project:	HS20061178	**Date Collected:**	06/23/20
Sample Matrix:	Ground Water	**Date Received:**	06/25/20
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
35AWW09_062320	K2005295-001	**3.17**	0.50	0.20	0.07	1	06/26/20 16:56	
03WW01_062320	K2005295-002	**69.8**	0.50	0.20	0.07	1	07/02/20 10:33	
35AWW08_062320	K2005295-003	**208**	0.50	0.20	0.07	1	07/02/20 10:33	
35AWW11_062320	K2005295-004	**7.28**	0.50	0.20	0.07	1	06/26/20 16:56	
Method Blank	K2005295-MB1	ND U	0.50	0.20	0.07	1	06/25/20 16:56	
Method Blank	K2005295-MB2	ND U	0.50	0.20	0.07	1	06/26/20 16:56	
Method Blank	K2005295-MB3	ND U	0.50	0.20	0.07	1	07/02/20 10:33	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2005295
Project:	HS20061178	**Date Analyzed:**	06/25/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	685091

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2005295-LCS1	21.2	25.0	85	83-117
Lab Control Sample	K2005295-LCS2	21.1	25.0	84	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2005295
Project:	HS20061178	**Date Analyzed:**	07/02/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	685526

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2005295-LCS3	82.8	87.5	95	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2005295
Project: HS20061178

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	685091	KQ2008648-01	06/25/20 16:56	25.0	25.3	101	90-110
CCV2	685091	KQ2008648-02	06/25/20 16:56	25.0	25.1	101	90-110
CCV3	685091	KQ2008648-03	06/25/20 16:56	25.0	25.7	103	90-110
CCV4	685091	KQ2008648-04	06/26/20 16:56	25.0	24.7	99	90-110
CCV5	685526	KQ2009226-06	07/02/20 10:33	25.0	26.1	105	90-110
CCV6	685526	KQ2009226-07	07/02/20 10:33	25.0	25.1	101	90-110
CCV7	685526	KQ2009226-08	07/02/20 10:33	25.0	25.3	101	90-110
CCV8	685526	KQ2009226-09	07/02/20 10:33	25.0	24.9	100	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K2005295
Project: HS20061178

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	685091	KQ2008648-05	06/25/20 16:56	0.50	0.20	0.07	ND	U
CCB2	685091	KQ2008648-06	06/25/20 16:56	0.50	0.20	0.07	ND	U
CCB3	685091	KQ2008648-07	06/25/20 16:56	0.50	0.20	0.07	ND	U
CCB4	685091	KQ2008648-08	06/26/20 16:56	0.50	0.20	0.07	ND	U
CCB5	685526	KQ2009226-10	07/02/20 10:33	0.50	0.20	0.07	0.45	J
CCB6	685526	KQ2009226-11	07/02/20 10:33	0.50	0.20	0.07	ND	U
CCB7	685526	KQ2009226-12	07/02/20 10:33	0.50	0.20	0.07	ND	U
CCB8	685526	KQ2009226-13	07/02/20 10:33	0.50	0.20	0.07	ND	U

Raw Data

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
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Work Request # Original (4984) 5020 5185 5260 5295 5296 5111 5174

Tier: II II I II N N II II

Date Analyzed: 6/25/20

Analyst: MK/GB Run # 1085091 1085092

Analysis: TOC/DOC

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS:

Rerun 5174 DOC DIL
Rerun 5295-2,3 DIL
Rerun 5020-2,4 DOC Due to carryover

Final Approved by: [signature] Date: 6/30/20

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** MKANALY **Analysis Lot:** 685091 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2004984-001	Carbon, Total Organic	N/A		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/25/20 16:56:00	N	II
K2004984-002	Carbon, Total Organic	N/A		Water	0.48 mg/L	10 mL	0.48 mg/L J	1	0.07	0.50			6/25/20 16:56:00	N	II
K2004984-003	Carbon, Total Organic	N/A		Water	0.50 mg/L	10 mL	0.50 mg/L J	1	0.07	0.50			6/25/20 16:56:00	N	II
K2004984-004	Carbon, Total Organic	N/A		Water	0.40 mg/L	10 mL	0.40 mg/L J	1	0.07	0.50			6/25/20 16:56:00	N	II
K2004984-005	Carbon, Total Organic	N/A		Water	0.50 mg/L	10 mL	0.50 mg/L	1	0.07	0.50			6/25/20 16:56:00	N	II
K2004984-006	Carbon, Total Organic	N/A		Water	0.19 mg/L	10 mL	0.19 mg/L J	1	0.07	0.50			6/25/20 16:56:00	N	II
K2004984-007	Carbon, Total Organic	N/A		Water	0.96 mg/L	10 mL	0.96 mg/L	1	0.07	0.50			6/25/20 16:56:00	N	II
K2004984-008	Carbon, Total Organic	N/A		Water	0.41 mg/L	10 mL	0.41 mg/L J	1	0.07	0.50			6/25/20 16:56:00	N	II
K2005020-001	Carbon, Total Organic	N/A		Water	3.97 mg/L	10 mL	3.97 mg/L	1	0.07	0.50			6/25/20 16:56:00	N	II
K2005020-003	Carbon, Total Organic	N/A		Water	2.87 mg/L	10 mL	2.87 mg/L	1	0.07	0.50			6/25/20 16:56:00	N	II
K2005185-002	Carbon, Total Organic	N/A		Drinking Water	0.45 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/26/20 16:56:00	N	I
K2005260-001	Carbon, Total Organic	N/A		Water	2.10 mg/L	10 mL	2.10 mg/L	1	0.07	0.50			6/26/20 16:56:00	N	II
K2005295-001	Carbon, Total Organic	N/A		Ground Water	3.17 mg/L	10 mL	3.17 mg/L	1	0.07	0.50			6/26/20 16:56:00	N	IV
K2005295-002.R01	Carbon, Total Organic	N/A		Ground Water	50.22 mg/L	10 mL	50.2 mg/L	1	0.07	0.50			6/26/20 16:56:00	N	IV
K2005295-003.R01	Carbon, Total Organic	N/A		Ground Water	57.82 mg/L	10 mL	57.8 mg/L	1	0.07	0.50			6/26/20 16:56:00	N	IV
K2005295-004	Carbon, Total Organic	N/A		Ground Water	7.28 mg/L	10 mL	7.28 mg/L	1	0.07	0.50			6/26/20 16:56:00	N	IV
K2005296-001	Carbon, Total Organic	N/A		Water	2.10 mg/L	10 mL	2.10 mg/L	1	0.07	0.50			6/26/20 16:56:00	N	IV
KQ2008648-01	Carbon, Total Organic	CCV		Water	25.34 mg/L	10 mL	25.3 mg/L	1					6/25/20 16:56:00	N	II
KQ2008648-02	Carbon, Total Organic	CCV		Water	25.13 mg/L	10 mL	25.1 mg/L	1					6/25/20 16:56:00	N	II
KQ2008648-03	Carbon, Total Organic	CCV		Water	25.73 mg/L	10 mL	25.7 mg/L	1					6/25/20 16:56:00	N	II
KQ2008648-04	Carbon, Total Organic	CCV		Water	24.66 mg/L	10 mL	24.7 mg/L	1					6/26/20 16:56:00	N	II
KQ2008648-05	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/25/20 16:56:00	N	II
KQ2008648-06	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/25/20 16:56:00	N	II
KQ2008648-07	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/25/20 16:56:00	N	II
KQ2008648-08	Carbon, Total Organic	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/26/20 16:56:00	N	II
KQ2008648-09	Carbon, Total Organic	LCS		Water	21.24 mg/L	10 mL	21.2 mg/L	1	0.07	0.50	85		6/25/20 16:56:00	N	II
KQ2008648-10	Carbon, Total Organic	LCS		Water	21.07 mg/L	10 mL	21.1 mg/L	1	0.07	0.50	84		6/26/20 16:56:00	N	II
KQ2008648-11	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/25/20 16:56:00	N	II
KQ2008648-12	Carbon, Total Organic	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/26/20 16:56:00	N	II
KQ2008648-13	Carbon, Total Organic	DUP	K2004984-001	Water	0.47 mg/L	10 mL	0.47 mg/L J	1	0.07	0.50		NC	6/25/20 16:56:00	N	II
KQ2008648-14	Carbon, Total Organic	MS	K2004984-001	Water	27.49 mg/L	10 mL	27.5 mg/L	1	0.07	0.50	110		6/25/20 16:56:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** MKANALY **Analysis Lot:** 685092 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2005020-002.R01	Carbon, Dissolved Organic (DOC)	N/A		Water	14.51 mg/L	10 mL	14.5 mg/L	1	0.07	0.50			6/26/20 2 :27:00	N	II
K2005020-004.R01	Carbon, Dissolved Organic (DOC)	N/A		Water	4.42 mg/L	10 mL	4.42 mg/L	1	0.07	0.50			6/26/20 2 :27:00	N	II
K2005111-001	Carbon, Dissolved Organic (DOC)	N/A		Water	5.11 mg/L	10 mL	5.11 mg/L	1	0.07	0.50			6/26/20 2 :27:00	N	II
K2005111-002	Carbon, Dissolved Organic (DOC)	N/A		Water	2.15 mg/L	10 mL	2.15 mg/L	1	0.07	0.50			6/26/20 2 :27:00	N	II
K2005174-001.R01	Carbon, Dissolved Organic (DOC)	N/A		Water	61.16 mg/L	10 mL	61.2 mg/L	1	0.07	0.50			6/26/20 2 :27:00	N	II
KQ2008788-01	Carbon, Dissolved Organic (DOC)	CCV		Water	25.73 mg/L	10 mL	25.7 mg/L	1					6/26/20 2 :27:00	N	II
KQ2008788-02	Carbon, Dissolved Organic (DOC)	CCV		Water	24.66 mg/L	10 mL	24.7 mg/L	1					6/26/20 2 :27:00	N	II
KQ2008788-03	Carbon, Dissolved Organic (DOC)	CCV		Water	25.01 mg/L	10 mL	25.0 mg/L	1					6/26/20 2 :27:00	N	II
KQ2008788-04	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/26/20 2 :27:00	N	II
KQ2008788-05	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/26/20 2 :27:00	N	II
KQ2008788-06	Carbon, Dissolved Organic (DOC)	CCB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/26/20 2 :27:00	N	II
KQ2008788-07	Carbon, Dissolved Organic (DOC)	MB		Water	0.00 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			6/26/20 2 :27:00	N	II
KQ2008788-08	Carbon, Dissolved Organic (DOC)	LCS		Water	21.07 mg/L	10 mL	21.1 mg/L	1	0.07	0.50	84		6/26/20 2 :27:00	N	II
KQ2008788-09	Carbon, Dissolved Organic (DOC)	DUP	K2005111-002	Water	2.27 mg/L	10 mL	2.27 mg/L	1	0.07	0.50		5	6/26/20 2 :27:00	N	II
KQ2008788-10	Carbon, Dissolved Organic (DOC)	MS	K2005111-002	Water	28.50 mg/L	10 mL	28.5 mg/L	1	0.07	0.50	105		6/26/20 2 :27:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

685091
685092

Schedule: 062520

Version: 2
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2020/06/25 15:21 - Thursday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K2004984-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K2004984-00DD	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K2004984-001MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
6	Sample	K2004984-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K2004984-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K2004984-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K2004984-005	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K2004984-006	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K2004984-007	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K2004984-008	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K2005020-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K2005020-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K2005185-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K2005296-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
17	Sample	K2005260-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
18	Sample	K2005295-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	K2005295-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	IB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
22	Sample	K2005295-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K2005295-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K2005174-001 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K2005020-002 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K2005020-004 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K2005111-002 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K2005111-002D DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K2005111-002MS DOC	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
30	Sample	K2005211-001 10X DOC	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
31	Sample	FILTER BLANK	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
32	Sample	IB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample		CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - 062520
Thursday, June 25, 2020 03:24 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2020/06/26 10:19 - Friday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	062520	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v2) Fusion1 (Fusion1) (v3)		
Comment:			

Report Results

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/06/25 15:24

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	14.94	19.26	4.32	49.76	05:21
2	TC Clean	8.82	12.52	3.70	50.02	04:04
3	TC Clean	2.22	6.13	3.90	50.04	03:47
4	TC Clean	1.89	5.61	3.72	50.02	03:56

Sample Type: Clean — From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/06/25 15:46

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.76	4.31	3.55	49.48	05:20
2	TC Clean	4.53	7.90	3.37	49.87	04:00
3	TC Clean	1.94	5.54	3.60	49.99	03:52
4	TC Clean	1.69	5.47	3.78	49.91	03:54

Sample Type: Blank (Creating v1400) From Schedule Version 2

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2020/06/25 16:08

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	0.91	4.46	3.55	49.55	05:20
2	TC Clean	4.31	7.97	3.66	50.02	04:01
3	TC Clean	2.02	5.68	3.67	49.96	03:45
4	TC Clean	1.71	5.49	3.78	49.97	03:44
5	Reagent Blank	2.82	6.71	3.90	50.00	05:06
6	Acid Blank	0.73	4.31	3.58	49.69	05:29

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.0055 ppm	0.0000 ppm	0.0000%	2020/06/25 16:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0055	0.0547	9.13	12.70	3.58	49.98	10:33

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.3442 ppm (PASS)	0.0000 ppm	0%	2020/06/25 16:56

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.3442	253.4417	187.68	191.37	3.70	50.02	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/06/25 17:11

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.17	10.77	3.60	49.94	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.0000 ppm	0.0000 ppm	0.0000%	2020/06/25 17:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.44	10.00	3.56	49.95	10:35

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 2

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	21.2411 ppm (PASS)	0.0000 ppm	0%	2020/06/25 17:41

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	21.2411	212.4114	158.89	162.69	3.79	50.01	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 2

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	2	TOC	ICS	0.0926 ppm	0.0000 ppm	0.0000%	2020/06/25 17:55

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	0.0926	0.9257	9.74	13.21	3.47	49.99	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K2004984-001	0.0000 ppm	0.0000 ppm	0.0000%	2020/06/25 18:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.50	9.96	3.46	50.00	10:27
2	TOC	0.0000	0.0000	5.98	9.59	3.62	50.06	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K2004984-00DD	0.4748 ppm	0.0104 ppm	2.1900%	2020/06/25 18:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4675	4.6749	12.37	15.79	3.42	49.98	10:28
2	TOC	0.4822	4.8217	12.47	15.95	3.48	50.09	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	K2004984-001MS	27.4888 ppm	0.1546 ppm	0.5600%	2020/06/25 19:07

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	27.3795	273.7949	201.15	204.74	3.59	50.08	10:31
2	TOC	27.5982	275.9817	202.69	206.30	3.61	49.99	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K2004984-002	0.4829 ppm	0.0931 ppm	19.2900%	2020/06/25 19:35

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5487	5.4875	12.94	16.57	3.63	50.08	10:26
2	TOC	0.4170	4.1702	12.02	15.65	3.64	49.98	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC)	CAS_salt_010711	CAS_salt_010711

(v1400) (v4) (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K2004984-003	0.4982 ppm	0.0350 ppm	7.0200%	2020/06/25 20:03

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5229	5.2294	12.76	16.42	3.66	49.98	10:25
2	TOC	0.4735	4.7348	12.41	16.10	3.69	49.95	10:22

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K2004984-004	0.3952 ppm	0.0381 ppm	9.6400%	2020/06/25 20:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4222	4.2216	12.05	15.77	3.72	49.95	10:26
2	TOC	0.3683	3.6827	11.67	15.34	3.67	49.88	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K2004984-005	0.5046 ppm	0.0254 ppm	5.0300%	2020/06/25 20:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.5225	5.2251	12.76	16.12	3.36	49.92	10:25
2	TOC	0.4866	4.8659	12.50	15.94	3.44	49.85	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.1288 ppm (PASS)	0.0000 ppm	0%	2020/06/25 21:27

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.1288	251.2877	186.17	189.68	3.51	49.93	10:28

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/06/25 21:41

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	6.67	10.19	3.52	49.85	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K2004984-006	0.1907 ppm	0.0027 ppm	1.4300%	2020/06/25 21:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.1926	1.9264	10.44	13.96	3.51	49.79	10:26
2	TOC	0.1888	1.8879	10.42	13.98	3.57	49.94	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	11	TOC	K2004984-007	0.9631 ppm	0.0021 ppm	0.2200%	2020/06/25 22:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.9616	9.6158	15.84	19.48	3.65	49.87	10:28
2	TOC	0.9646	9.6458	15.86	19.55	3.70	49.84	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	12	TOC	K2004984-008	0.4122 ppm	0.0103 ppm	2.4900%	2020/06/25 22:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4194	4.1945	12.03	15.85	3.82	49.79	10:28
2	TOC	0.4049	4.0491	11.93	15.64	3.71	49.78	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	13	TOC	K2005020-001	3.9743 ppm	0.0053 ppm	0.1300%	2020/06/25 23:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.9781	39.7805	37.00	40.60	3.60	49.78	10:30
2	TOC	3.9705	39.7050	36.94	40.62	3.67	49.77	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	14	TOC	K2005020-003	2.8653 ppm	0.0288 ppm	1.0100%	2020/06/25 23:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.8857	28.8565	29.33	32.82	3.49	49.79	10:26
2	TOC	2.8449	28.4488	29.05	32.63	3.58	49.79	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	15	TOC	K2005185-002	0.4475 ppm	0.0095 ppm	2.1200%	2020/06/26 00:17

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4542	4.5423	12.28	15.97	3.70	49.79	10:29
2	TOC	0.4408	4.4083	12.18	15.68	3.50	49.81	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	16	TOC	K2005296-001	2.0951 ppm	0.0493 ppm	2.3500%	2020/06/26 00:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1300	21.2997	24.03	27.63	3.60	49.83	10:26
2	TOC	2.0603	20.6026	23.54	27.20	3.66	49.83	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	17	TOC	K2005260-001	2.2722 ppm	0.0678 ppm	2.9900%	2020/06/26 01:13

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3201	23.2014	25.37	29.04	3.67	49.85	10:29

2	TOC	2.2242	22.2420	24.69	28.35	3.66	49.87	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	18	TOC	K2005295-001	3.1720 ppm	0.1152 ppm	3.6300%	2020/06/26 01:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.2534	32.5344	31.91	35.57	3.65	49.87	10:26
2	TOC	3.0905	30.9050	30.77	34.40	3.63	49.89	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	19	TOC	K2005295-002	50.2197 ppm	0.3945 ppm	0.7900%	2020/06/26 02:09

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	50.4987	504.9866	363.33	366.83	3.50	49.91	10:29
2	TOC	49.9407	499.4070	359.42	363.12	3.71	49.91	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.7335 ppm (PASS)	0.0000 ppm	0%	2020/06/26 02:37

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.7335	257.3349	190.41	194.00	3.60	49.92	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/06/26 02:52

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.30	12.00	3.70	49.93	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2020/06/26 03:06

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.33	11.06	3.74	49.94	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	21.0675 ppm (PASS)	0.0000 ppm	0%	2020/06/26 03:21

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	21.0675	210.6751	157.68	161.41	3.74	49.94	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample — From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	21	TOC	IB	0.0000 ppm	0.0000 ppm	0.0000%	2020/06/26 03:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	6.71	10.50	3.79	49.96	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time

◆ 22	TOC	K2005295-003	67.8166 ppm	1.4457 ppm	2.1300%	2020/06/26 03:50

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	68.8388	688.3882	491.98	495.74	3.76	49.98	10:28
2	TOC	66.7943	667.9429	477.64	481.82	4.18	49.97	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	23	TOC	K2005295-004	7.2813 ppm	1.5161 ppm	20.8200%	2020/06/26 04:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.3534	83.5336	67.69	71.69	4.00	50.00	10:29
2	TOC	6.2093	62.0933	52.65	56.38	3.73	50.00	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	24	TOC	K2005174-001 DOC	61.1599 ppm	1.2078 ppm	1.9700%	2020/06/26 04:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	60.3059	603.0589	432.13	435.72	3.59	50.00	10:27
2	TOC	62.0140	620.1399	444.11	448.93	4.82	50.02	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	25	TOC	K2005020-002 DOC	14.5105 ppm	7.9724 ppm	54.9400%	2020/06/26 05:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	20.1478	201.4780	150.42	154.82	4.39	50.00	10:29
2	TOC	8.8731	88.7311	71.33	75.08	3.75	50.02	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	26	TOC	K2005020-004 DOC	4.4208 ppm	0.8373 ppm	18.9400%	2020/06/26 05:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.0129	50.1286	44.26	47.98	3.72	50.01	10:30
2	TOC	3.8288	38.2880	35.95	39.70	3.75	50.01	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	27	TOC	K2005111-002 DOC	2.1483 ppm	0.2378 ppm	11.0700%	2020/06/26 06:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3164	23.1643	25.34	28.97	3.63	50.03	10:31
2	TOC	1.9801	19.8014	22.98	26.61	3.63	50.02	10:23

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	28	TOC	K2005111-002D DOC	2.2685 ppm	0.1670 ppm	7.3600%	2020/06/26 06:38

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1504	21.5035	24.17	27.84	3.66	50.00	10:27
2	TOC	2.3866	23.8657	25.83	29.51	3.67	49.98	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.6638 ppm (PASS)	0.0000 ppm	0%	2020/06/26 07:07

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.6638	246.6375	182.90	186.48	3.58	49.99	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB — From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/06/26 07:21

Pos	Base Analysis	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

	Type									
D	TOC	0 ppm	1	0.0000	0.0000	8.34	12.02	3.69	49.98	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	29	TOC	K2005111-002MS DOC	28.4988 ppm	0.2181 ppm	0.7700%	2020/06/26 07:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	28.3446	283.4459	207.92	211.83	3.91	49.99	10:29
2	TOC	28.6531	286.5308	210.09	213.86	3.78	49.96	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	30	TOC	K2005211-001 10X DOC	5.1054 ppm	0.2121 ppm	4.1500%	2020/06/26 08:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.2553	52.5535	45.96	49.55	3.59	49.95	10:27
2	TOC	4.9554	49.5541	43.85	47.49	3.64	49.94	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	FILTER BLANK	0.0985 ppm	0.1392 ppm	141.4200%	2020/06/26 08:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.96	12.59	3.63	49.96	10:28
2	TOC	0.1969	1.9692	10.47	13.90	3.43	49.95	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	IB	0.0000 ppm	0.0000 ppm	0.0000%	2020/06/26 09:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.18	10.77	3.59	49.93	10:29
2	TOC	0.0000	0.0000	6.76	10.33	3.57	49.90	10:31

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.0070 ppm (PASS)	0.0000 ppm	0%	2020/06/26 09:29

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.0070	250.0703	185.31	188.55	3.24	49.86	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 3

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/06/26 09:43

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	7.25	10.86	3.61	49.81	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 3

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC		0.0000 ppm	0.0000 ppm	0.0000%	2020/06/26 09:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	7.33	10.70	3.37	49.76	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 9.0906 (IC) (v1400)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Meta Data Used in this Report

Blanks

Version	Reagent (Abs)	Acid (Abs)	DI IC (Abs)	DI TC (Abs)	DI TOC (Abs)	Save Time	Operator
v1399	1.3330	1.3500	0.0000	0.0000	0.0000	2020/06/24 15:24	Fusion1 (Fusion1)
v1400	0.9390	0.7310	0.0000	0.0000	0.0000	2020/06/25 16:42	Fusion1 (Fusion1)

Calibrations

Name: CAS_salt_010711 (TOC)

Version: v38
Ver Creation: 2020/06/13 16:40
Comment:
Operator: Fusion1 (Fusion1)
Basic Analysis Type: TOC
Calibration curve formula: TOC: y = 7.015x + 9.892
r^2 value: TOC: r^2 = 0.99974

Basic Analysis Type: TOC

Sample ID	Y Raw Value	X Expected	Message	End Time
DI Water	9.5750	0.0000		2020/06/13 15:13
0.500 ppm	12.9010	0.5000		2020/06/13 15:28
1.0 ppm	15.6320	1.0000		2020/06/13 15:42
5.0 ppm	43.2510	5.0000		2020/06/13 15:56
10 ppm	82.4040	10.0000		2020/06/13 16:11
25 ppm	188.6880	25.0000		2020/06/13 16:25
50 ppm	358.6500	50.0000		2020/06/13 16:39

Methods

Name: CAS_salt_010711 (TOC)

Version: v4
Ver Creation: 2019/02/21 17:57
Comment:
Operator: Fusion1 (Fusion1)

Parameter	Value	Advanced Parameter	Value
SampleVolume	10.0 mL	NeedleRinseVolume	5.0 ml
Dilution	1:10	VialPrimeVolume	2.0 ml
AcidVolume	0.5 ml	ICSamplePrimeVolume	2.0 ml
ReagentVolume	2.0 ml	ICSpargeRinseVolume	12.0 ml
UVReactorPrerinse	Off	BaselineStabilizeTime	0.70 min
UVReactorPrerinseVolume	5.0	DetectorPressureFlow	150 ml/min
NumberOfUVReactorPrerinses	1	SyringeSpeedWaste	10
ICSpargeTime	1.00 mins	SyringeSpeedAcid	7
DetectorSweepFlow	500 ml/min	SyringeSpeedReagent	7

PreSpargeTime	2.00 mins	SyringeSpeedDIWater	7
SystemFlow	500 ml/min	NDIRPressurization	60 psig
		SyringeSpeedSampleDispense	5
		SyringeSpeedSampleAspirate	4
		SyringeSpeedUVDispense	5
		SyringeSpeedUVAspirate	5
		SyringeSpeedICDispense	5
		SyringeSpeedICAspirate	5
		NDIRPressureStabilize	1.75 min
		SampleMixing	Off
		SampleMixingCycles	1
		SampleMixingVolume	10.0
		LowLevelFilterNDIR	Off

Acceptance / Approval

Electronic Signatures

Report Version	User Name	Acceptance	Reason	Date

Report History

Report History

Report Version	User Name	System Reason	User Reason	Date
1	Fusion1 (Fusion1)	Schedule completed	Schedule completed	2020/06/26 10:13

Work Request # Original (5353) 5357 5466 5295 5204 | 5480 5020 5459

Tier: IV II I IV I II II II

5174 5453 5455
II II II

Date Analyzed: 7/2/20

Analyst: MK

Run # 685526 / 686066

Analysis: TOC / DOC

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS:
686066 - LCS is low 82%
5480-1 Dup 11% < 5x MRL

Final Approved by: _____ Date: 7/10/20

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** MKANALY **Analysis Lot:** 685526 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2005204-002	Carbon, Total Organic	N/A		Water	2.01 mg/L	10 mL	2.01 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	I
K2005295-002	Carbon, Total Organic	N/A		Ground Water	69.82 mg/L	10 mL	69.8 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	IV
K2005295-003	Carbon, Total Organic	N/A		Ground Water	207.90 mg/L	10 mL	208 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	IV
K2005353-001	Carbon, Total Organic	N/A		Ground Water	1.75 mg/L	10 mL	1.75 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	IV
K2005353-002	Carbon, Total Organic	N/A		Ground Water	13.87 mg/L	10 mL	13.9 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	IV
K2005353-003	Carbon, Total Organic	N/A		Ground Water	3.00 mg/L	10 mL	3.00 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	IV
K2005353-004	Carbon, Total Organic	N/A		Ground Water	10.18 mg/L	10 mL	10.2 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	IV
K2005353-005	Carbon, Total Organic	N/A		Ground Water	84.93 mg/L	10 mL	849 mg/L	10	0.7	5.0			7/2/20 10:33:00	N	IV
K2005357-001	Carbon, Total Organic	N/A		Water	2.03 mg/L	10 mL	2.03 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	II
K2005466-001	Carbon, Total Organic	N/A		Water	3.82 mg/L	10 mL	3.82 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	I
K2005466-002	Carbon, Total Organic	N/A		Water	2.78 mg/L	10 mL	2.78 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	I
K2005466-003	Carbon, Total Organic	N/A		Water	2.75 mg/L	10 mL	2.75 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	I
K2005466-004	Carbon, Total Organic	N/A		Water	2.80 mg/L	10 mL	2.80 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	I
K2005466-005	Carbon, Total Organic	N/A		Water	2.62 mg/L	10 mL	2.62 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	I
KQ2009226-02	Carbon, Total Organic	MS	K2005357-001	Water	29.02 mg/L	10 mL	29.0 mg/L	1	0.07	0.50	108		7/2/20 10:33:00	N	II
KQ2009226-03	Carbon, Total Organic	DUP	K2005357-001	Water	1.95 mg/L	10 mL	1.95 mg/L	1	0.07	0.50		4	7/2/20 10:33:00	N	II
KQ2009226-04	Carbon, Total Organic	MB		Ground Water	0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:33:00	N	IV
KQ2009226-05	Carbon, Total Organic	LCS		Ground Water	20.70 mg/L	10 mL	82.8 mg/L	4	0.3	2.0	95		7/2/20 10:33:00	N	IV
KQ2009226-06	Carbon, Total Organic	CCV		Water	26.14 mg/L	10 mL	26.1 mg/L	1					7/2/20 10:33:00	N	I
KQ2009226-07	Carbon, Total Organic	CCV		Water	25.14 mg/L	10 mL	25.1 mg/L	1					7/2/20 10:33:00	N	I
KQ2009226-08	Carbon, Total Organic	CCV		Water	25.28 mg/L	10 mL	25.3 mg/L	1					7/2/20 10:33:00	N	I
KQ2009226-09	Carbon, Total Organic	CCV		Water	24.90 mg/L	10 mL	24.9 mg/L	1					7/2/20 10:33:00	N	I
KQ2009226-10	Carbon, Total Organic	CCB		Water	0.45 mg/L	10 mL	0.45 mg/L J	1	0.07	0.50			7/2/20 10:33:00	N	I
KQ2009226-11	Carbon, Total Organic	CCB		Water	-0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:33:00	N	I
KQ2009226-12	Carbon, Total Organic	CCB		Water	-0.13 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:33:00	N	I
KQ2009226-13	Carbon, Total Organic	CCB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:33:00	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** MKANALY **Analysis Lot:** 686666 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2005020-002	Carbon, Dissolved Organic (DOC)	N/A		Water	5.25 mg/L	10 mL	5.25 mg/L	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005020-004	Carbon, Dissolved Organic (DOC)	N/A		Water	2.56 mg/L	10 mL	2.56 mg/L	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005174-001	Carbon, Dissolved Organic (DOC)	N/A		Water	8.90 mg/L	10 mL	890 mg/L	100	7	50			7/2/20 10:30:00	N	II
K2005453-001	Carbon, Dissolved Organic (DOC)	N/A		Water	4901.30 mg/L	10 mL	490000 mg/L	100	7	50			7/2/20 10:30:00	N	II
K2005455-001	Carbon, Dissolved Organic (DOC)	N/A		Water	705.71 mg/L	10 mL	70600 mg/L	100	7	50			7/2/20 10:30:00	N	II
K2005459-001	Carbon, Dissolved Organic (DOC)	N/A		Effluent	0.98 mg/L	10 mL	0.98 mg/L	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005459-002	Carbon, Dissolved Organic (DOC)	N/A		Water	0.98 mg/L	10 mL	0.98 mg/L	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005480-001	Carbon, Total Organic	N/A		Water	0.48 mg/L	10 mL	0.48 mg/L J	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005480-002	Carbon, Total Organic	N/A		Water	0.03 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005480-003	Carbon, Total Organic	N/A		Water	0.08 mg/L	10 mL	0.08 mg/L J	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005480-004	Carbon, Total Organic	N/A		Water	0.04 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005480-005	Carbon, Total Organic	N/A		Water	-0.06 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005480-006	Carbon, Total Organic	N/A		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005480-007	Carbon, Total Organic	N/A		Water	0.37 mg/L	10 mL	0.37 mg/L J	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005480-008	Carbon, Total Organic	N/A		Water	-0.28 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-01	Carbon, Dissolved Organic (DOC)	DUP	K2005020-002	Water	5.39 mg/L	10 mL	5.39 mg/L	1	0.07	0.50		3	7/2/20 10:30:00	N	II
KQ2009240-02	Carbon, Dissolved Organic (DOC)	MS	K2005020-002	Water	31.99 mg/L	10 mL	32.0 mg/L	1	0.07	0.50	107		7/2/20 10:30:00	N	II
KQ2009240-03	Carbon, Total Organic	DUP	K2005480-001	Water	0.54 mg/L	10 mL	0.54 mg/L	1	0.07	0.50		11*	7/2/20 10:30:00	N	II
KQ2009240-04	Carbon, Total Organic	MS	K2005480-001	Water	28.68 mg/L	10 mL	28.7 mg/L	1	0.07	0.50	113		7/2/20 10:30:00	N	II
KQ2009240-05	Carbon, Dissolved Organic (DOC)	CCV		Water	25.28 mg/L	10 mL	25.3 mg/L	1					7/2/20 10:30:00	N	II
KQ2009240-05	Carbon, Total Organic	CCV		Water	25.28 mg/L	10 mL	25.3 mg/L	1					7/2/20 10:30:00	N	II
KQ2009240-06	Carbon, Dissolved Organic (DOC)	CCV		Water	24.90 mg/L	10 mL	24.9 mg/L	1					7/2/20 10:30:00	N	II
KQ2009240-06	Carbon, Total Organic	CCV		Water	24.90 mg/L	10 mL	24.9 mg/L	1					7/2/20 10:30:00	N	II
KQ2009240-07	Carbon, Dissolved Organic (DOC)	CCV		Water	24.90 mg/L	10 mL	24.9 mg/L	1					7/2/20 10:30:00	N	II
KQ2009240-07	Carbon, Total Organic	CCV		Water	24.90 mg/L	10 mL	24.9 mg/L	1					7/2/20 10:30:00	N	II
KQ2009240-08	Carbon, Dissolved Organic (DOC)	CCV		Water	24.53 mg/L	10 mL	24.5 mg/L	1					7/2/20 10:30:00	N	II
KQ2009240-08	Carbon, Total Organic	CCV		Water	24.53 mg/L	10 mL	24.5 mg/L	1					7/2/20 10:30:00	N	II
KQ2009240-09	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.13 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-09	Carbon, Total Organic	CCB		Water	-0.13 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** MKANALY **Analysis Lot:** 686666 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ2009240-10	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-10	Carbon, Total Organic	CCB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-11	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-11	Carbon, Total Organic	CCB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-12	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-12	Carbon, Total Organic	CCB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-13	Carbon, Dissolved Organic (DOC)	MB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-13	Carbon, Total Organic	MB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-14	Carbon, Dissolved Organic (DOC)	LCS		Water	17.97 mg/L	10 mL	18.0 mg/L	1	0.07	0.50	82*		7/2/20 10:30:00	N	II
KQ2009240-14	Carbon, Total Organic	LCS		Water	17.97 mg/L	10 mL	18.0 mg/L	1	0.07	0.50	82*		7/2/20 10:30:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	CCV	1	26.484	0.3393	26.1444	26.14435	26.1	7/2/2020
3	CCB	1	0.786	0.3393	0.4470	0.44695	<0.5	7/2/2020
4	MB1	1	0.354	0.3393	0.0150	0.01495	<0.5	7/2/2020
5	LCS	1	21.061	0.3393	20.7215	20.72145	20.7	7/2/2020
6	5353-1	1	2.091	0.3393	1.7522	1.75215	1.75	7/2/2020
7	5353-2	1	14.207	0.3393	13.8678	13.86775	13.9	7/2/2020
8	5353-3	1	3.339	0.3393	3.0001	3.00005	3	7/2/2020
9	5353-4	1	10.524	0.3393	10.1847	10.18465	10.18	7/2/2020
10	5353-5	10	8.832	0.3393	8.4932	84.9315	84.93	7/2/2020
11	5357-1	1	2.367	0.3393	2.0278	2.02775	2.0	7/2/2020
12	5357-1D	1	2.291	0.3393	1.9514	1.95135	1.95	7/2/2020
13	ccv	1	25.475	0.3393	25.1361	25.13605	25.14	7/2/2020
14	ccb	1	0.324	0.3393	-0.0150	-0.01495	<0.5	7/2/2020
15	5357-1MS	1	29.360	0.3393	29.0208	29.02075	29.0	7/2/2020
16	5466-1	1	4.155	0.3393	3.8160	3.81595	3.8	7/2/2020
17	5466-2	1	3.121	0.3393	2.7822	2.78215	2.78	7/2/2020
18	5466-3	1	3.092	0.3393	2.7527	2.75265	2.8	7/2/2020
19	5466-4	1	3.141	0.3393	2.8021	2.80205	2.8	7/2/2020
20	5466-5	1	2.963	0.3393	2.6233	2.62325	2.62	7/2/2020
21	5527-1	1	2.354	0.3393	2.0148	2.01475	2.01	7/2/2020
22	LCS2	1	18.306	0.3393	17.9672	17.96715	18.0	7/2/2020
23	RB	1	0.000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
24	IB	1	0.000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
25	CCV	1	25.621	0.3393	25.2818	25.28175	25.28	7/2/2020

ICAL Date 06/13/20 ICAL ID#:11-GEN-05-51A

LCS =21.9 ppm Lot (REF# 19-GEN-08-24F)

CCV = 25.0 ppm (Ref.#13-GEN-8-23F)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 13-GEN-08-15B)

date time

Analyzed By:	Date Analyzed
Reviewed By:	Date Reviewed 7/10/20

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	CCB	1	0.2114	0.3393	-0.1279	-0.12785	<0.5	7/2/2020
27	MB	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
28	LCS	1	17.4088	0.3393	17.0696	17.06955	17.1	7/2/2020
29	ib	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
30	ib	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
31	5295-2	10	7.3216	0.3393	6.9824	69.8235	69.8	7/2/2020
32	5295-3	20	10.7357	0.3393	10.3965	207.929	207.9	7/2/2020
33	5204-2	1	2.3509	0.3393	2.0117	2.01165	2.0	7/2/2020
34	5480-1	1	0.8224	0.3393	0.4832	0.48315	<0.5	7/2/2020
35	5480-1D	1	0.8790	0.3393	0.5398	0.53975	0.5	7/2/2020
36	5480-1MS	1	29.0198	0.3393	28.6806	28.68055	28.7	7/2/2020
37	CCV	1	25.2427	0.3393	24.9035	24.90345	24.9	7/2/2020
38	CCB	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
39	5480-2	1	0.3701	0.3393	0.0309	0.03085	<0.5	7/2/2020
40	5480-3	1	0.4217	0.3393	0.0825	0.08245	<0.5	7/2/2020
41	5480-4	1	0.3797	0.3393	0.0405	0.04045	<0.5	7/2/2020
42	5480-5	1	0.2763	0.3393	-0.0630	-0.063	<0.5	7/2/2020
43	5480-6	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
44	5480-7	1	0.7055	0.3393	0.3663	0.36625	<0.5	7/2/2020
45	5480-8	1	0.0620	0.3393	-0.2773	-0.27725	<0.5	7/2/2020
46	5020-2	1	5.5916	0.3393	5.2524	5.25235	5.3	7/2/2020
47	5020-2D	1	5.7299	0.3393	5.3907	5.39065	5.4	7/2/2020
48	5020-2MS	1	32.3279	0.3393	31.9887	31.98865	32.0	7/2/2020
49	CCV	1	25.2354	0.3393	24.8962	24.89615	24.9	7/2/2020
50	CCB	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020

Analyzed By:	Date Analyzed
Reviewed By:	Date Reviewed 7/10/20

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	MB	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
52	LCS	1	13.9973	0.3393	13.6581	13.65805	13.7	7/2/2020
53	5020-4	1	2.9015	0.3393	2.5623	2.56225	2.6	7/2/2020
54	5459-1	1	1.3180	0.3393	0.9788	0.97875	1.0	7/2/2020
55	5459-2	1	1.3232	0.3393	0.9840	0.98395	1.0	7/2/2020
56	5174-1	100	8.9021	0.3393	8.5629	856.285	856.3	7/2/2020
57	5453-1	100	49.3522	0.3393	49.0130	4901.295	4901.3	7/2/2020
58	5455-1	100	7.3963	0.3393	7.0571	705.705	705.7	7/2/2020
59	RB	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
60	RB	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
61	CCV	1	24.8697	0.3393	24.5305	24.53045	24.5	7/2/2020
62	CCB	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
63		1		0.3393	-0.3393	-0.33925	<0.5	7/2/2020
64		1		0.3393	-0.3393	-0.33925	<0.5	7/2/2020
65		1		0.0000	0.0000	0	<0.5	7/2/2020
66		1		0.0000	0.0000	0	<0.5	7/2/2020
67		1		0.0000	0.0000	0	<0.5	7/2/2020
68		1		0.0000	0.0000	0	<0.5	7/2/2020
69		1		0.0000	0.0000	0	<0.5	7/2/2020
70		1		0.0000	0.0000	0	<0.5	7/2/2020
71		1		0.0000	0.0000	0	<0.5	7/2/2020
72		1		0.0000	0.0000	0	<0.5	7/2/2020
73		1		0.0000	0.0000	0	<0.5	7/2/2020
74		1		0.0000	0.0000	0	<0.5	7/2/2020
75		1		0.0000	0.0000	0	<0.5	7/2/2020

Analyzed By:	Date Analyzed
Reviewed By:	Date Reviewed 7/10/20

ALS ENVIRONMENTAL

0 Carbon
0 Carbon

0.736	0.736			OBSERVATIONS	5	0.7356
0.786				STD Deviation	0.26042	ABOVE
0.354	0.354	0.354	0.354	AVERAGE	0.48234	0.3542
0.324	0.324	0.324	0.324	UCL	0.74276	0.3243
0.211				LCL	0.22192	BELOW
						BELOW
						BELOW
				OBSERVATIONS	3	BELOW
				STD Deviation	0.22932	BELOW
				AVERAGE	0.47137	BELOW
				UCL	0.70069	BELOW
				LCL	0.24205	BELOW
						BELOW
						BELOW
				OBSERVATIONS	2	BELOW
				STD Deviation	0.02114	BELOW
				AVERAGE	0.33925	BELOW
				UCL	0.36039	BELOW
				LCL	0.31811	BELOW
						BELOW
						BELOW
				OBSERVATIONS	2	BELOW
				STD Deviation	0.02990	BELOW
				AVERAGE	0.33925	BELOW
						BELOW
						BELOW
						BELOW
						BELOW
						BELOW
						BELOW

685526

Schedule: 070220

Version: 7
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2020/07/02 17:58 - Thursday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K2005353-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K2005353-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K2005353-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
6	Sample	K2005353-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K2005353-005 10X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K2005357-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K2005357-001D	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K2005357-001MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K2005466-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K2005466-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K2005466-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K2005466-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K2005466-005	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K2005527-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
18	Sample	IB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	~~K2005375-009~~ IB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	~~K2005375-010~~ IB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K2005295-002 10X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K2005295-003 20X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K2005204-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K2005480-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K2005480-001DUP	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K2005480-001MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K2005480-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K2005480-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K2005480-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K2005480-005	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K2005480-006	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K2005480-007	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K2005480-008	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K2005020-002 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K2005020-002 DUP	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K2005020-002 MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

Schedule: 070220

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K2005020-004 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K2005459-001 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K2005459-002 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K2005174-001 100X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K2005453-001 100X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K2005453-001 100X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
53	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
54	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
57	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
61	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
62	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
63	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
64	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
65	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
66	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
67	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
68	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
69	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
70	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
71	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
72	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
73	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
74	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
75	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - 070220
Thursday, July 02, 2020 10:33 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2020/07/06 08:18 - Monday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	070220	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v4) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7)		
Comment:			

Report Results

Sample Type: Clean — From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2020/07/02 10:33

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	16.57	20.54	3.97	49.66	05:25
2	TC Clean	16.80	20.49	3.70	49.79	07:19
3	TC Clean	2.80	6.54	3.74	49.81	07:01
4	TC Clean	1.41	5.23	3.81	49.80	07:01

Sample Type: Clean — From Schedule Version 5

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2020/07/02 11:05

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	4.14	7.83	3.69	49.68	05:24
2	TC Clean	9.03	12.60	3.57	49.79	07:18
3	TC Clean	2.16	5.86	3.70	49.77	07:00

4	TC Clean	1.88	5.63	3.75	49.78	07:02

Sample Type: Clean

From Schedule Version 5

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/07/02 11:36

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	2.49	6.22	3.73	49.65	05:25
2	TC Clean	7.09	10.67	3.58	49.76	07:16
3	TC Clean	2.36	5.90	3.55	49.74	07:04
4	TC Clean	2.07	5.65	3.58	49.75	07:03

Sample Type: Blank (Creating v1404)

From Schedule Version 5

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2020/07/02 12:08

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.90	5.50	3.59	49.76	05:19
2	TC Clean	7.90	11.59	3.69	49.75	07:16
3	TC Clean	2.67	6.30	3.62	49.73	07:00
4	TC Clean	2.59	6.12	3.53	49.74	07:01
5	Reagent Blank	18.31	22.13	3.82	49.72	08:11
6	Acid Blank	2.84	6.38	3.54	49.87	08:03

Sample Type: Sample

From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.7356 ppm	0.0000 ppm	0.0000%	2020/07/02 12:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7356	7.3563	17.37	20.98	3.61	49.82	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.4836 ppm (PASS)	0.0000 ppm	0%	2020/07/02 13:12

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	26.4836	264.8361	195.67	199.41	3.74	49.80	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.7862 ppm (PASS)	0.0000 ppm	0%	2020/07/02 13:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.7862	7.8618	15.41	19.00	3.60	49.86	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample

From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	1	TOC	MB1	0.3542 ppm	0.0000 ppm	0.0000%	2020/07/02 13:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3542	3.5415	14.69	18.43	3.74	49.84	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS

From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	21.0607 ppm (PASS)	0.0000 ppm	0%	2020/07/02 13:56

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	21.0607	210.6067	157.63	161.14	3.51	49.82	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.7298 ppm	0.0000 ppm	0.0000%	2020/07/02 14:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7298	7.2979	17.33	21.04	3.71	49.81	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K2005353-001	2.0914 ppm	0.1019 ppm	4.8700%	2020/07/02 14:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1635	21.6347	27.38	30.98	3.60	49.81	10:25
2	TOC	2.0193	20.1934	26.37	30.19	3.81	49.79	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K2005353-002	14.2070 ppm	0.0275 ppm	0.1900%	2020/07/02 14:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	14.2265	142.2649	112.00	115.76	3.76	49.89	10:27
2	TOC	14.1876	141.8757	111.73	115.39	3.66	50.03	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	K2005353-003	3.3393 ppm	0.2545 ppm	7.6200%	2020/07/02 15:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.5193	35.1931	36.89	40.69	3.80	50.06	10:28
2	TOC	3.1594	31.5936	34.37	38.20	3.83	50.22	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K2005353-004	10.5239 ppm	0.0292 ppm	0.2800%	2020/07/02 15:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.5032	105.0323	85.88	89.65	3.76	50.32	10:29
2	TOC	10.5446	105.4457	86.18	89.88	3.71	50.42	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K2005353-005 10X	8.8324 ppm	0.3003 ppm	3.4000%	2020/07/02 16:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.0447	90.4475	75.65	79.17	3.51	50.50	10:30
2	TOC	8.6201	86.2008	72.68	76.38	3.70	50.57	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K2005357-001	2.3670 ppm	0.0746 ppm	3.1500%	2020/07/02 16:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4198	24.1978	29.18	32.71	3.53	50.63	10:29
2	TOC	2.3143	23.1429	28.44	32.20	3.76	50.65	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K2005357-001D	2.2906 ppm	0.0053 ppm	0.2300%	2020/07/02 17:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2943	22.9433	28.30	31.95	3.65	50.69	10:29
2	TOC	2.2868	22.8678	28.25	32.05	3.80	50.61	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.4753 ppm (PASS)	0.0000 ppm	0%	2020/07/02 17:42

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.4753	254.7532	188.60	192.34	3.74	50.59	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.3243 ppm (PASS)	0.0000 ppm	0%	2020/07/02 17:57

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.3243	3.2431	12.17	16.00	3.83	50.52	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K2005357-001MS	29.3600 ppm	0.3828 ppm	1.3000%	2020/07/02 18:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.0893	290.8929	216.26	219.80	3.54	50.44	10:32
2	TOC	29.6307	296.3072	220.06	223.87	3.81	50.35	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	11	TOC	K2005466-001	4.1552 ppm	0.0957 ppm	2.3000%	2020/07/02 18:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.2228	42.2282	41.83	45.64	3.81	50.25	10:29
2	TOC	4.0875	40.8753	40.88	44.62	3.74	50.19	10:28

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	12	TOC	K2005466-002	3.1214 ppm	0.0203 ppm	0.6500%	2020/07/02 19:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.1357	31.3569	34.20	37.88	3.68	50.08	10:26
2	TOC	3.1070	31.0704	34.00	37.63	3.63	50.02	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	13	TOC	K2005466-003	3.0919 ppm	0.0094 ppm	0.3000%	2020/07/02 19:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0852	30.8523	33.85	37.57	3.72	49.98	10:26
2	TOC	3.0985	30.9848	33.94	37.65	3.71	49.94	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	14	TOC	K2005466-004	3.1413 ppm	0.0101 ppm	0.3200%	2020/07/02 20:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.1484	31.4838	34.29	38.04	3.75	49.92	10:29
2	TOC	3.1341	31.3412	34.19	37.95	3.76	49.92	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	15	TOC	K2005466-005	2.9625 ppm	0.0554 ppm	1.8700%	2020/07/02 20:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0017	30.0169	33.26	37.04	3.78	49.96	10:28
2	TOC	2.9233	29.2328	32.71	36.58	3.86	49.96	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	16	TOC	K2005527-001	2.3540 ppm	0.0146 ppm	0.6200%	2020/07/02 21:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3643	23.6433	28.79	32.53	3.74	49.97	10:30
2	TOC	2.3437	23.4366	28.65	32.46	3.81	49.99	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	18.3064 ppm (PASS)	0.0000 ppm	0%	2020/07/02 21:28

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	18.3064	183.0636	138.31	142.18	3.88	49.99	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	IB	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/02 21:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	11.68	15.63	3.95	50.01	10:29
2	TOC	0.0000	0.0000	11.56	15.56	4.00	50.02	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/02 22:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	11.36	15.34	3.98	50.04	10:27
2	TOC	0.0000	0.0000	11.30	15.20	3.89	50.07	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.6210 ppm (PASS)	0.0000 ppm	0%	2020/07/02 22:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.6210	256.2101	189.62	193.44	3.82	50.08	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.2114 ppm (PASS)	0.0000 ppm	0%	2020/07/02 22:53

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.2114	2.1140	11.38	15.30	3.92	50.09	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/02 23:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	10.75	14.56	3.81	50.10	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	17.4088 ppm (PASS)	0.0000 ppm	0%	2020/07/02 23:23

Pos	Base Analysis	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

	Type									
C	TOC	25.0 ppm	1	17.4088	174.0883	132.01	135.94	3.92	50.11	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	21	TOC	K2005375-009	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/02 23:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	10.77	14.54	3.78	50.15	10:29
2	TOC	0.0000	0.0000	10.03	13.80	3.77	50.15	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	22	TOC	K2005375-010	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/03 00:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	10.17	13.91	3.74	50.17	10:27
2	TOC	0.0000	0.0000	9.80	13.74	3.95	50.18	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	23	TOC	K2005295-002 10X	7.3216 ppm	0.0162 ppm	0.2200%	2020/07/03 00:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.3331	73.3309	63.65	67.59	3.94	50.18	10:31
2	TOC	7.3101	73.1014	63.49	67.64	4.16	50.21	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	24	TOC	K2005295-003 20X	10.7357 ppm	0.1529 ppm	1.4200%	2020/07/03 01:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.6275	106.2754	86.76	90.72	3.96	50.20	10:30
2	TOC	10.8438	108.4379	88.27	92.20	3.92	50.22	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	25	TOC	K2005204-002	2.3509 ppm	0.0088 ppm	0.3700%	2020/07/03 01:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3571	23.5706	28.74	32.75	4.01	50.21	10:30
2	TOC	2.3447	23.4465	28.65	32.47	3.82	50.22	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	26	TOC	K2005480-001	0.8224 ppm	0.0062 ppm	0.7600%	2020/07/03 01:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8269	8.2687	18.01	22.03	4.02	50.23	10:27
2	TOC	0.8180	8.1803	17.94	21.78	3.83	50.22	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	27	TOC	K2005480-001DUP	0.8790 ppm	0.0249 ppm	2.8300%	2020/07/03 02:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8614	8.6137	18.25	22.22	3.97	50.22	10:26
2	TOC	0.8966	8.9658	18.50	22.45	3.96	50.25	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	28	TOC	K2005480-001MS	29.0198 ppm	0.0027 ppm	0.0100%	2020/07/03 02:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.0179	290.1787	215.76	219.59	3.83	50.24	10:25
2	TOC	29.0217	290.2172	215.79	219.74	3.95	50.23	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.2427 ppm (PASS)	0.0000 ppm	0%	2020/07/03 03:22

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.2427	252.4267	186.96	190.97	4.00	50.23	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/07/03 03:37

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	9.86	13.92	4.06	50.23	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	29	TOC	K2005480-002	0.3701 ppm	0.0192 ppm	5.1700%	2020/07/03 03:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3837	3.8366	14.90	18.90	4.00	50.25	10:28
2	TOC	0.3566	3.5658	14.71	18.62	3.92	50.24	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	30	TOC	K2005480-003	0.4217 ppm	0.0010 ppm	0.2400%	2020/07/03 04:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4224	4.2244	15.17	19.10	3.93	50.23	10:29
2	TOC	0.4210	4.2101	15.16	19.28	4.12	50.23	10:32

Dilution	Blank Contribution	Method	Calibration

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	31	TOC	K2005480-004	0.3797 ppm	0.0185 ppm	4.8900%	2020/07/03 04:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3928	3.9279	14.96	18.88	3.92	50.25	10:27
2	TOC	0.3666	3.6656	14.78	18.73	3.95	50.24	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	32	TOC	K2005480-005	0.2762 ppm	0.0380 ppm	13.7600%	2020/07/03 05:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2494	2.4938	13.96	17.95	4.00	50.24	10:27
2	TOC	0.3031	3.0312	14.33	17.93	3.60	50.24	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	33	TOC	K2005480-006	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/03 05:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	12.17	15.98	3.82	50.24	10:32
2	TOC	0.0000	0.0000	11.90	15.65	3.75	50.25	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	34	TOC	K2005480-007	0.7055 ppm	0.0326 ppm	4.6200%	2020/07/03 06:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7285	7.2850	17.32	21.01	3.69	50.24	10:29
2	TOC	0.6825	6.8246	16.99	20.90	3.90	50.23	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	35	TOC	K2005480-008	0.0620 ppm	0.0489 ppm	78.8700%	2020/07/03 06:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0966	0.9656	12.88	16.61	3.72	50.24	10:30
2	TOC	0.0274	0.2742	12.40	16.02	3.62	50.23	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K2005020-002 DOC	5.5916 ppm	0.0571 ppm	1.0200%	2020/07/03 07:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.5513	55.5129	51.15	54.95	3.80	50.22	10:30
2	TOC	5.6320	56.3198	51.71	55.35	3.64	50.22	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K2005020-002 DUP	5.7299 ppm	0.0306 ppm	0.5300%	2020/07/03 07:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.7516	57.5158	52.55	56.13	3.58	50.19	10:30
2	TOC	5.7082	57.0824	52.25	55.99	3.74	50.19	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	K2005020-002 MS	32.3279 ppm	0.2808 ppm	0.8700%	2020/07/03 08:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	32.5264	325.2644	240.37	244.27	3.90	50.18	10:26
2	TOC	32.1293	321.2928	237.59	241.48	3.90	50.17	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.2354 ppm (PASS)	0.0000 ppm	0%	2020/07/03 08:33

Pos	Base Analysis	ID	Rep	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run

	Type		#							Time
B	TOC	25 ppm	1	25.2354	252.3540	186.91	190.63	3.72	50.14	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/07/03 08:47

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	9.64	13.17	3.54	50.12	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/03 09:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.19	12.81	3.62	50.12	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	13.9973 ppm (PASS)	0.0000 ppm	0%	2020/07/03 09:17

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	13.9973	139.9734	108.08	111.62	3.54	50.12	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	40	TOC	K2005020-004 DOC	2.9015 ppm	0.0669 ppm	2.3100%	2020/07/03 09:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.9488	29.4880	32.89	36.47	3.58	50.09	10:34
2	TOC	2.8541	28.5415	32.23	35.81	3.58	50.09	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K2005459-001 DOC	1.3180 ppm	0.0121 ppm	0.9200%	2020/07/03 09:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3094	13.0942	21.39	24.97	3.58	50.08	10:30
2	TOC	1.3265	13.2652	21.51	25.23	3.72	50.07	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K2005459-002 DOC	1.3232 ppm	0.0044 ppm	0.3400%	2020/07/03 10:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3264	13.2638	21.51	25.23	3.72	50.05	10:28
2	TOC	1.3201	13.2011	21.47	25.18	3.71	50.04	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K2005174-001 100X	8.9021 ppm	0.0563 ppm	0.6300%	2020/07/03 10:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.9420	89.4197	74.93	78.66	3.73	50.03	10:26
2	TOC	8.8623	88.6228	74.37	77.98	3.60	50.03	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K2005453-001 100X	49.3522 ppm	0.1170 ppm	0.2400%	2020/07/03 11:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	49.4349	494.3491	358.98	362.57	3.58	50.02	10:27
2	TOC	49.2694	492.6941	357.82	361.69	3.86	50.01	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	45	TOC	K2005453-001 100X	7.3963 ppm	0.1878 ppm	2.5400%	2020/07/03 11:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.5291	75.2910	65.02	68.53	3.51	50.01	10:28
2	TOC	7.2635	72.6352	63.16	66.81	3.66	50.00	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	46	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/03 12:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.01	12.53	3.52	49.99	10:28
2	TOC	0.0000	0.0000	9.06	12.47	3.41	49.99	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	47	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/03 12:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.51	11.96	3.45	49.98	10:27
2	TOC	0.0000	0.0000	8.30	11.88	3.58	49.97	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.8697 ppm (PASS)	0.0000 ppm	0%	2020/07/03 13:16

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8697	248.6975	184.35	187.98	3.63	49.96	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/07/03 13:31

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.84	12.35	3.51	49.96	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	48	TOC		0.0000 ppm	0.0000 ppm	0.0000%	2020/07/03 13:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.36	11.89	3.53	49.93	10:26
2	TOC	0.0000	0.0000	8.20	11.72	3.52	49.92	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	49	TOC		0.0000 ppm	0.0000 ppm	0.0000%	2020/07/03 14:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.06	11.60	3.53	49.92	10:30
2	TOC	0.0000	0.0000	8.01	11.61	3.60	49.92	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	50	TOC		0.0000 ppm	0.0000 ppm	0.0000%	2020/07/03 14:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.03	11.73	3.70	49.90	10:28

LABORATORY REPORT

July 8, 2020

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

RE: HS20061178

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on June 25, 2020. For your reference, these analyses have been assigned our service request number P2003560.

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 4:03 pm, Jul 08, 2020

Hayden Akers
Project Manager

Client: ALS Laboratory Group Service Request No: P2003560
Project: HS20061178

CASE NARRATIVE

The samples were received intact under chain of custody on June 25, 2020 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	4068-007
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: HS20061178

Service Request: P2003560

Date Received: 6/25/2020
Time Received: 09:15

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
35AWW09_062320	P2003560-001	Water	6/23/2020	10:05	X	X
03WW01_062320	P2003560-002	Water	6/23/2020	11:00	X	X
35AWW08_062320	P2003560-003	Water	6/23/2020	12:05	X	X
35AWW11_062320	P2003560-004	Water	6/23/2020	13:25	X	X

P1003560

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: **Texas** **COC ID:** **14187**

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:	
Email:	

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS20061178
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20061178-01**	**35AWW09_062320**	**Groundwater**	**23 Jun 2020 10:05**
	MEE plus CO2 Sub to ALS SimiValley			09 Jul 2020
2.	**HS20061178-02**	**03WW01_062320**	**Groundwater**	**23 Jun 2020 11:00**
	MEE plus CO2 Sub to ALS SimiValley			09 Jul 2020
3.	**HS20061178-03**	**35AWW08_062320**	**Groundwater**	**23 Jun 2020 12:05**
	MEE plus CO2 Sub to ALS SimiValley			09 Jul 2020
4.	**HS20061178-04**	**35AWW11_062320**	**Groundwater**	**23 Jun 2020 13:25**
	MEE plus CO2 Sub to ALS SimiValley			09 Jul 2020

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

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 6/24/2020 1800

Received By: _____ Date/Time: 6-25-20 0815 2° wet

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

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P2003560

Project: HS20061178

Sample(s) received on: 06/25/20 Date opened: 06/25/20 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 Thermometer ID T-111 Wet Ic			
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
P2003560-001.01	40mL VOA NP		7		A	LD 06/30/2020
P2003560-001.04	40ml VOA HCL		1		A	LD 07/01/2020
P2003560-001.05	40ml VOA HCL				A	
P2003560-001.06	40ml VOA HCL				A	
P2003560-001.07	40mL VOA NP				A	
P2003560-002.01	40mL VOA NP		7		A	LD 06/30/2020
P2003560-002.04	40ml VOA HCL		1		A	LD 07/01/2020
P2003560-002.05	40ml VOA HCL				A	
P2003560-002.06	40ml VOA HCL				A	
P2003560-002.07	40mL VOA NP				A	
P2003560-003.01	40mL VOA NP		7		A	LD 06/30/2020
P2003560-003.04	40ml VOA HCL		1		A	LD 07/01/2020
P2003560-003.05	40ml VOA HCL				A	
P2003560-003.06	40ml VOA HCL				A	
P2003560-003.07	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: P2003560

Project: HS20061178

Sample(s) received on: 06/25/20 Date opened: 06/25/20 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2003560-004.01	40mL VOA NP		7		A	LD 06/30/2020
P2003560-004.04	40ml VOA HCL		1		A	LD 07/01/2020
P2003560-004.05	40ml VOA HCL				A	
P2003560-004.06	40ml VOA HCL				A	
P2003560-004.07	40mL VOA NP					

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: **HS20061178** ALS Project ID: P2003560

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD Date(s) Collected: 6/23/20
Analyst: Li Donghao Date Received: 6/25/20
Matrix: Liquid Date Analyzed: 6/30/20
Test Notes:

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
35AWW09_062320	P2003560-001	0.10	**100,000**	1,000	860	370	
03WW01_062320	P2003560-002	0.10	**300,000**	1,000	860	370	
35AWW08_062320	P2003560-003	0.10	**230,000**	1,000	860	370	
35AWW11_062320	P2003560-004	0.10	**390,000**	1,000	860	370	
Method Control Sample	P200630-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 Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2003560
Client Project ID: **HS20061178** ALS Sample ID: P200630-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Li Donghao Date Analyzed: 6/30/20
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	19,500	19,200	**85**	**84**	80-122	1	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: **35AWW09_062320**
Client Project ID: **HS20061178**

ALS Project ID: P2003560
ALS Sample ID: P2003560-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 06/23/20
Date Received: 06/25/20
Date Analyzed: 07/01/20
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	**1.9**	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: **03WW01_062320**
Client Project ID: **HS20061178**

ALS Project ID: P2003560
ALS Sample ID: P2003560-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 06/23/20
Date Received: 06/25/20
Date Analyzed: 07/01/20
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	**640**	1.3	1.0	0.51	
74-85-1	Ethene	**0.46**	1.0	0.55	0.24	**J**
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: **35AWW08_062320**
Client Project ID: **HS20061178**

ALS Project ID: P2003560
ALS Sample ID: P2003560-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 06/23/20
Date Received: 06/25/20
Date Analyzed: 07/01/20
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	**1,500**	1.3	1.0	0.51	
74-85-1	Ethene	**12**	1.0	0.55	0.24	
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: **35AWW11_062320**
Client Project ID: **HS20061178**

ALS Project ID: P2003560
ALS Sample ID: P2003560-004

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 06/23/20
Date Received: 06/25/20
Date Analyzed: 07/01/20
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	**1,000**	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: **Method Control Sample** ALS Project ID: P2003560
Client Project ID: **HS20061178** ALS Sample ID: P200701-MB

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Li Donghao Date Analyzed: 7/01/20
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 Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS20061178**

ALS Project ID: P2003560
ALS Sample ID: P200701-LCS
P200701-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/01/20
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	2.72	2.70	**108**	**107**	73-125	0.9	26	
74-85-1	Ethene	4.40	4.68	4.60	**106**	**105**	72-133	0.9	11	
74-84-0	Ethane	4.72	4.52	4.38	**96**	**93**	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.

Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302007.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 17:15:13
Operator : LD
Sample : P2003560-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 17:57:56 2020
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 :

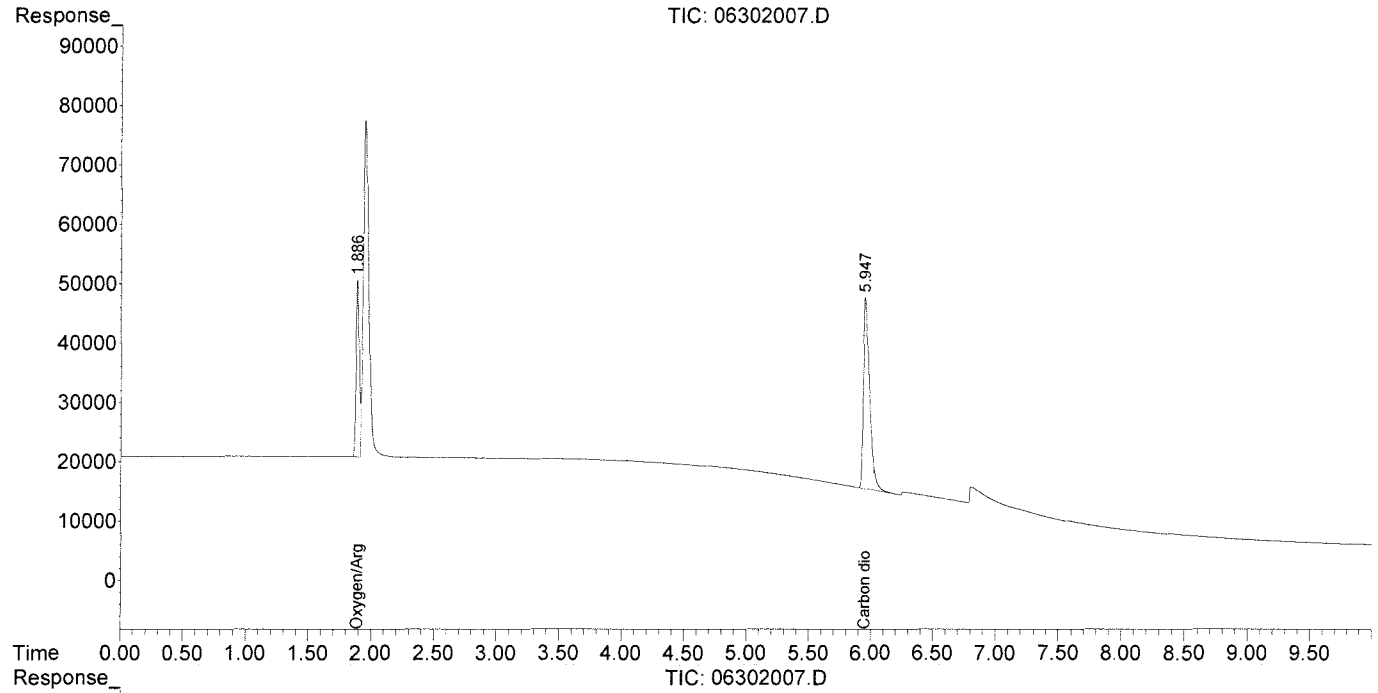
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.886	515586	0.108	ppm
2)	Carbon monoxide	1.886	515586	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.948	1123512	4786.418	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	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

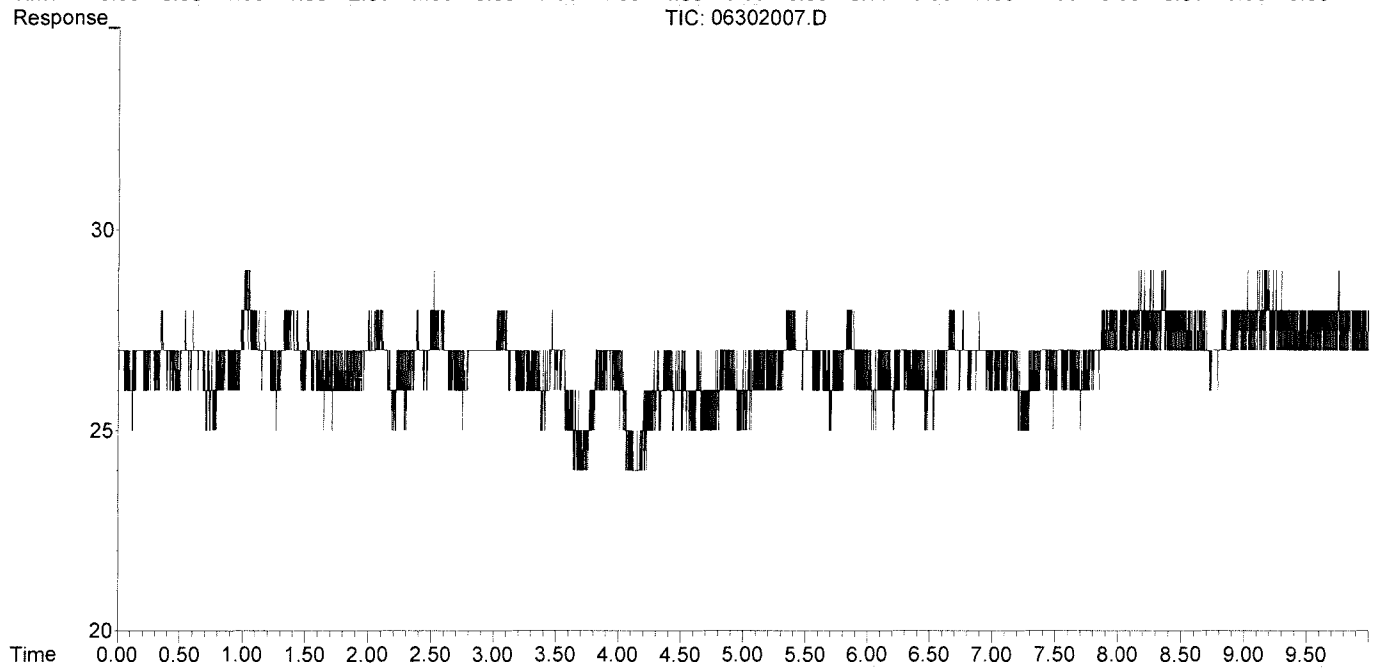
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302007.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 17:15:13
Operator : LD
Sample : P2003560-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 17:57:56 2020
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 : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302008.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 17:29:19
Operator : LD
Sample : P2003560-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 17:58:07 2020
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 :

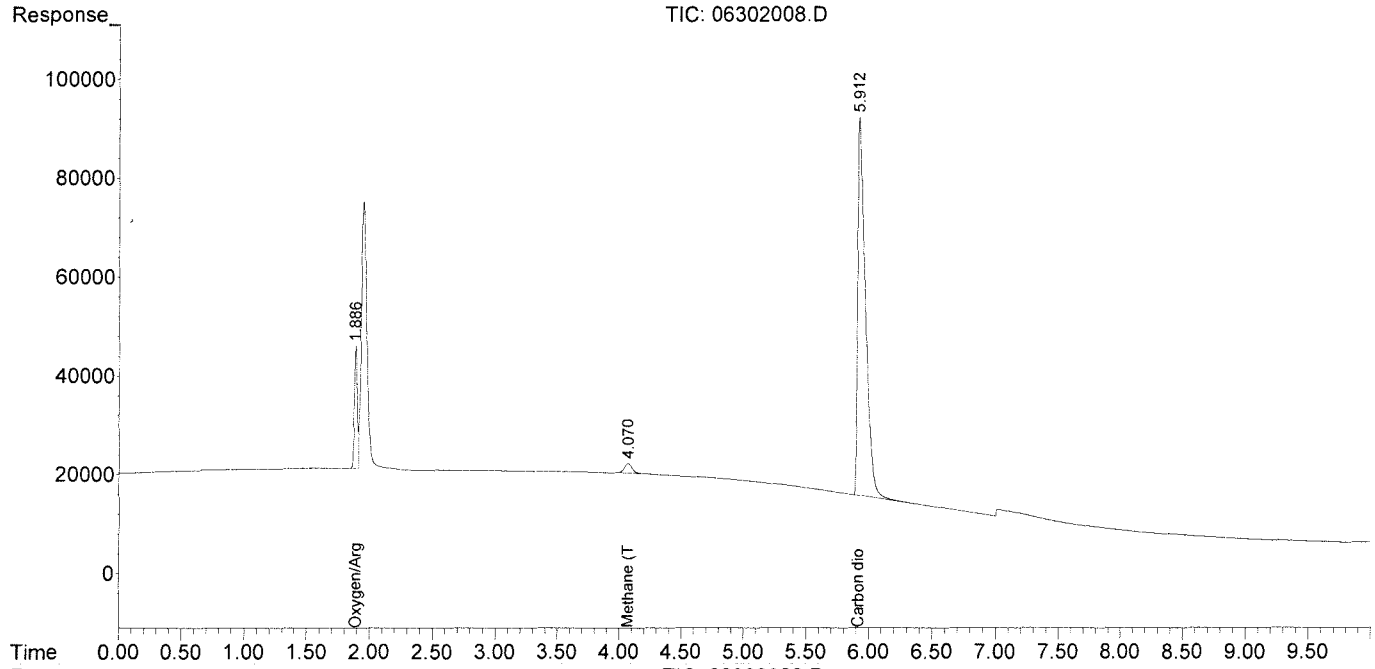
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.886	422537	0.089	ppm
2)	Carbon monoxide	1.886	422537	N.D.	ppm
3)	Methane (TCD)	4.069f	84302	8913.896	ppm
4)	Carbon dioxide	5.913	3269126	13927.224	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	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

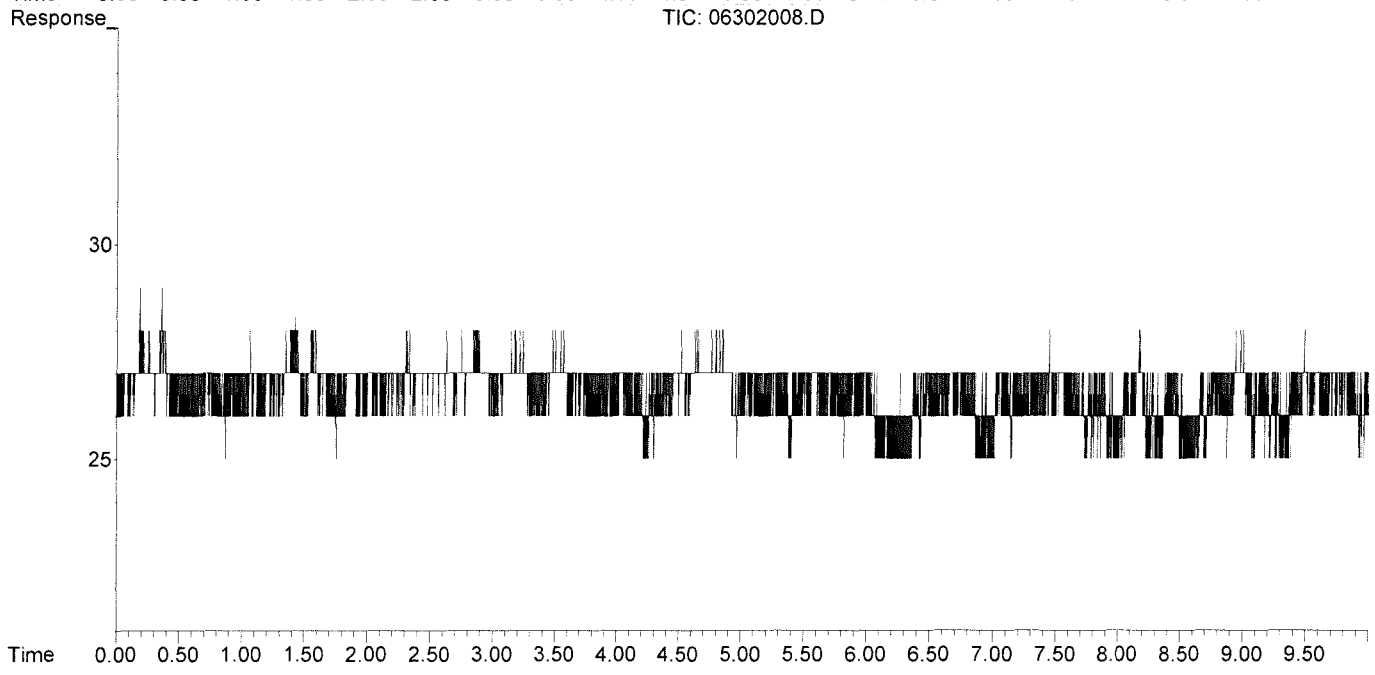
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302008.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 17:29:19
Operator : LD
Sample : P2003560-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 17:58:07 2020
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 :





00998433

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302009.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 17:42:46
Operator : LD
Sample : P2003560-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 17:58:20 2020
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 :

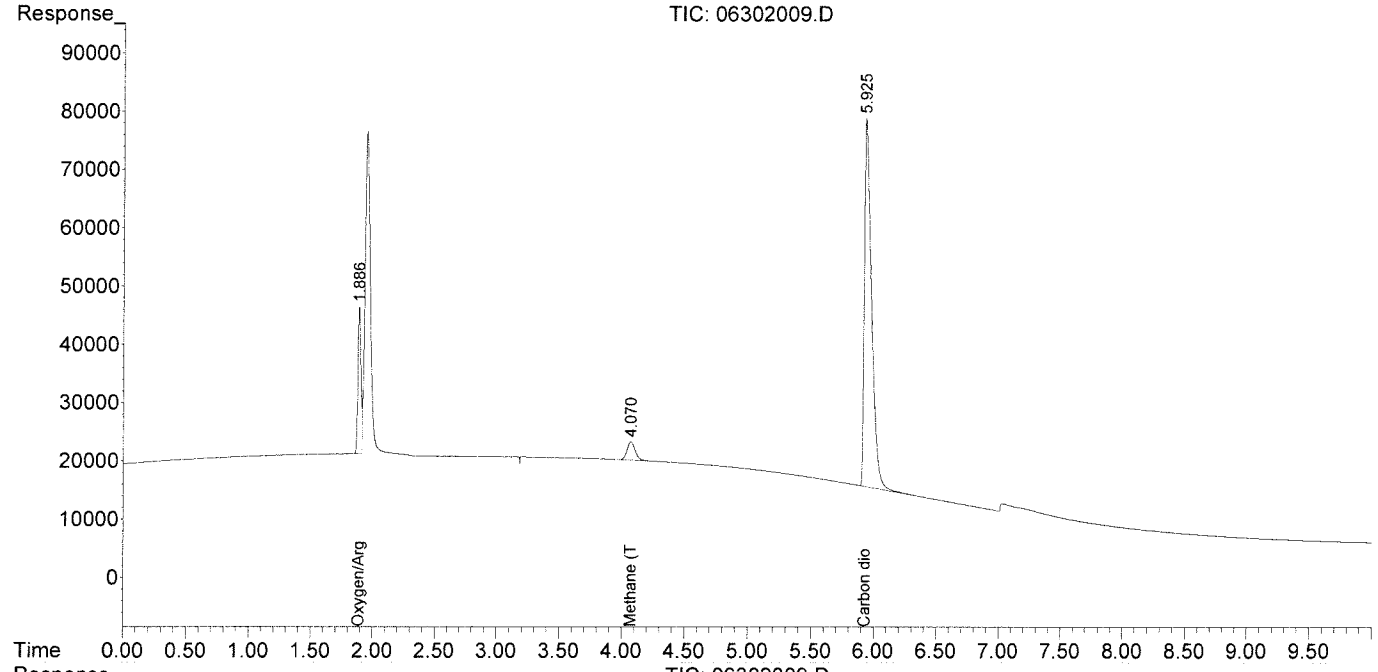
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.887	428110	0.090	ppm
2)	Carbon monoxide	1.887	428110	N.D.	ppm
3)	Methane (TCD)	4.070f	139836	14785.929	ppm
4)	Carbon dioxide	5.926	2498558	10644.430	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	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

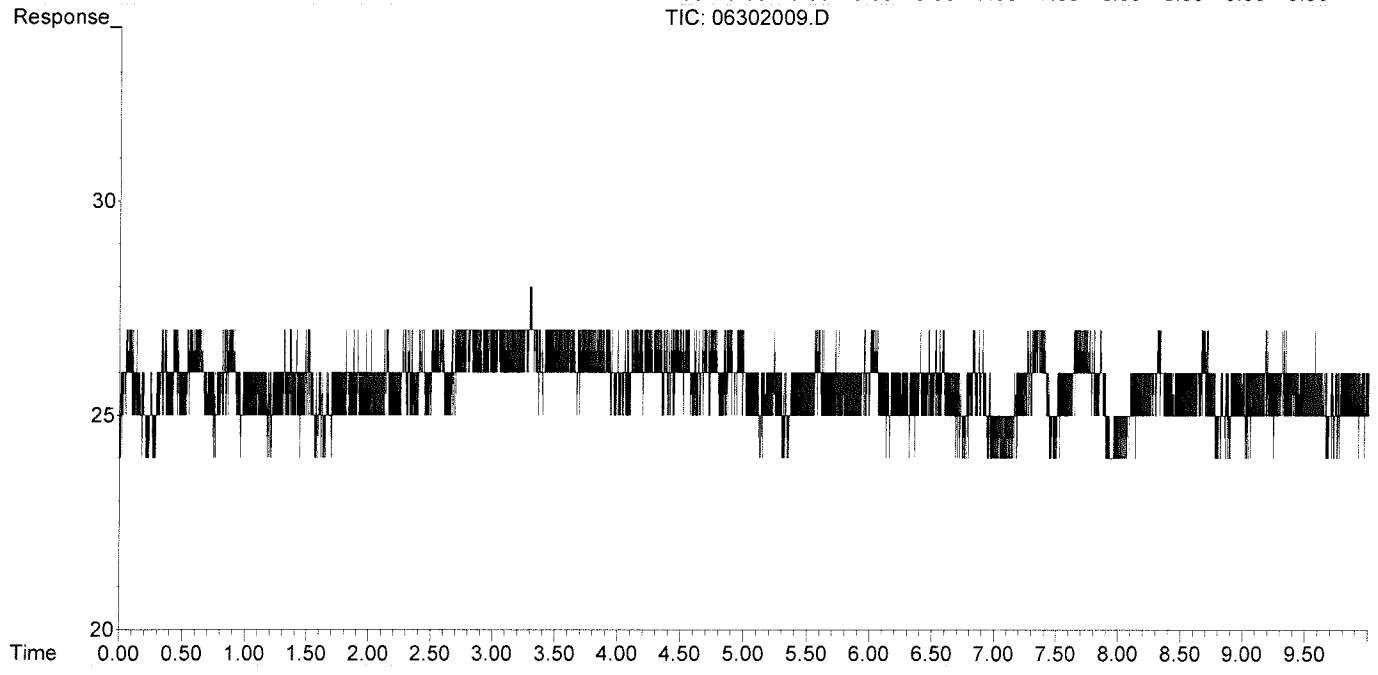
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302009.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 17:42:46
Operator : LD
Sample : P2003560-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 17:58:20 2020
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 : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302010.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 17:55:45
Operator : LD
Sample : P2003560-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 18:54:53 2020
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 :

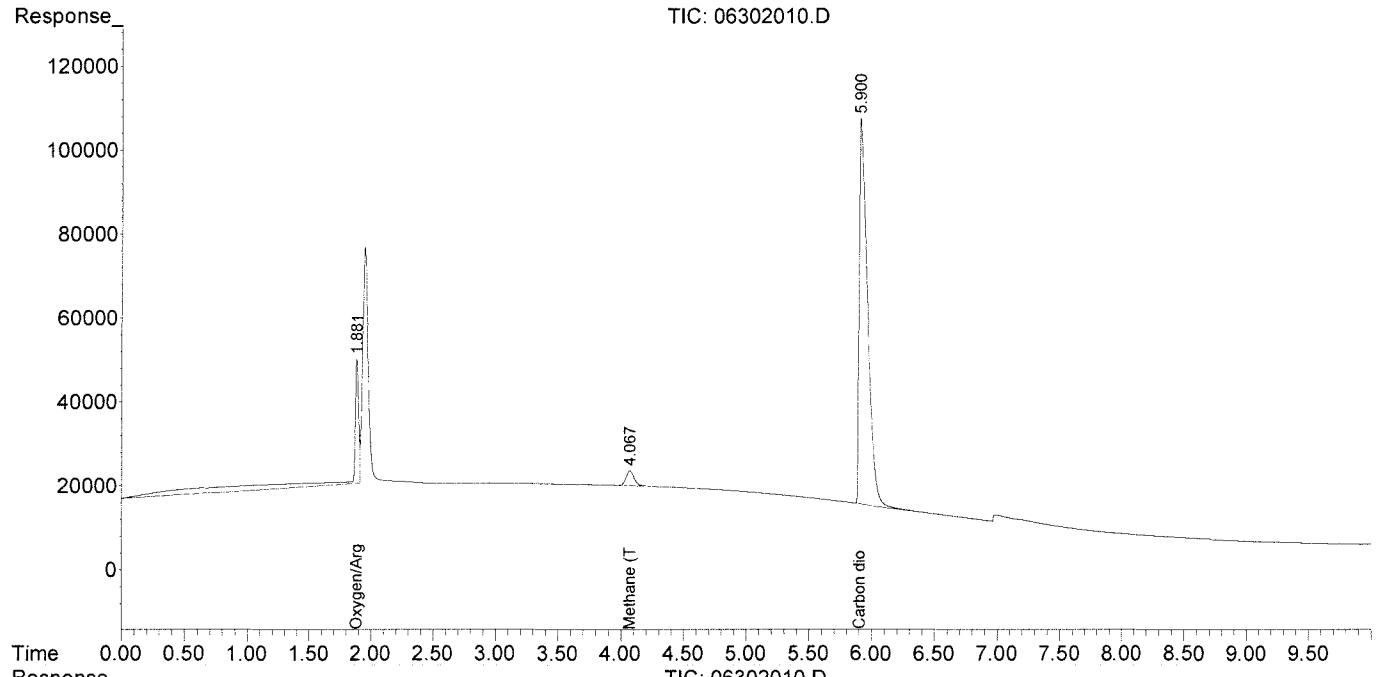
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.882	1534639	0.322	ppm
2)	Carbon monoxide	1.882	1534639	N.D.	ppm
3)	Methane (TCD)	4.068f	160664	16988.274	ppm
4)	Carbon dioxide	5.902	4192820	17862.373	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	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

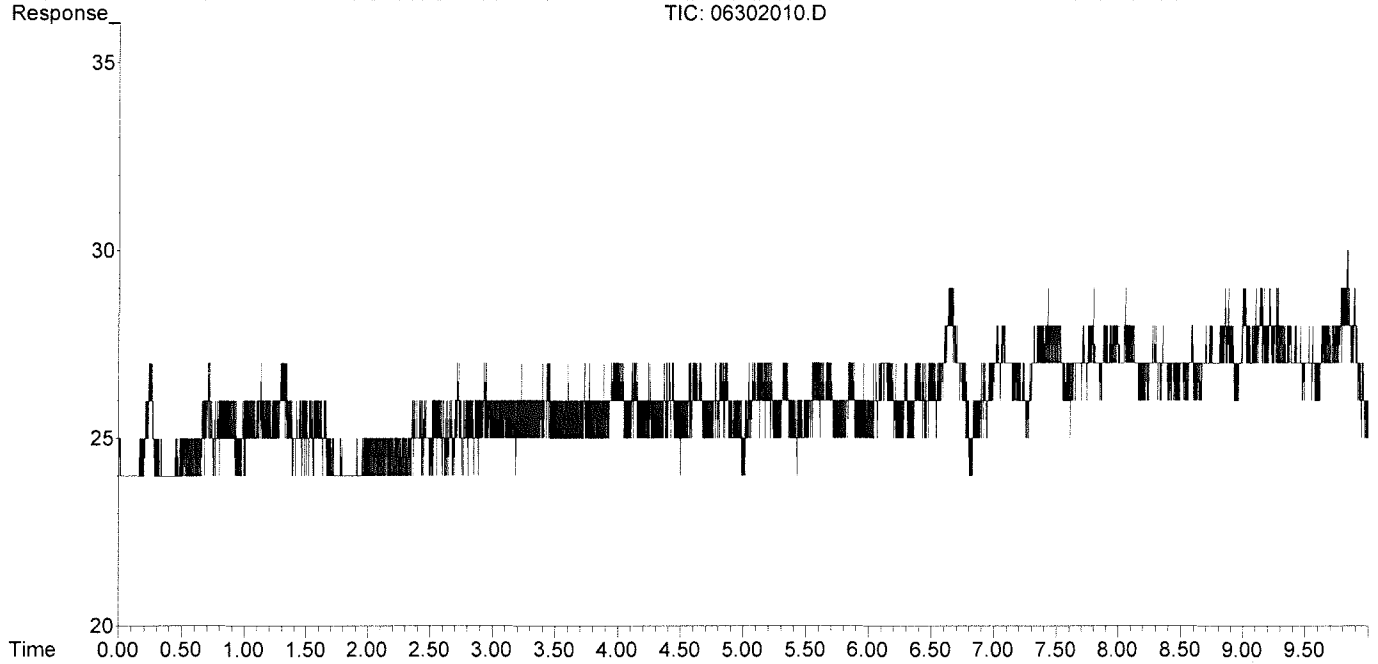
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302010.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 17:55:45
Operator : LD
Sample : P2003560-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 18:54:53 2020
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 : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302003.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 15:53:39
Operator : LD
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 30 16:06:51 2020
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 :

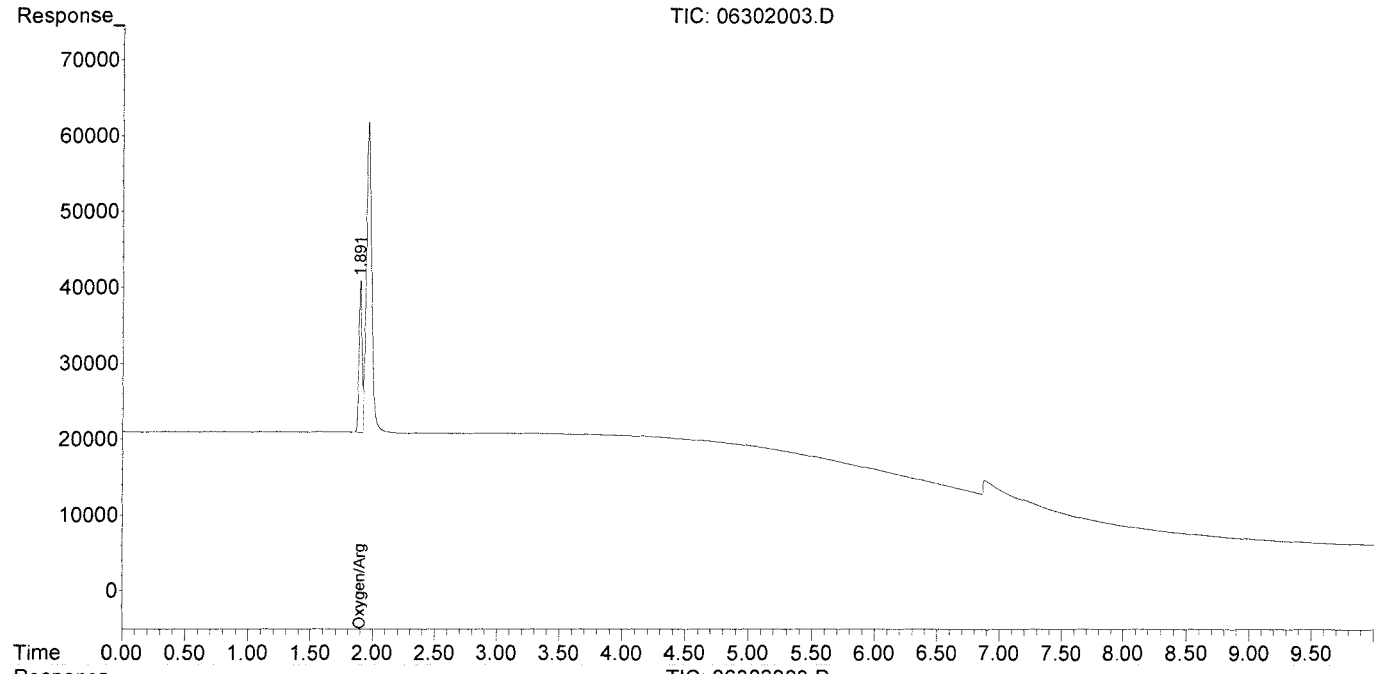
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.892	355521	0.075	ppm
2)	Carbon monoxide	1.892	355521	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	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

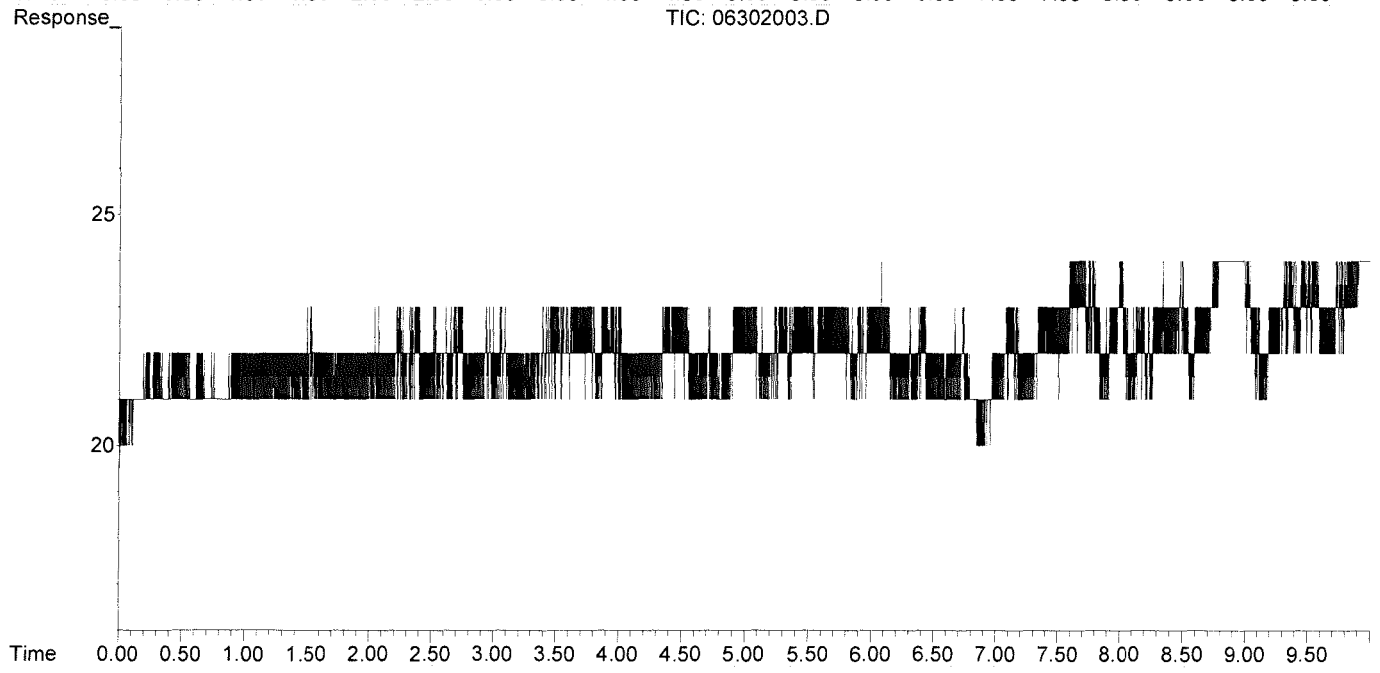
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302003.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 15:53:39
Operator : LD
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 30 16:06:51 2020
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 : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302005.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 16:21:46
Operator : LD
Sample : LCS S32-01212003
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 16:34:35 2020
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 :

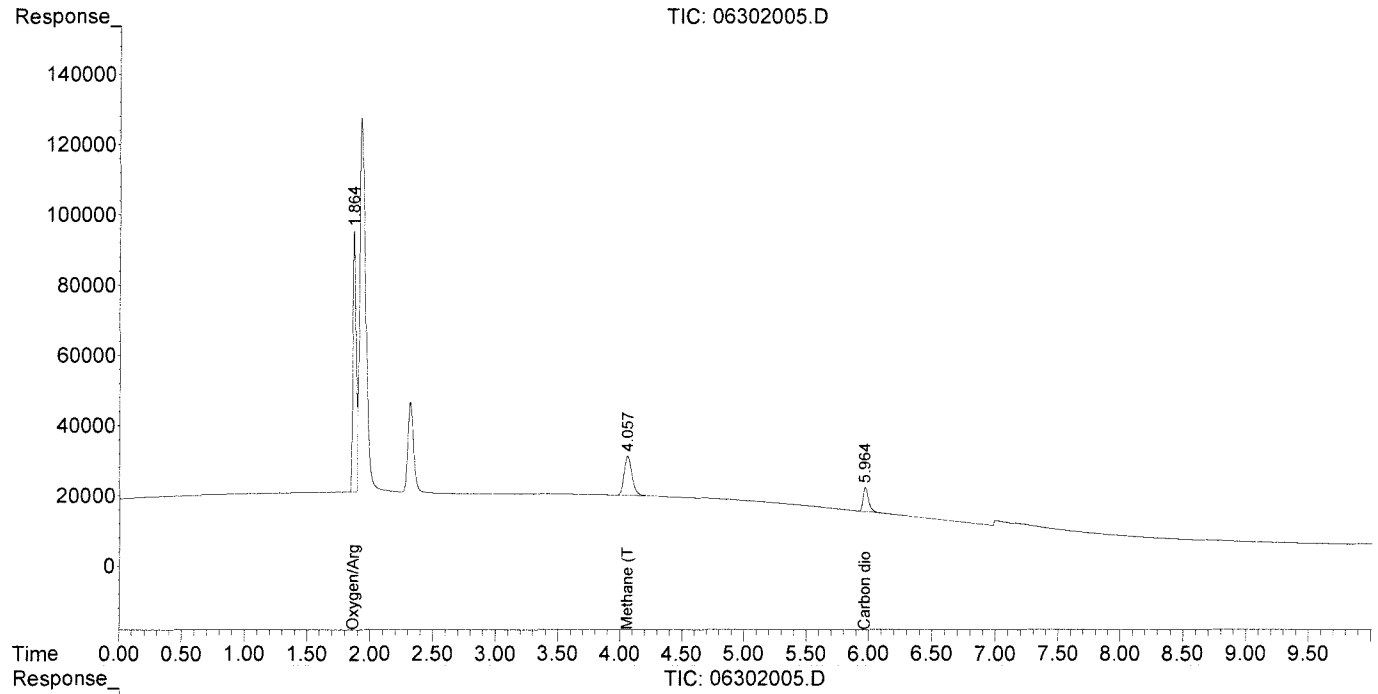
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.864	1294617	0.272	ppm
2)	Carbon monoxide	1.864	1294617	N.D.	ppm
3)	Methane (TCD)	4.058f	508271	53743.498	ppm
4)	Carbon dioxide	5.965	209388	892.043	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	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

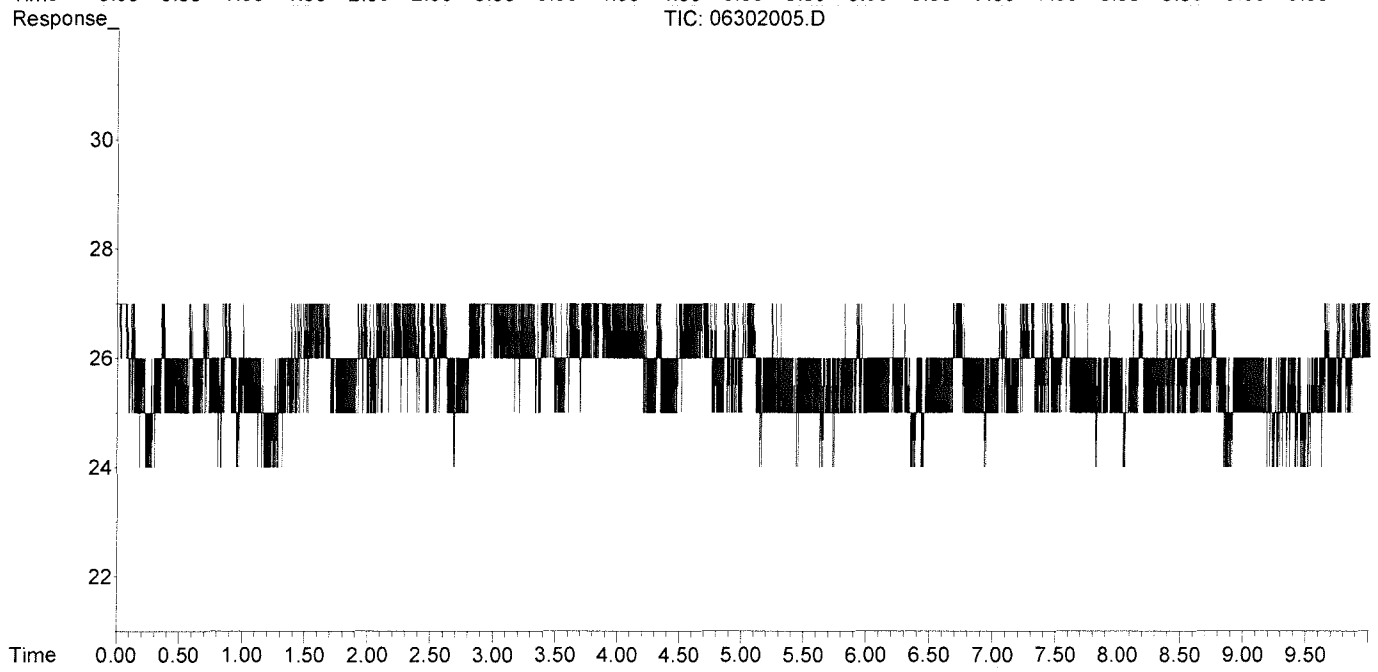
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302005.D
Signal(s) : Signal #1: TCDIA.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 16:21:46
Operator : LD
Sample : LCS S32-01212003
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 16:34:35 2020
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 : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302006.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 16:35:59
Operator : LD
Sample : LCSD S32-01212003
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 17:12:43 2020
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	1.860	1335935	0.281	ppm
2)	Carbon monoxide	1.860	1335935	N.D.	ppm
3)	Methane (TCD)	4.058f	508224	53738.492	ppm
4)	Carbon dioxide	5.969	206148	878.239	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

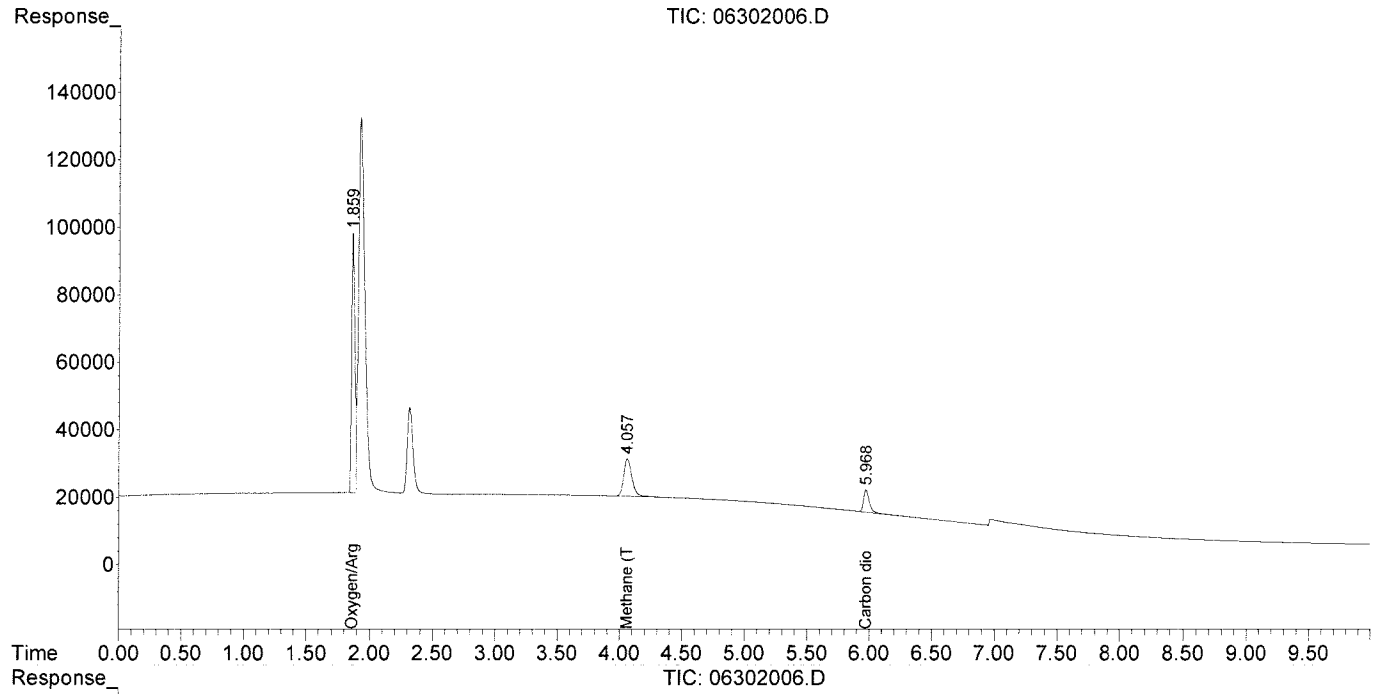
(f)=RT Delta > 1/2 Window (m)=manual int.

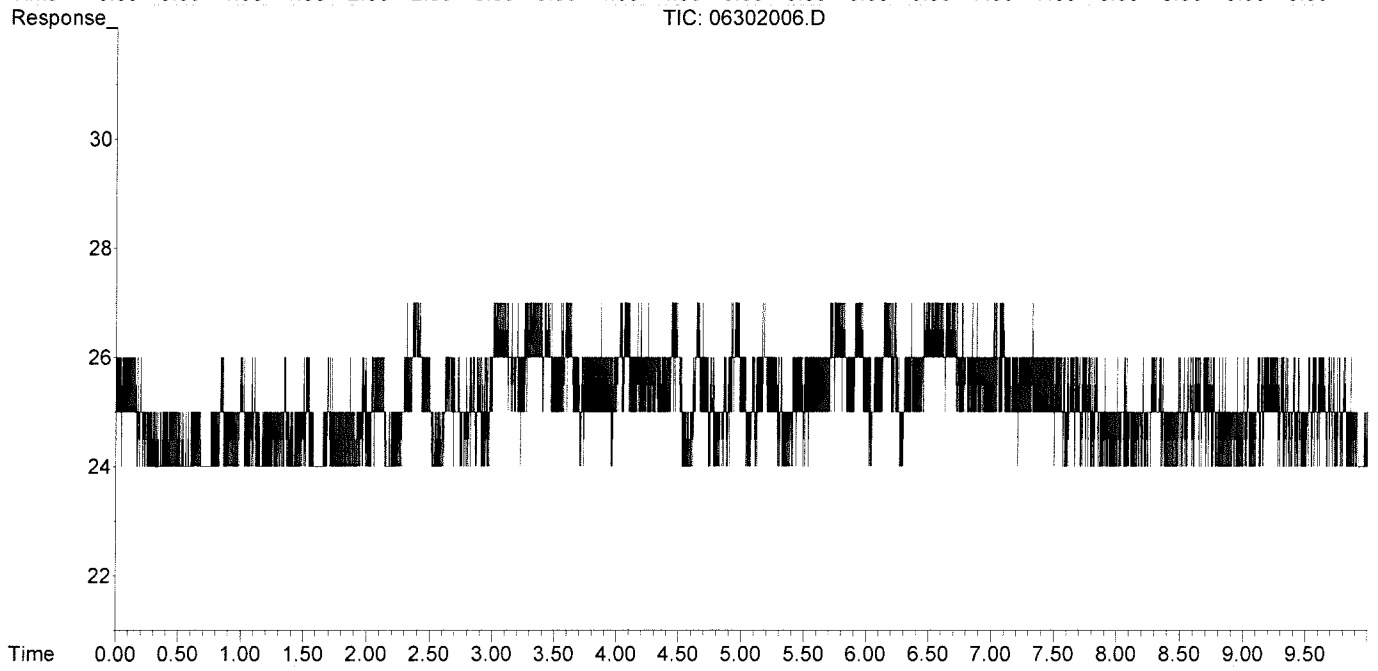
Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302006.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 16:35:59
Operator : LD
Sample : LCSD S32-01212003
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 17:12:43 2020
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 :





Response Factor Report HP5890

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

dit Compounds -- Compound #4 -- Carbon dioxide

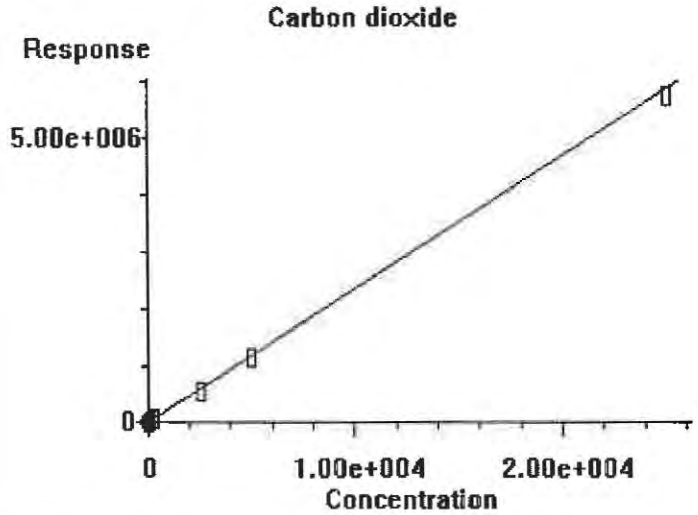
Search by: Ret Time | Name | Index | Find Compound

- 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

Calibration Status Report HP5890

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

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 :

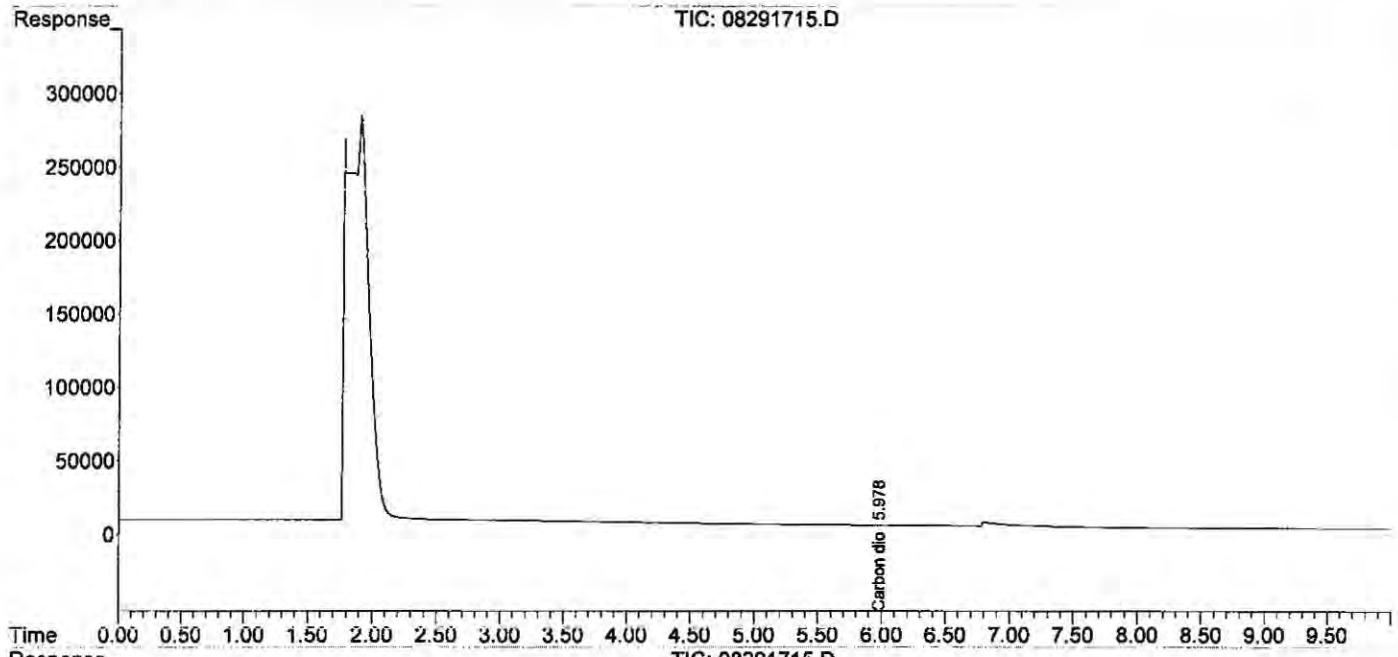
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	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	

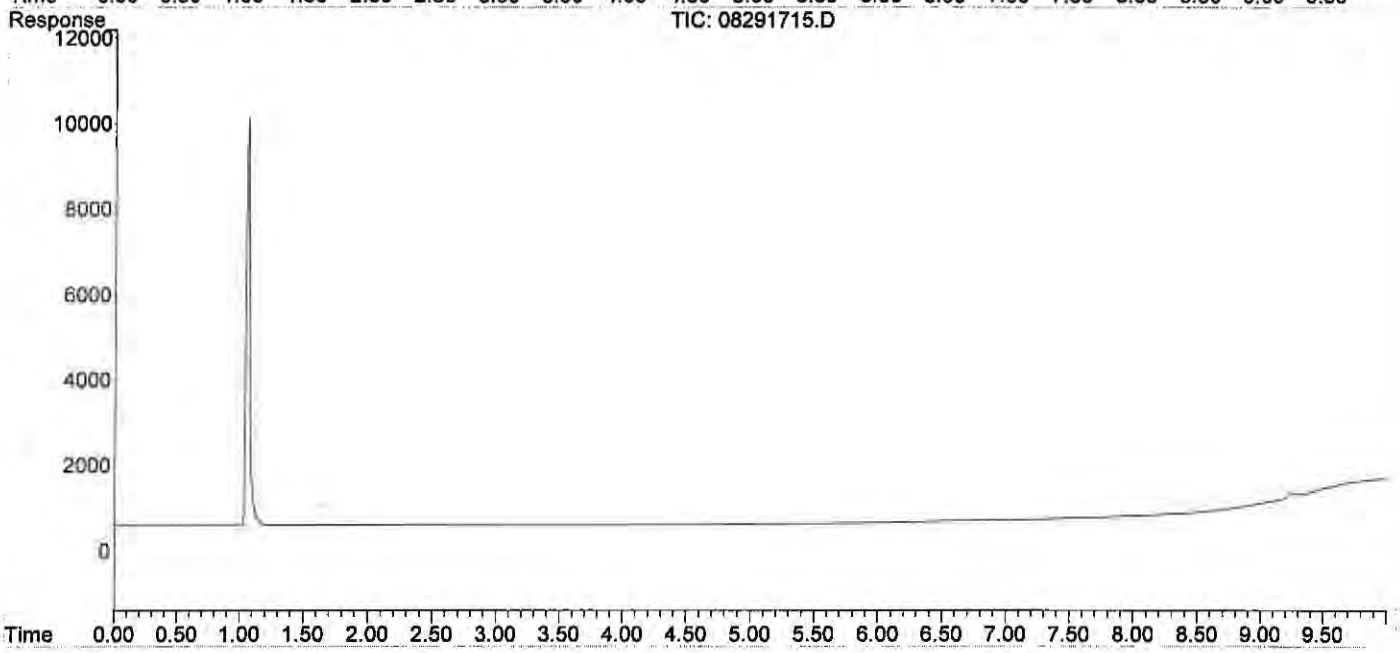
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



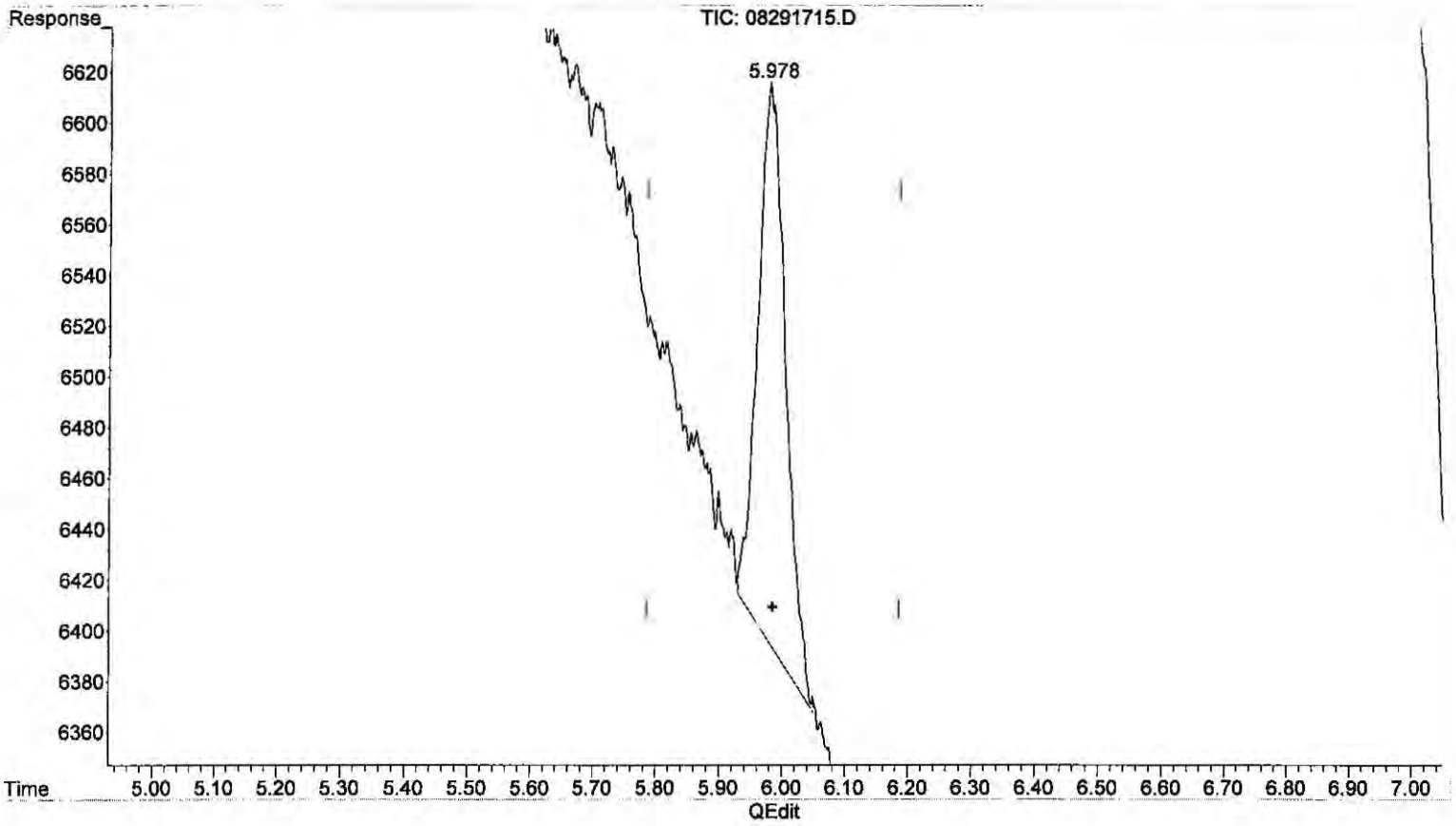


Quantitation Report (Qedit)

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

(+) = Expected Retention Time

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

Quantitation Report (QT Reviewed)

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 :

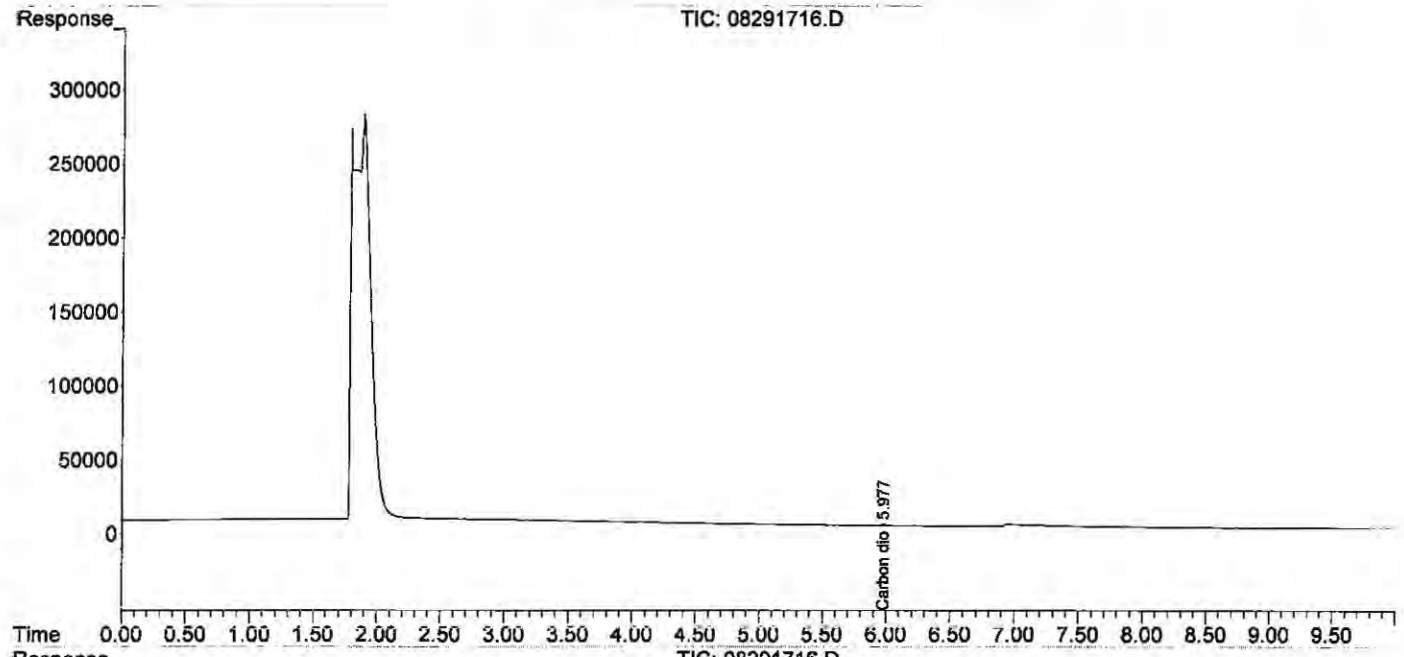
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	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	

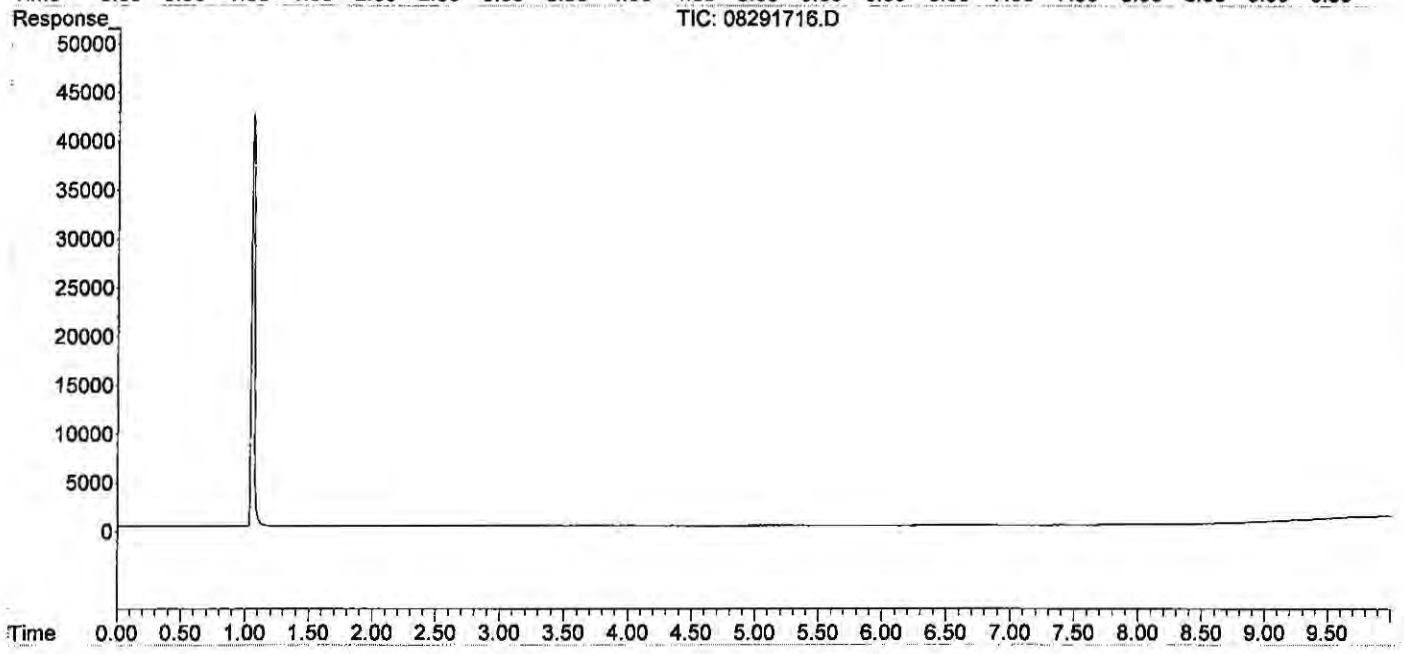
(f)=RT Delta > 1/2 Window (m)=manual int.

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	

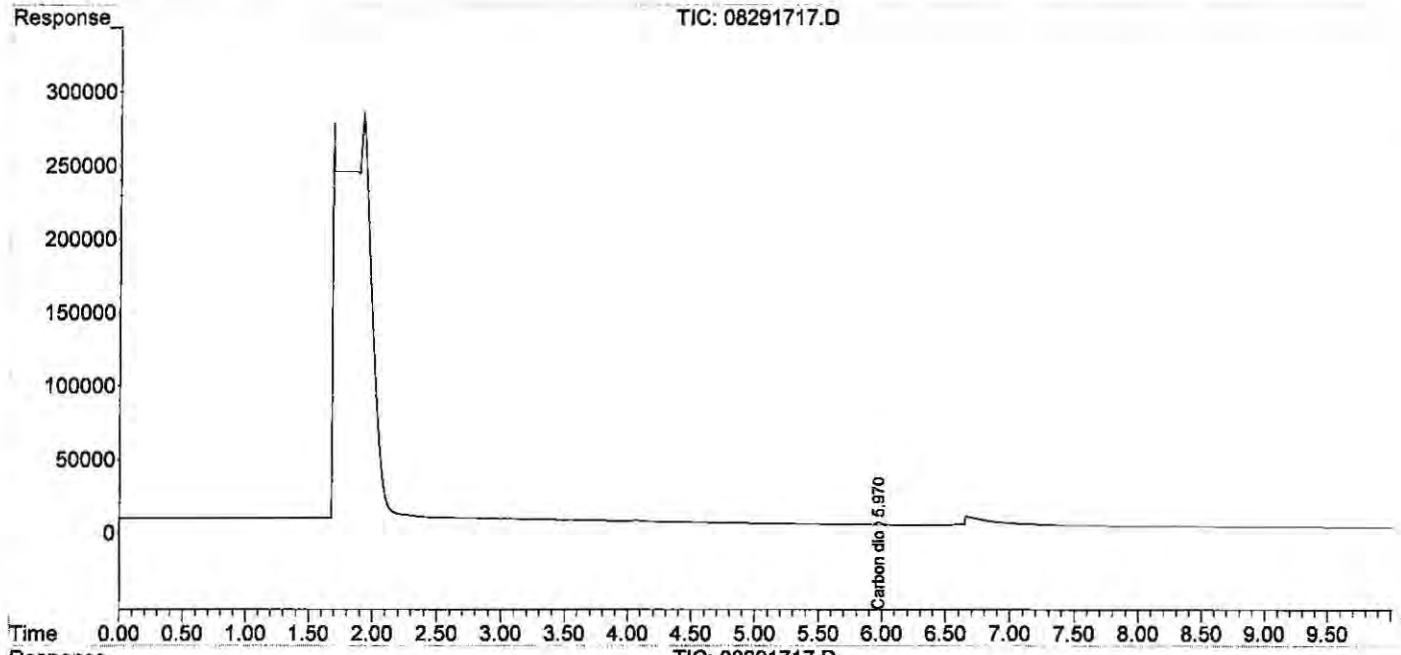
(f)=RT Delta > 1/2 Window (m)=manual int.

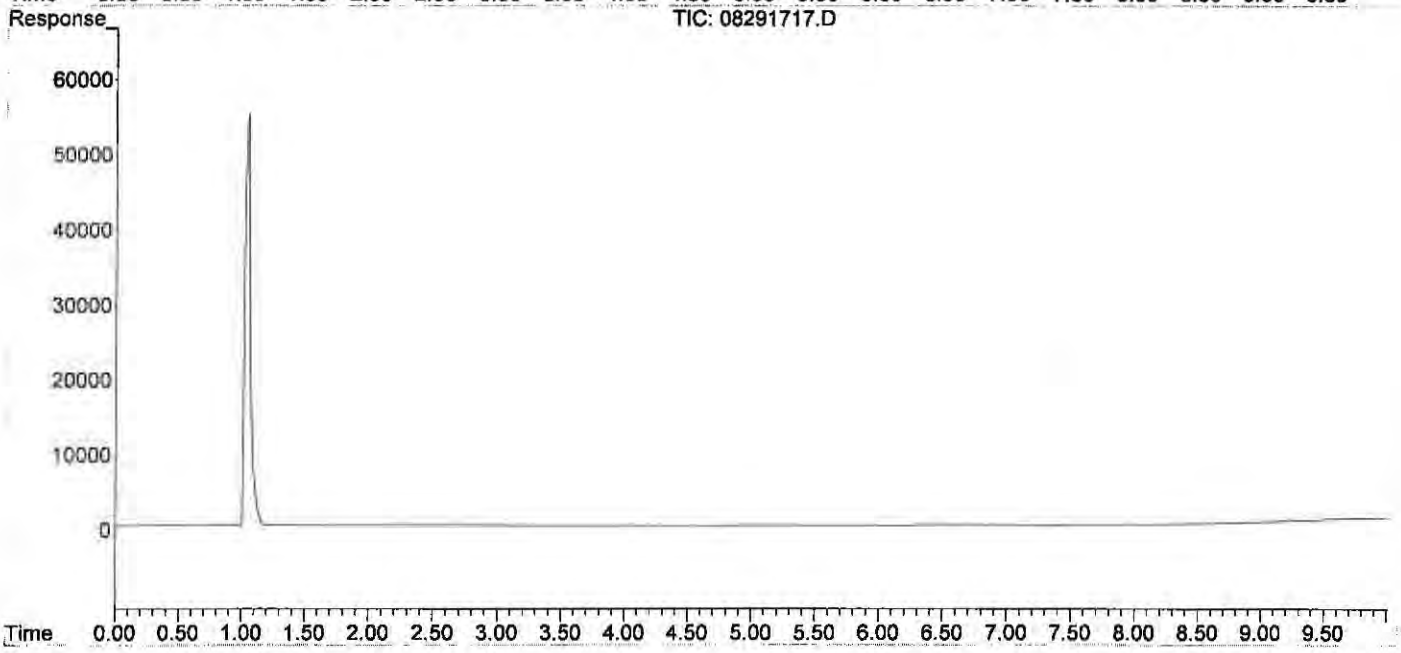
Quantitation Report (QT Reviewed)

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 :

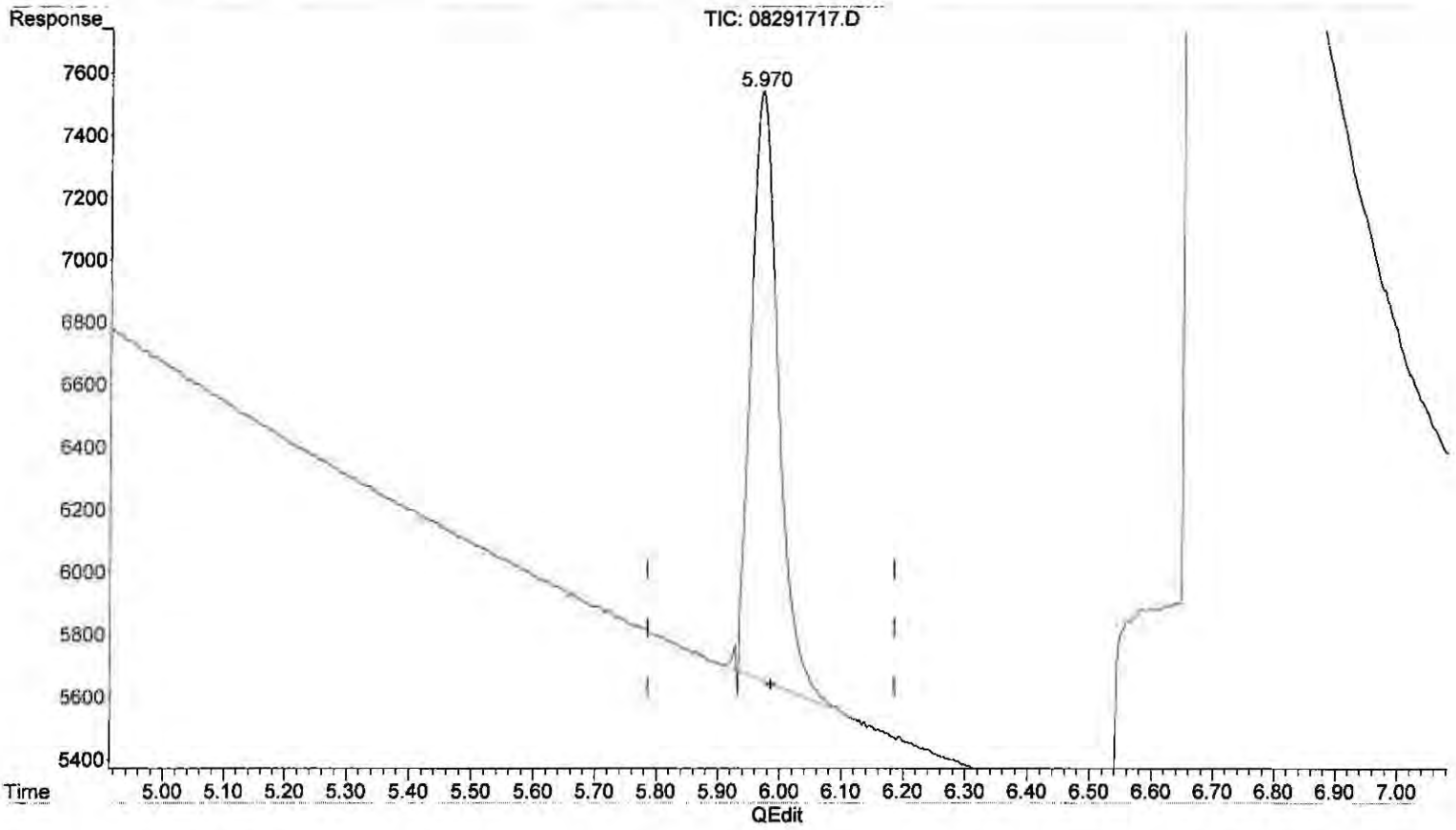




Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

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 #1 Info :
Signal #2 Phase:
Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

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	

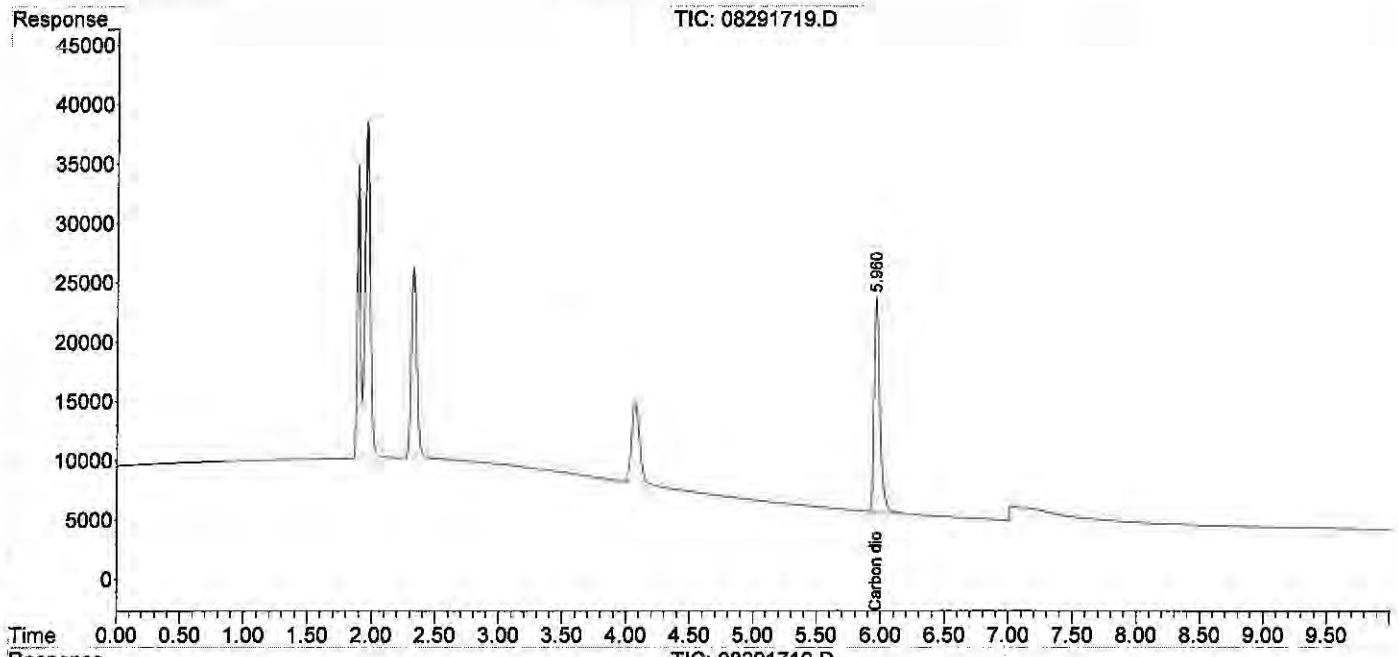
(f)=RT Delta > 1/2 Window (m)=manual int.

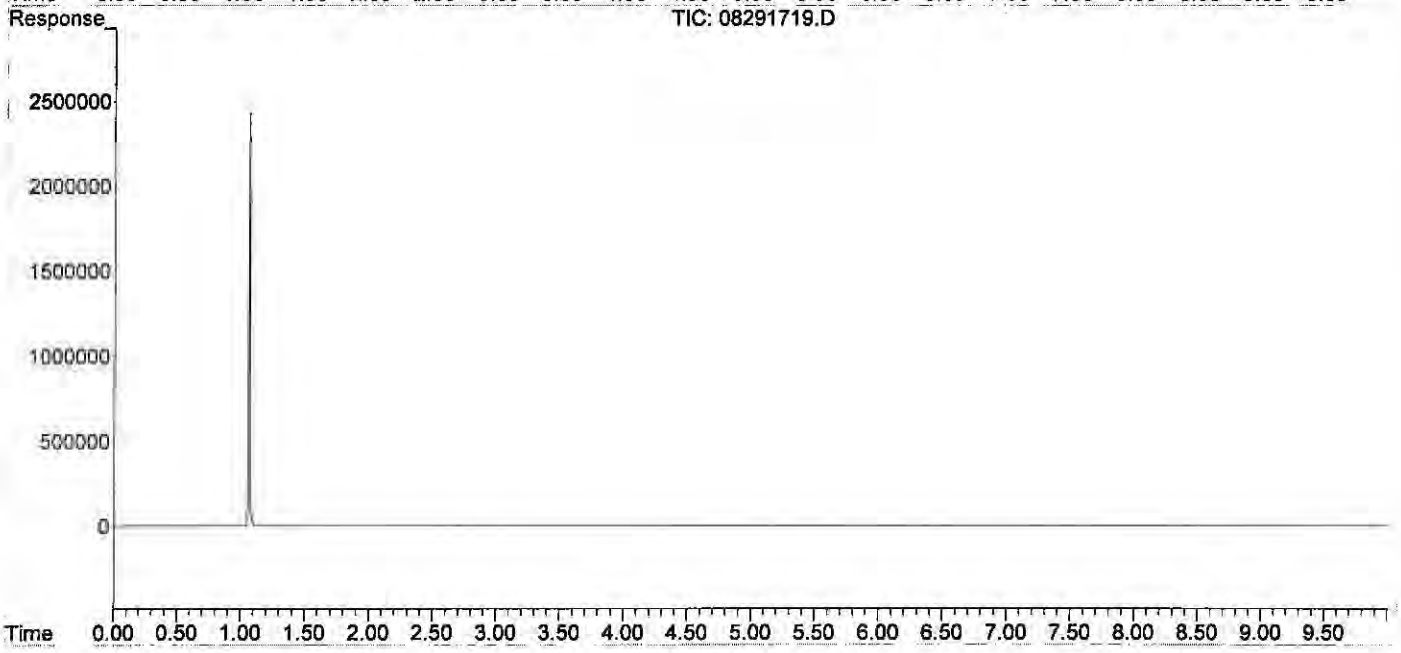
Quantitation Report (QT Reviewed)

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 :

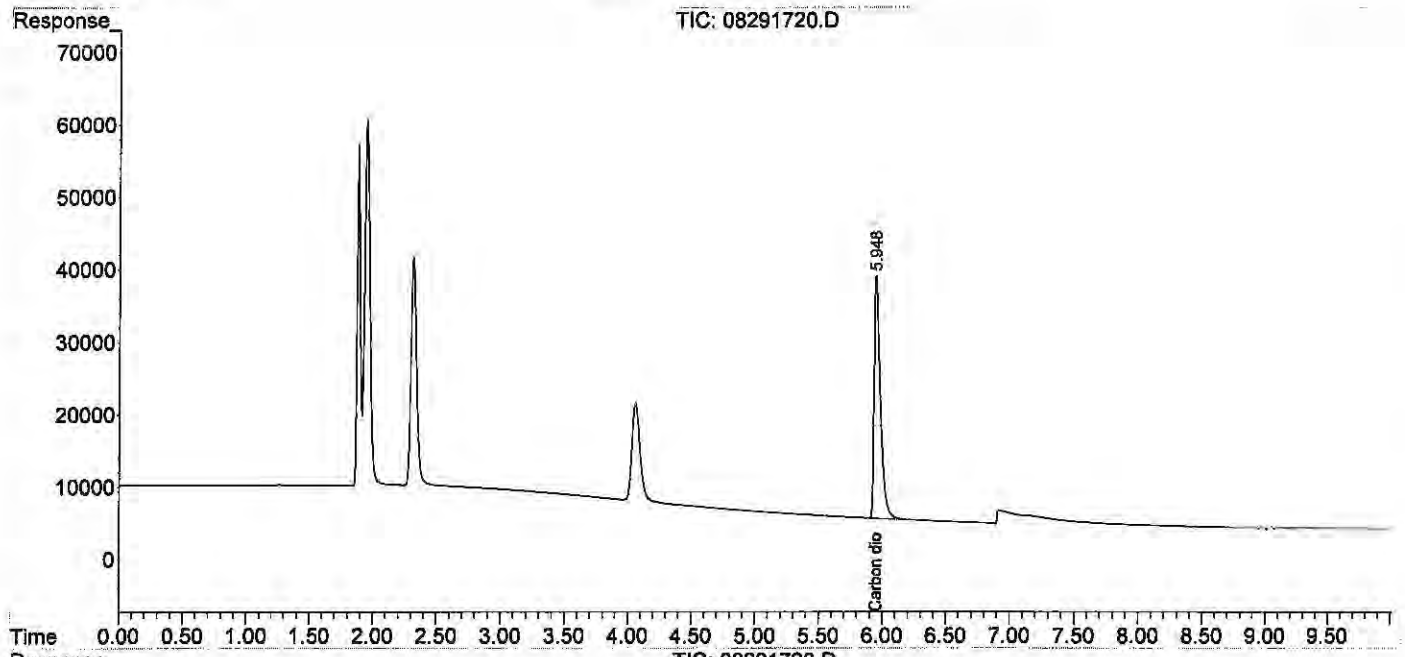
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	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	

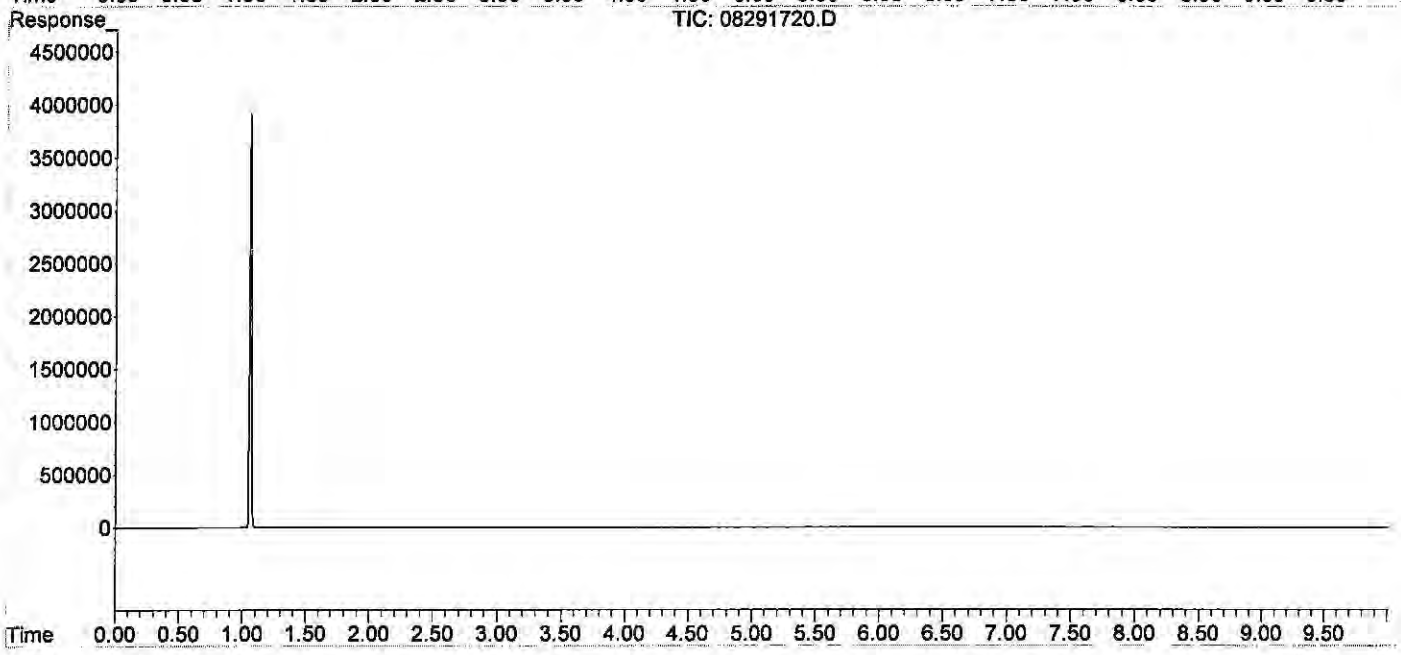
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

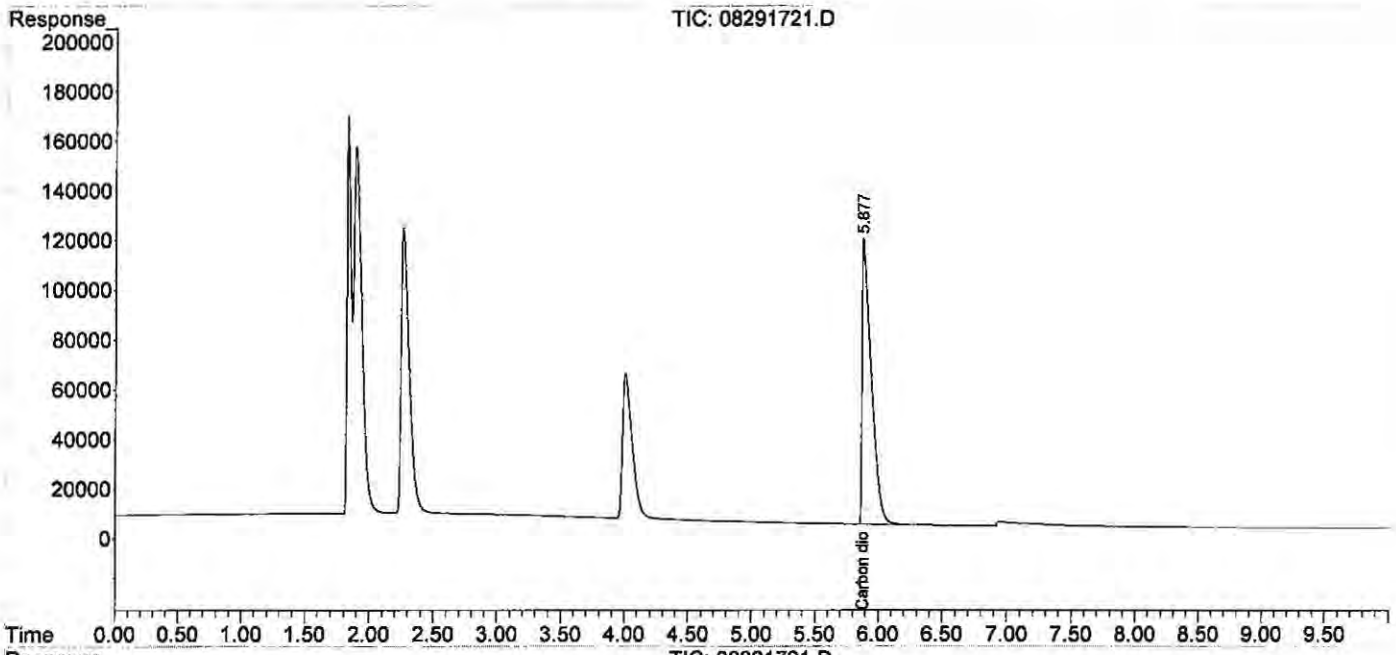
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	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	

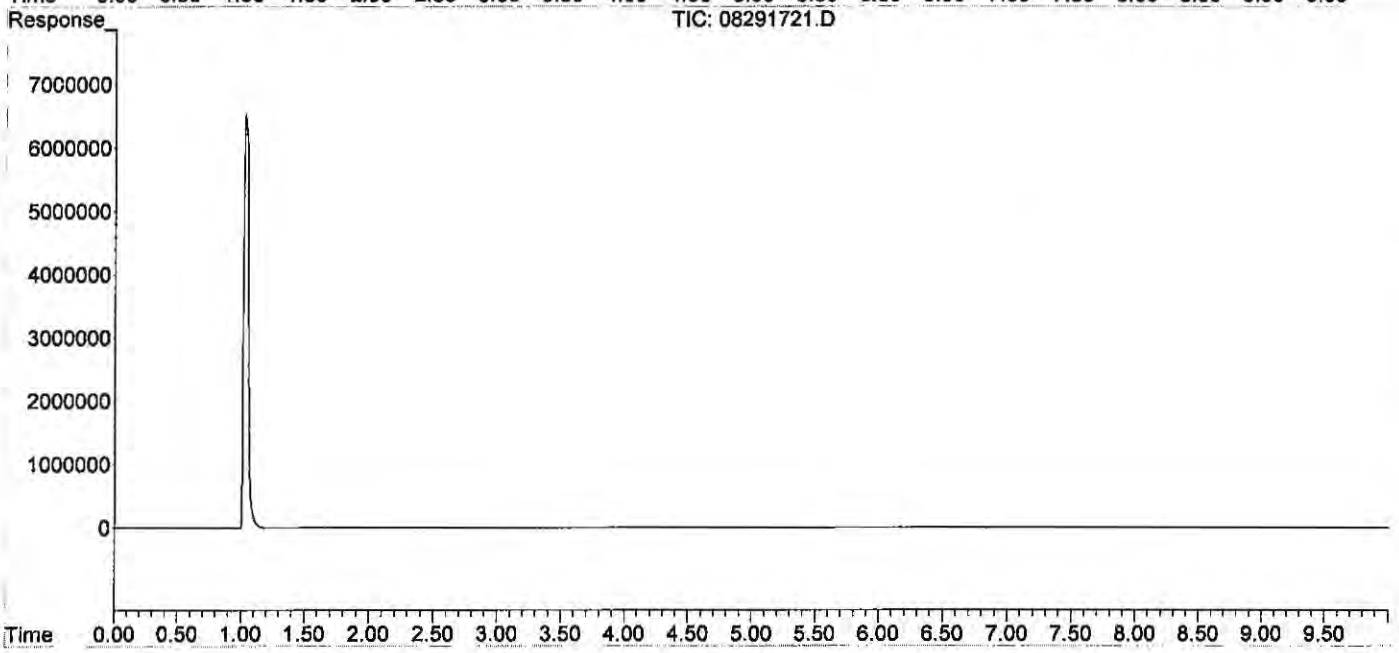
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :





Quantitation Report (QT Reviewed)

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

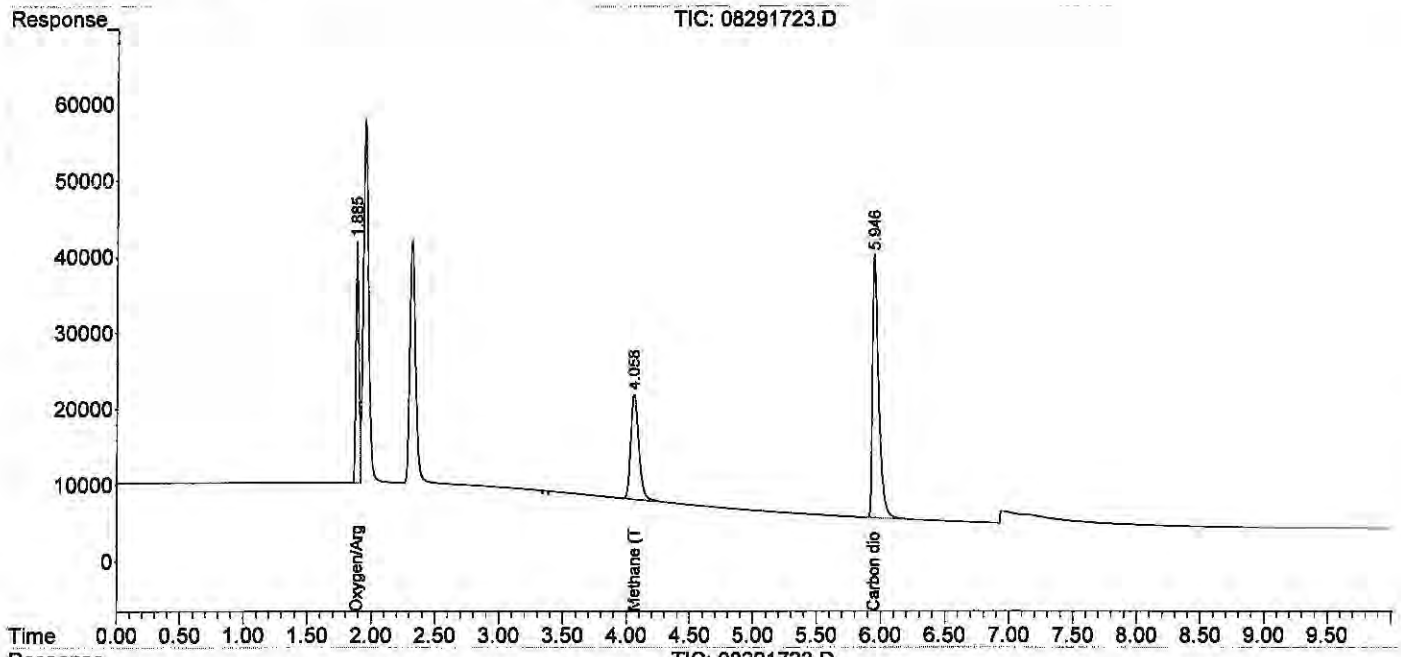
(f)=RT Delta > 1/2 Window (m)=manual int.

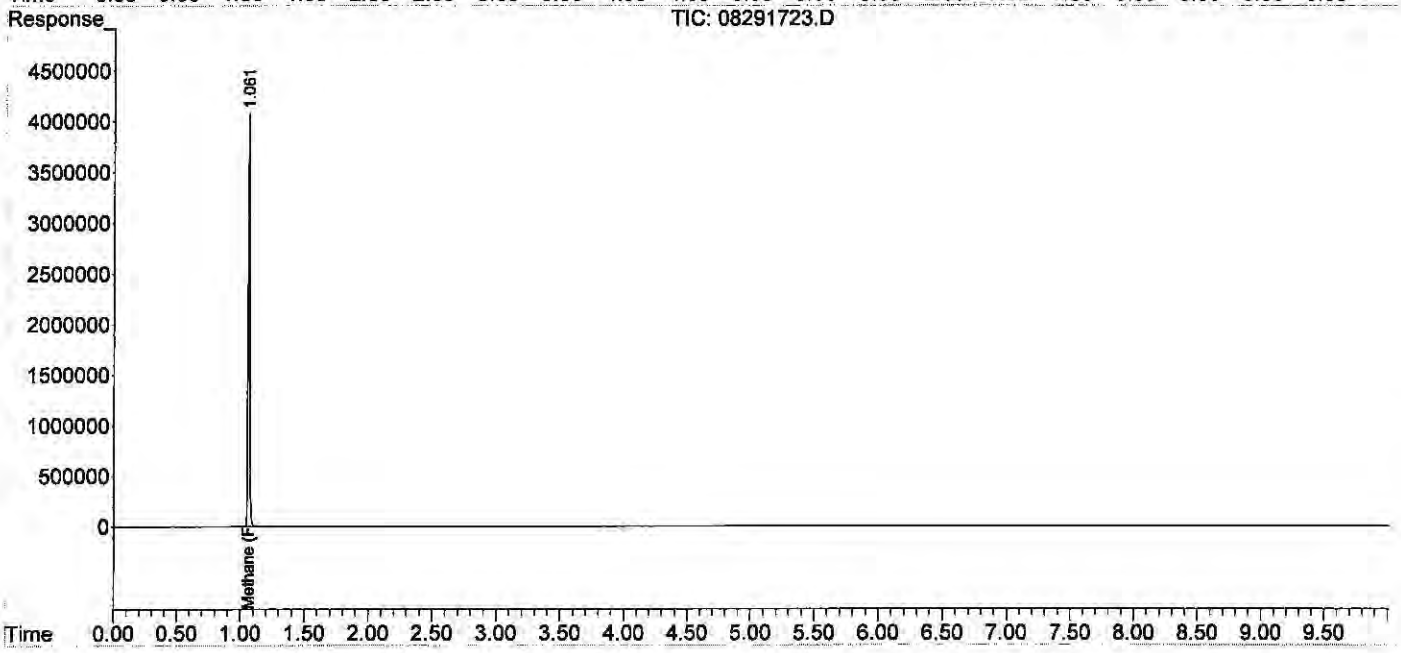
9/4/17

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 #1 Info :
Signal #2 Phase:
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 | Analyst : LD | Instrument : GC#10

Service Request: P2003560 | Date Analysis : 06/30/20 | 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 S32-06222001	0.100	4877.612
ACTUAL		5000.00
%Difference		2.4%
MCS 0.1ml	0.100	0.000
RB 0.1ml	0.100	0.000
LCS S32-01212003	0.100	892.043
LCSD S32-01212003	0.100	878.239
P2003560-001 0.1ml	0.100	4786.418
P2003560-002 0.1ml	0.100	13927.22
P2003560-003 0.1ml	0.100	10644.43
P2003560-004 0.1ml	0.100	17862.37

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 S32-01212003	8920.430
LCSD S32-01212003	8782.390
P2003560-001 0.1ml	47364.180
P2003560-002 0.1ml	139272.24
P2003560-003 0.1ml	106444.30
P2003560-004 0.1ml	178623.73

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LP 06/30

STD S32-06222001	4778.670
ACTUAL	5000.00
%Difference	4.4%

Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302001.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 12:47:00
Operator : LD
Sample : STD S32-06222001
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 13:05:55 2020
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

LD 06/30

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

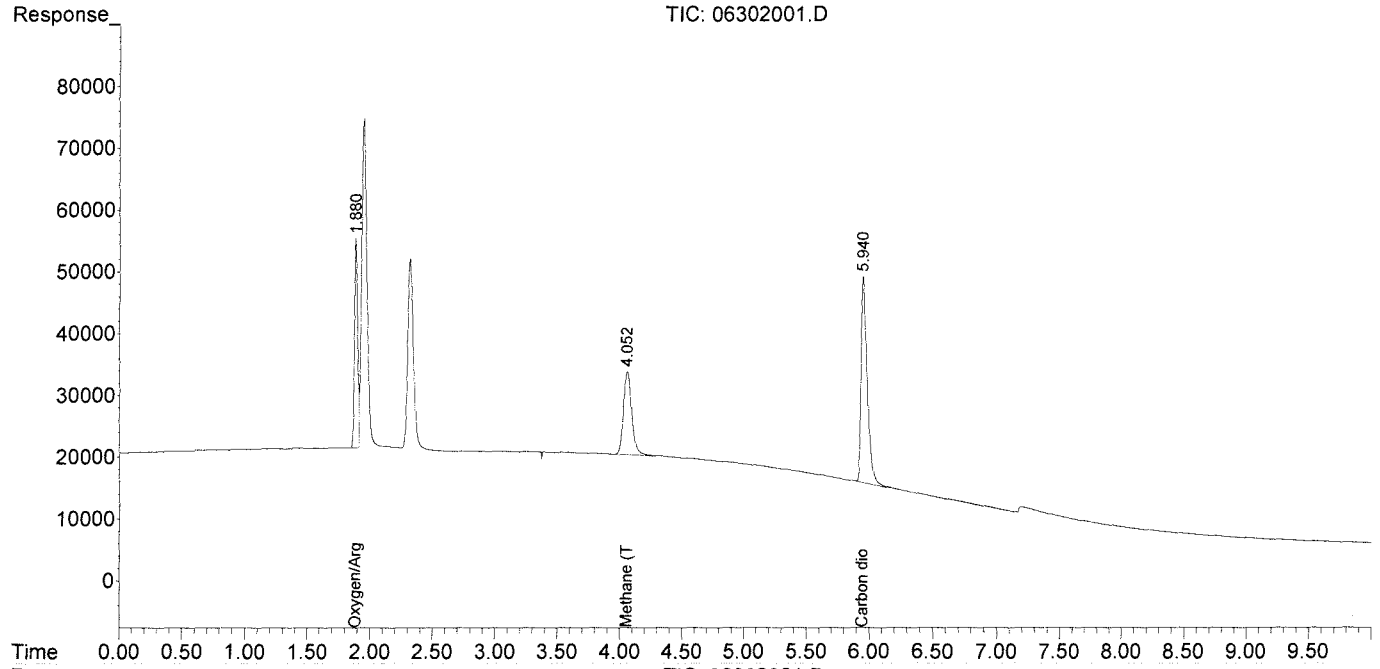
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Oxygen/Argon	1.881	581272	0.122 ppm
2)	Carbon monoxide	1.881	581272	N.D. ppm
3)	Methane (TCD)	4.053f	611602	64669.487 ppm
4)	Carbon dioxide	5.941	1144918	4877.612 ppm
6)	Methane (FID)	0.000	0	N.D. ppm
7)	Ethylene	0.000	0	N.D. ppm
8)	Ethane	0.000	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

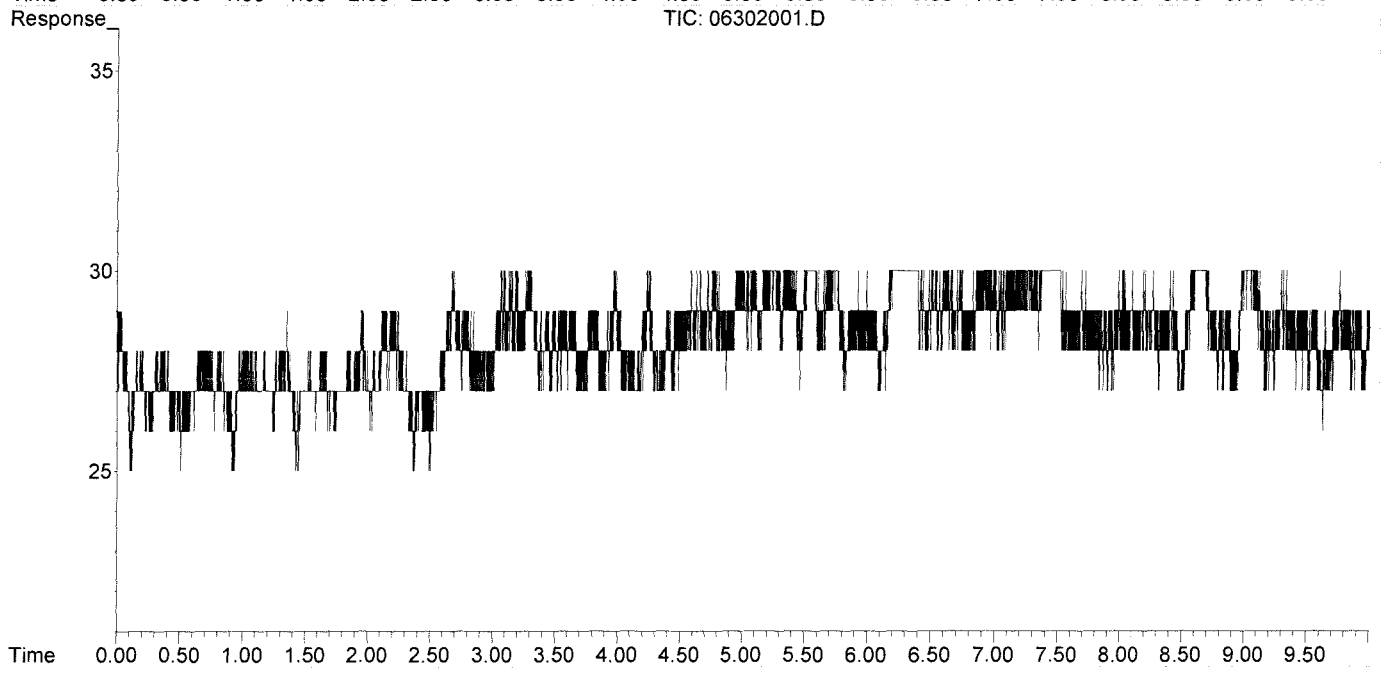
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302001.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 12:47:00
Operator : LD
Sample : STD S32-06222001
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 13:05:55 2020
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 : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302016.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 19:40:55
Operator : LD
Sample : STD S32-06222001
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 19:52:35 2020
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 :

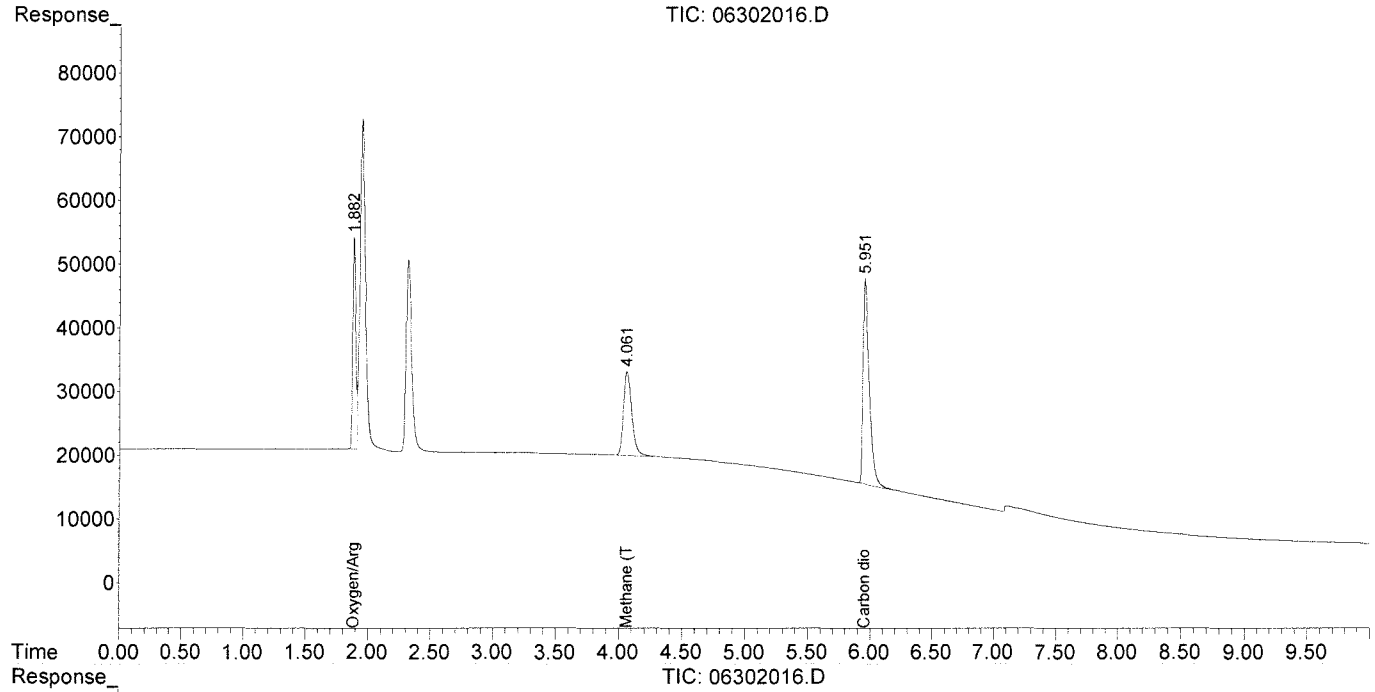
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.883	577214	0.121	ppm
2)	Carbon monoxide	1.883	577214	N.D.	ppm
3)	Methane (TCD)	4.061f	607023	64185.278	ppm
4)	Carbon dioxide	5.952	1121693	4778.670	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	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

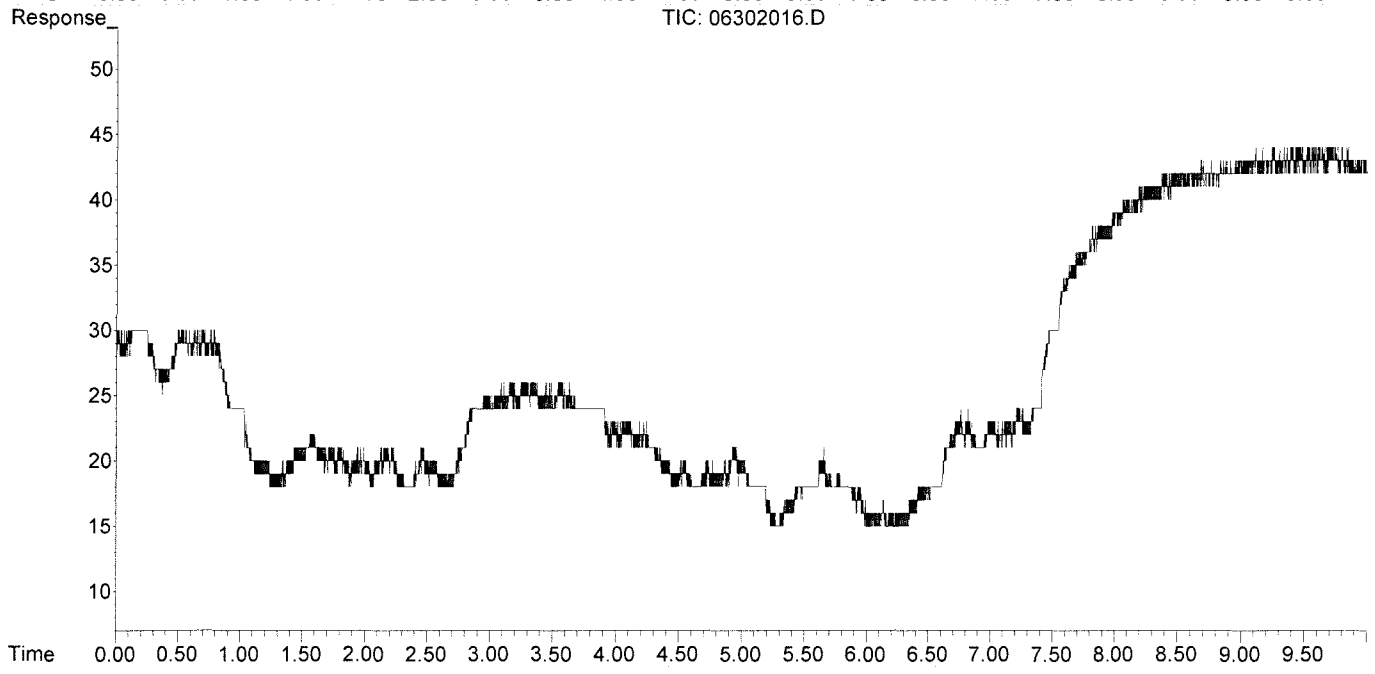
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302016.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 19:40:55
Operator : LD
Sample : STD S32-06222001
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 19:52:35 2020
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	mls 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	lcv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2020_06\30\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	30-Jun-20, 12:47:00	06302001.D	STD S32-06222001		LD	RSKBOTH.M	pass
2	30-Jun-20, 13:20:23	06302002.D	RB 0.1ml		LD	RSKBOTH.M	pass
3	30-Jun-20, 15:53:39	06302003.D	MCS 0.1ml		LD	RSKBOTH.M	pass
4	30-Jun-20, 16:08:23	06302004.D	xxxxLCS S32-01212003		LD	RSKBOTH.M	pass
5	30-Jun-20, 16:21:46	06302005.D	LCS S32-01212003		LD	RSKBOTH.M	pass
6	30-Jun-20, 16:35:59	06302006.D	LCSD S32-01212003		LD	RSKBOTH.M	pass
7	30-Jun-20, 17:15:13	06302007.D	P2003560-001 0.1ml		LD	RSKBOTH.M	
8	30-Jun-20, 17:29:19	06302008.D	P2003560-002 0.1ml		LD	RSKBOTH.M	
9	30-Jun-20, 17:42:46	06302009.D	P2003560-003 0.1ml		LD	RSKBOTH.M	
10	30-Jun-20, 17:55:45	06302010.D	P2003560-004 0.1ml		LD	RSKBOTH.M	
11	30-Jun-20, 18:11:05	06302011.D	P2003597-001 0.1ml		LD	RSKBOTH.M	
12	30-Jun-20, 18:24:23	06302012.D	P2003597-002 0.1ml		LD	RSKBOTH.M	
13	30-Jun-20, 18:51:47	06302013.D	P2003597-003 0.1ml		LD	RSKBOTH.M	
14	30-Jun-20, 19:04:54	06302014.D	P2003597-004 0.1ml		LD	RSKBOTH.M	
15	30-Jun-20, 19:23:20	06302015.D	P2003597-005 0.1ml		LD	RSKBOTH.M	
16	30-Jun-20, 19:40:55	06302016.D	STD S32-06222001		LD	RSKBOTH.M	pass

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012006.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 14:41:02
Operator : LD
Sample : P2003560-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 15:10:18 2020
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 :

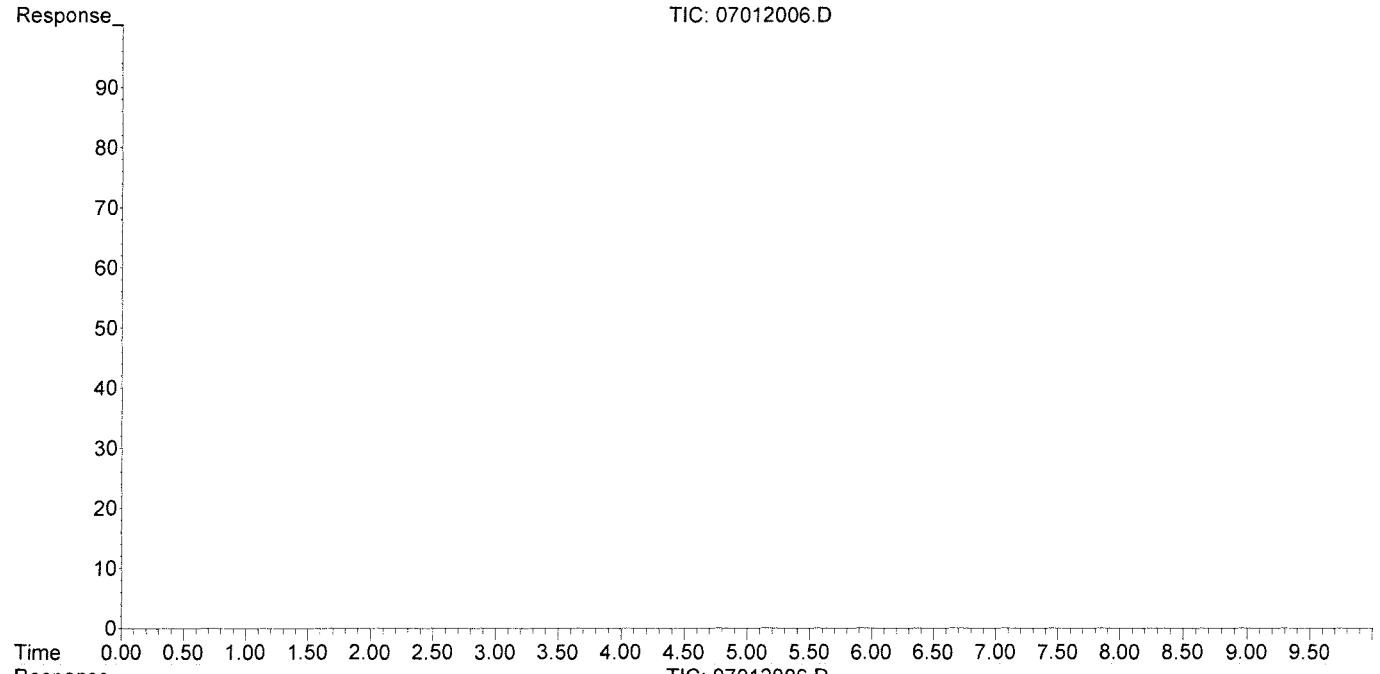
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.103	9198	1.014	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	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

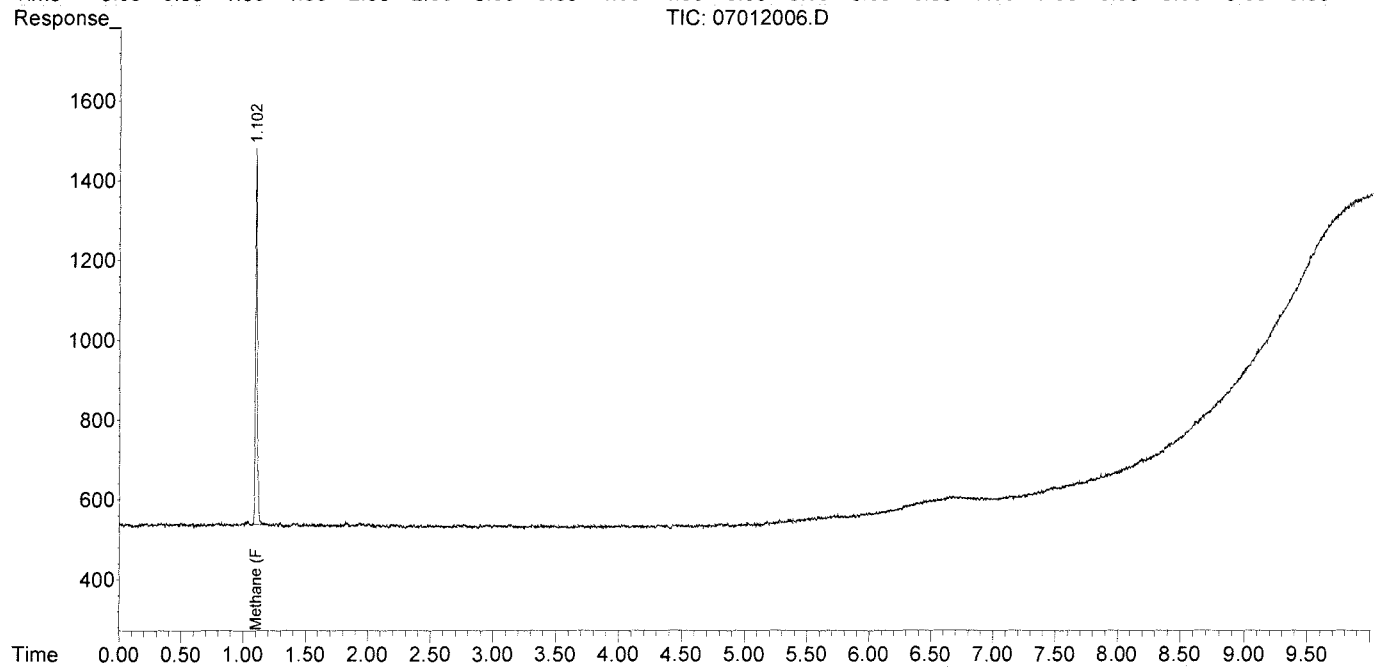
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012006.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 14:41:02
Operator : LD
Sample : P2003560-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 15:10:18 2020
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 : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012007.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 14:54:52
Operator : LD
Sample : P2003560-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 15:10:36 2020
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 :

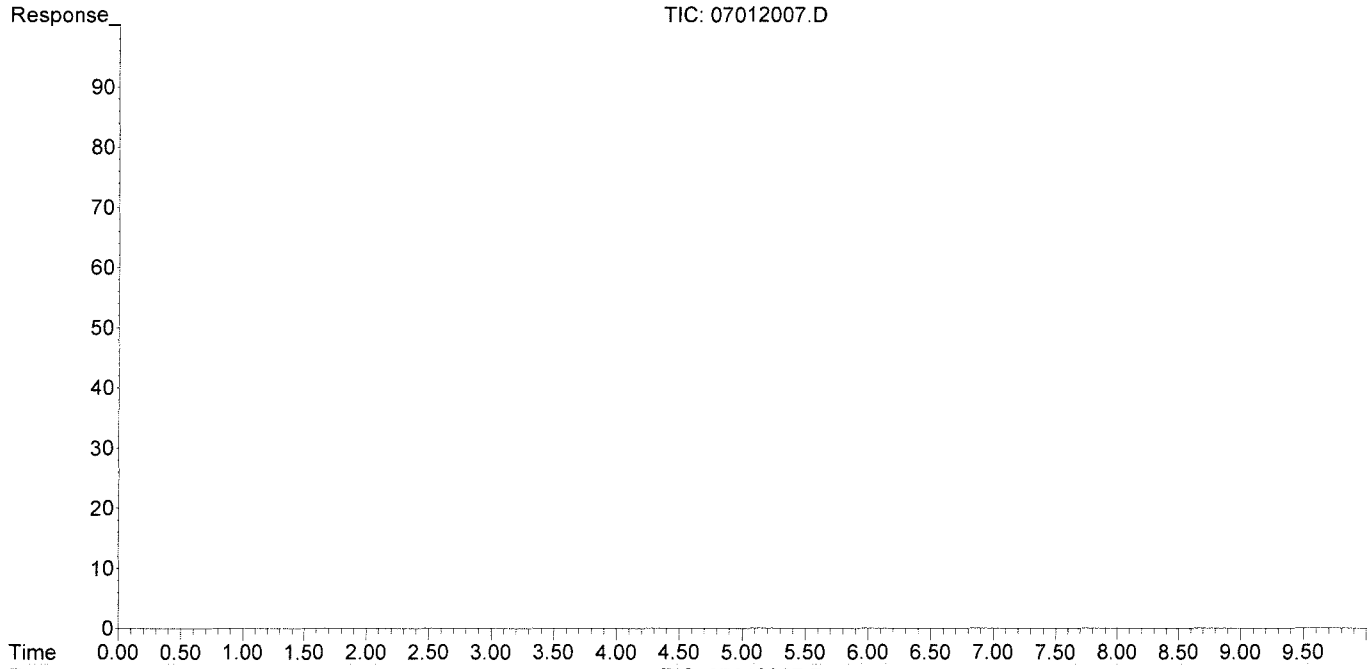
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.099	3037679	334.891	ppm
7)	Ethylene	1.667	1744	0.104	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	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

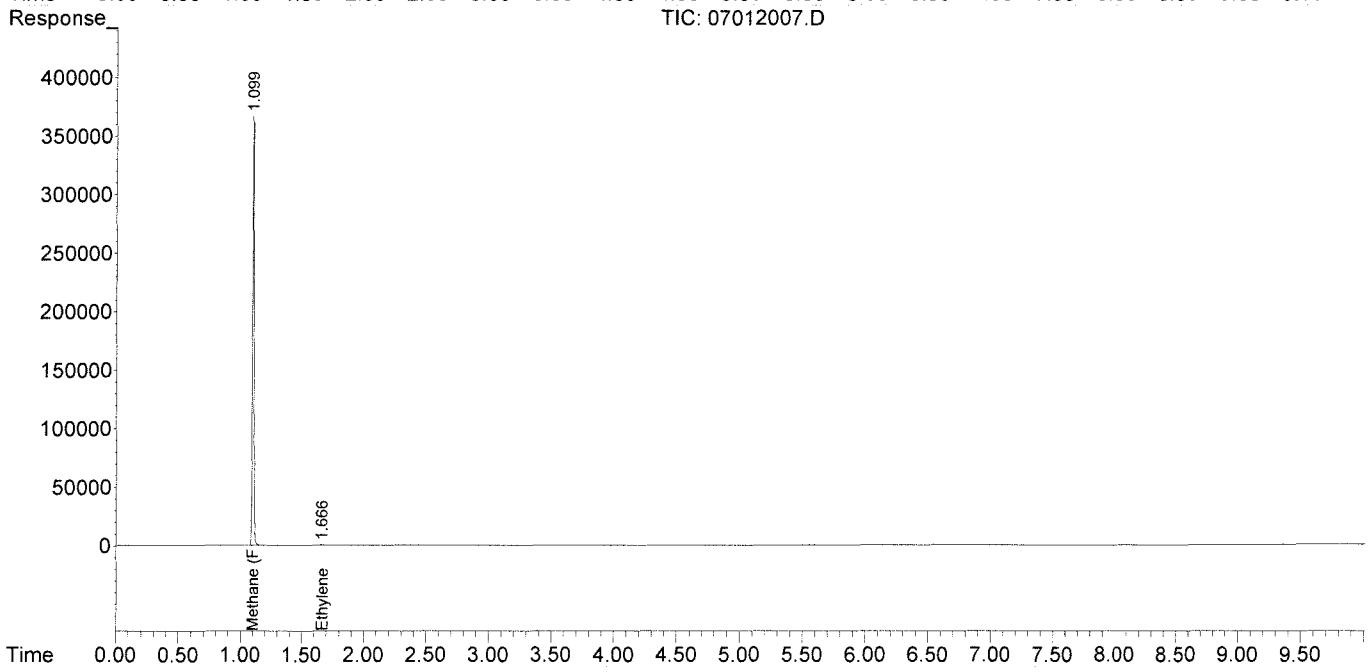
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012007.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 14:54:52
Operator : LD
Sample : P2003560-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 15:10:36 2020
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 : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012008.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 15:07:49
Operator : LD
Sample : P2003560-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 16:06:25 2020
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 :

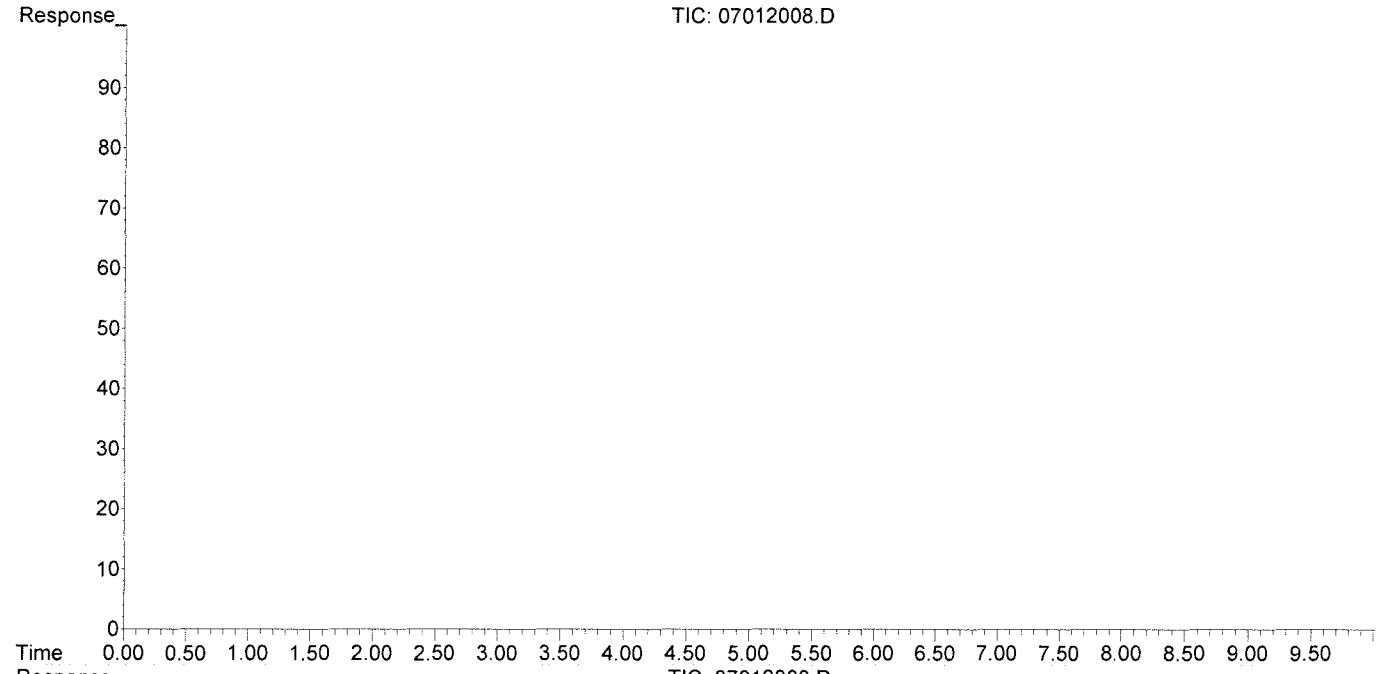
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.096	6982321	769.772	ppm
7)	Ethylene	1.656	45643	2.727	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	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

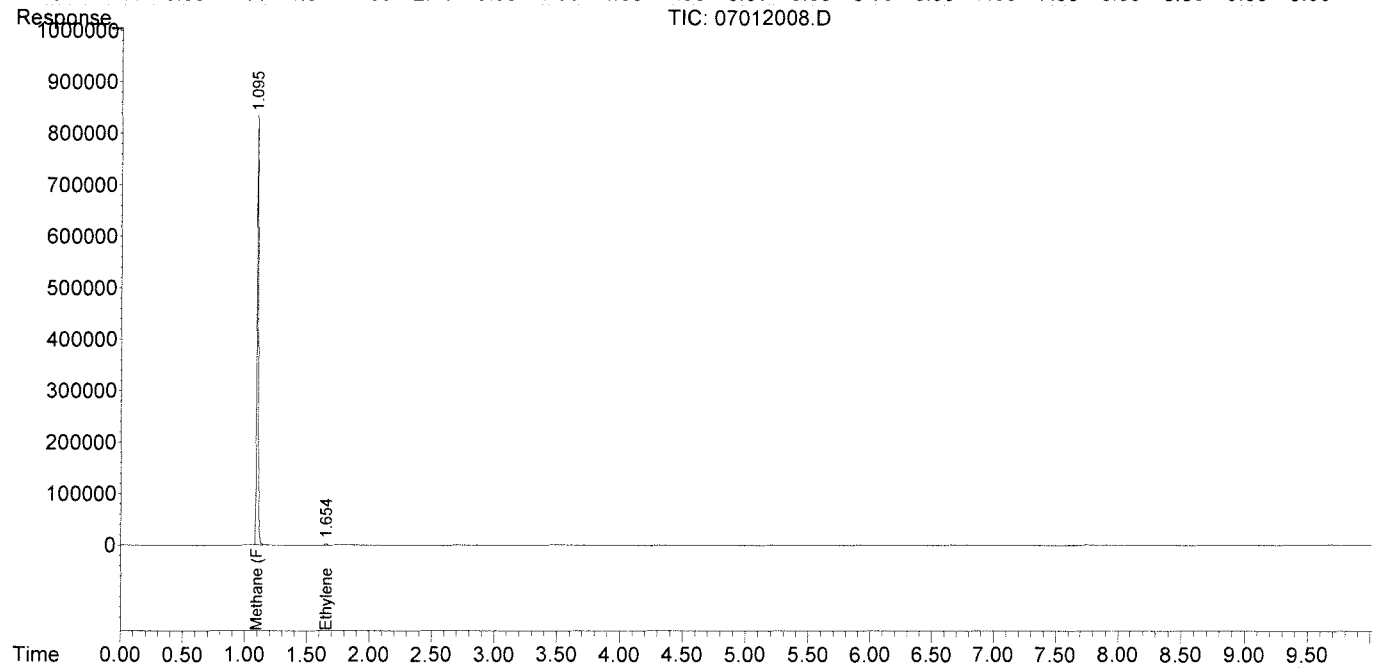
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012008.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 15:07:49
Operator : LD
Sample : P2003560-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 16:06:25 2020
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 : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012009.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 15:27:11
Operator : LD
Sample : P2003560-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 16:06:44 2020
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 :

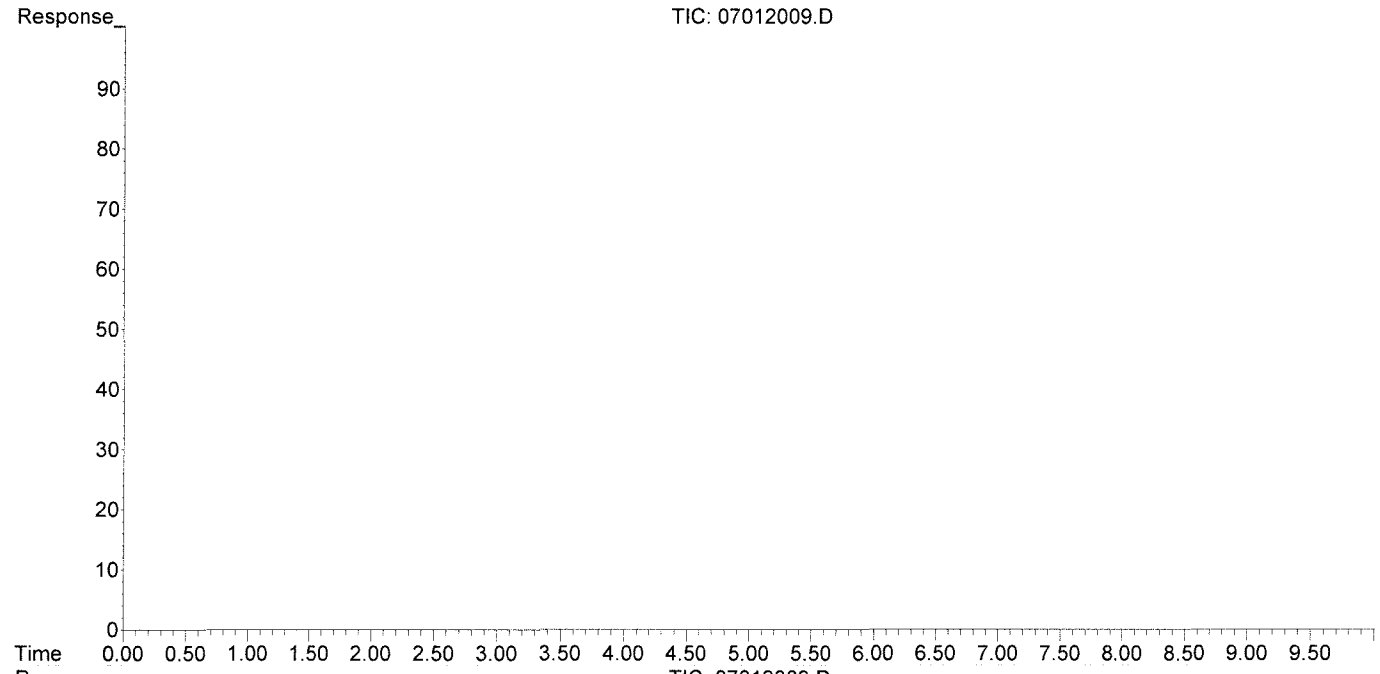
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.103	4907090	540.986	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	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

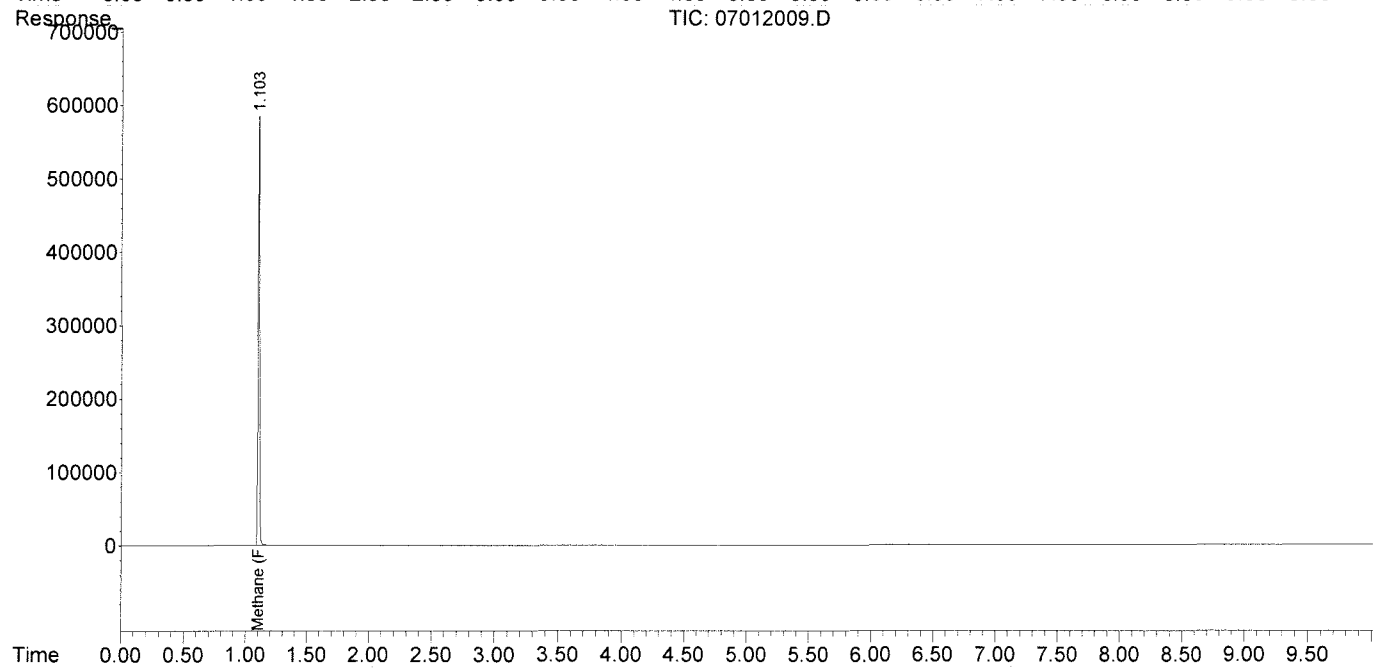
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012009.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 15:27:11
Operator : LD
Sample : P2003560-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 16:06:44 2020
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 : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012003.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 13:48:06
Operator : LD
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: Jul 01 14:08:21 2020
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 :

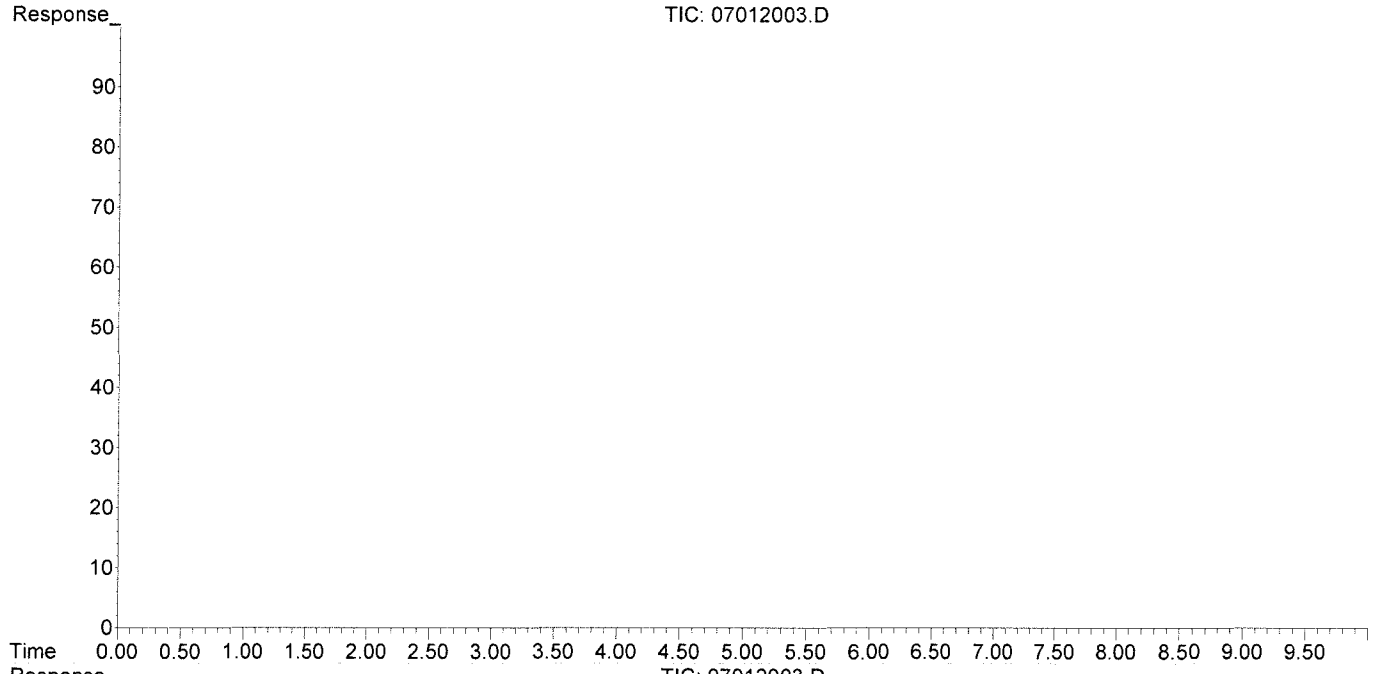
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000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

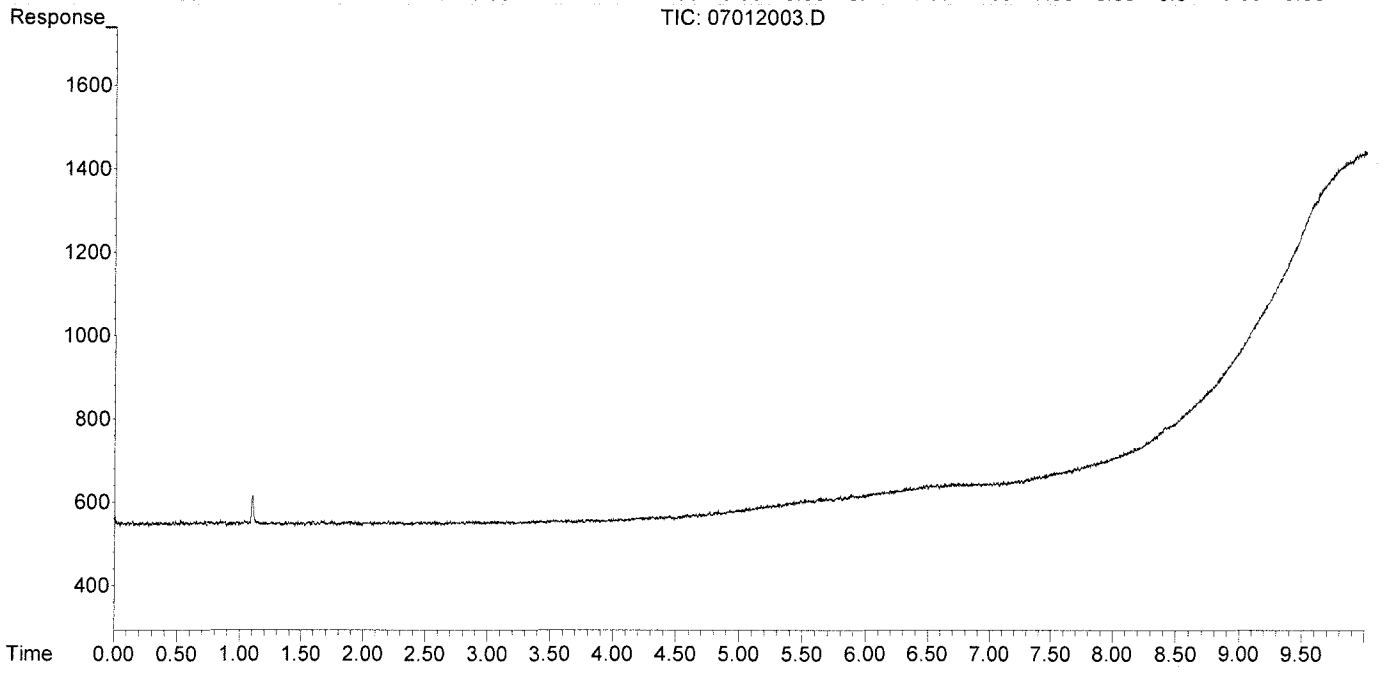
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012003.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 13:48:06
Operator : LD
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: Jul 01 14:08:21 2020
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 : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012004.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 14:01:52
Operator : LD
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: Jul 01 14:18:37 2020
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 :

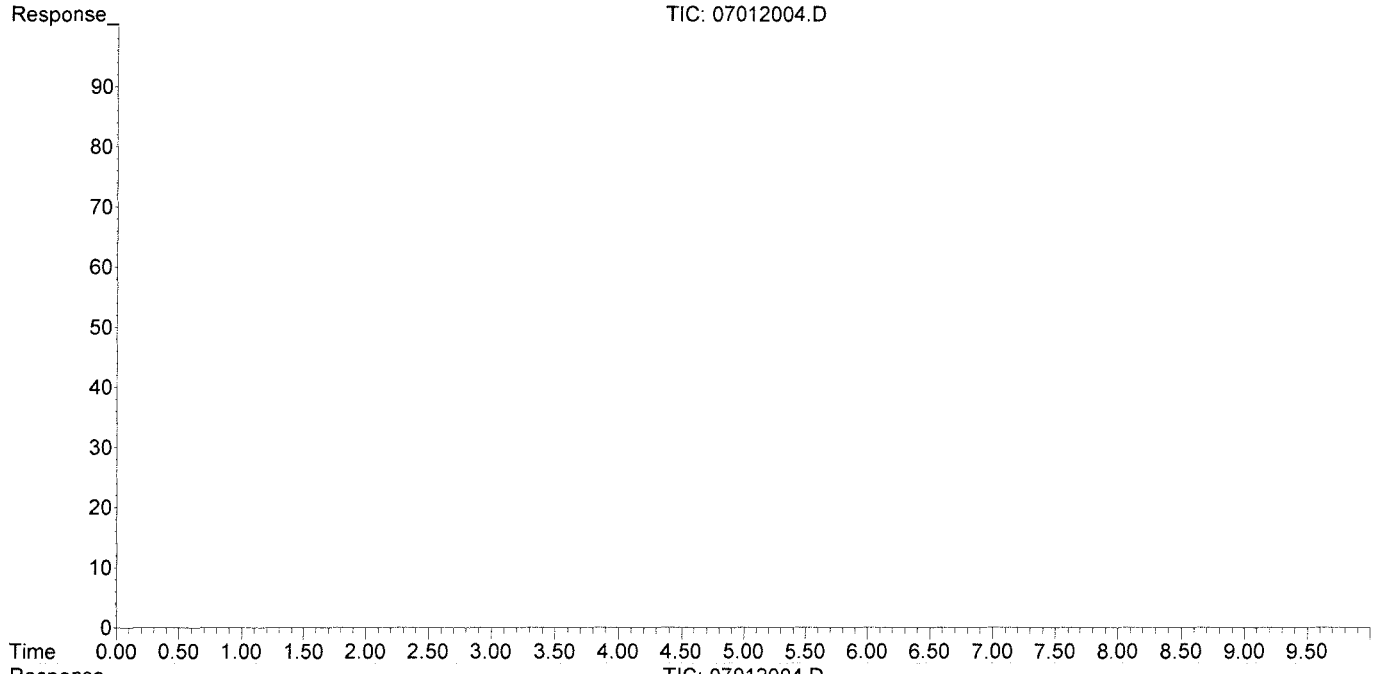
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.097	12970	1.430	ppm	
7)	Ethylene	1.664	17638	1.054	ppm	
8)	Ethane	1.928	20361	1.201	ppm	
9)	Propylene	4.313	23705	1.012	ppm	
10)	Propane	4.435	30311	1.218	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	d
13)	n-Butane	0.000	0	N.D.	ppm	d

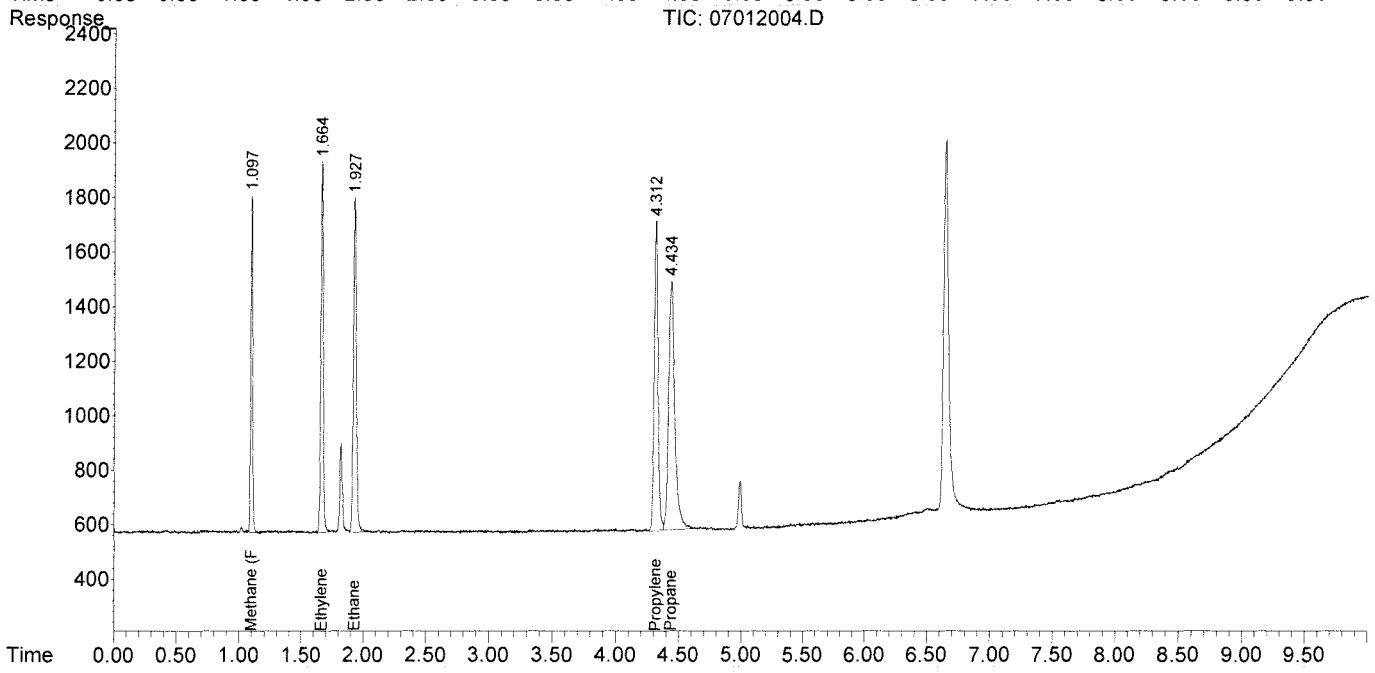
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012004.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 14:01:52
Operator : LD
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: Jul 01 14:18:37 2020
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 : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012005.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 14:21:34
Operator : LD
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: Jul 01 14:39:02 2020
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 :

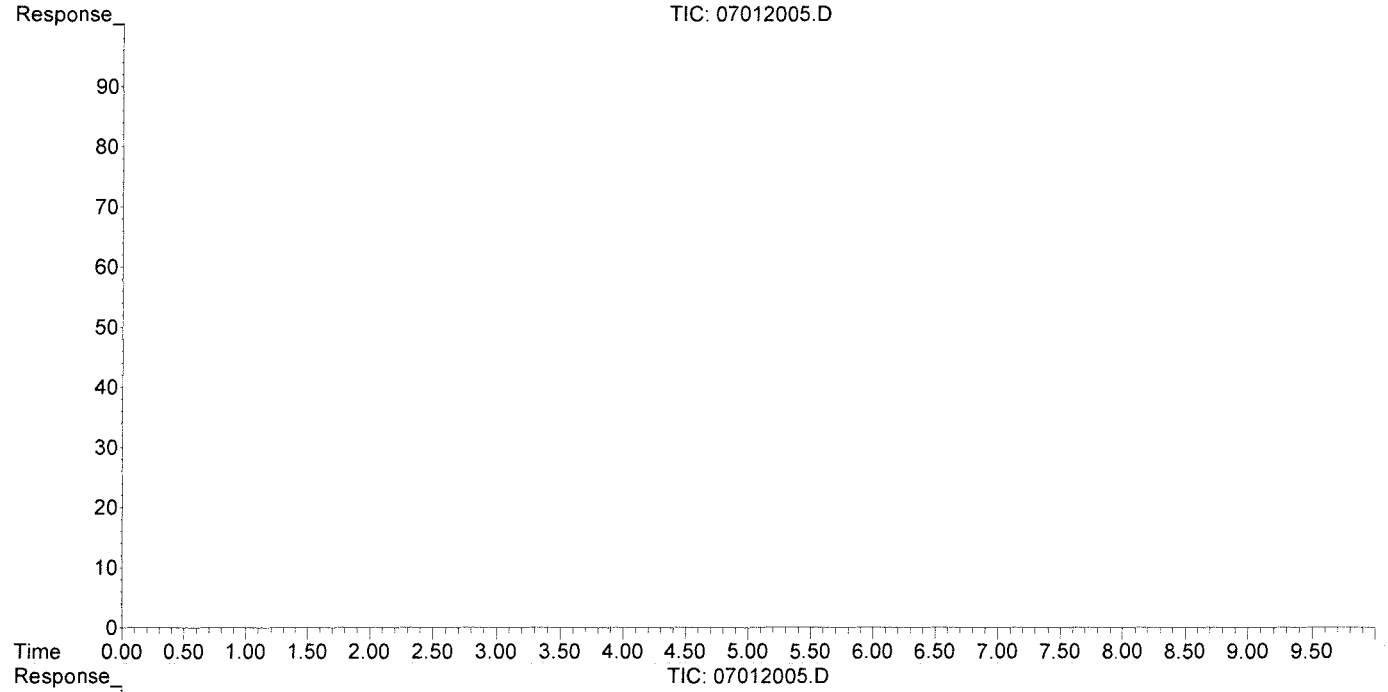
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.098	12856	1.417	ppm	
7)	Ethylene	1.665	17341	1.036	ppm	
8)	Ethane	1.928	19739	1.165	ppm	
9)	Propylene	4.311	23012	0.982	ppm	
10)	Propane	4.433	29429	1.183	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	d
13)	n-Butane	0.000	0	N.D.	ppm	d

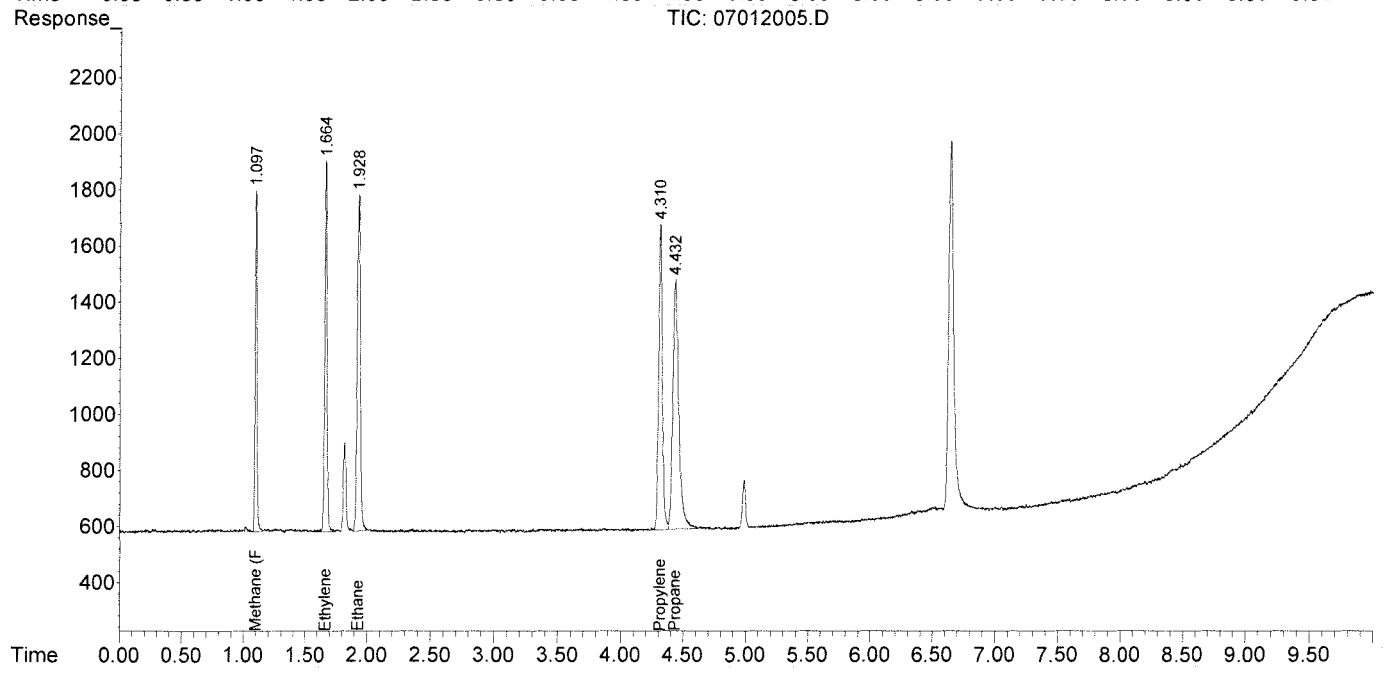
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012005.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 14:21:34
Operator : LD
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: Jul 01 14:39:02 2020
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

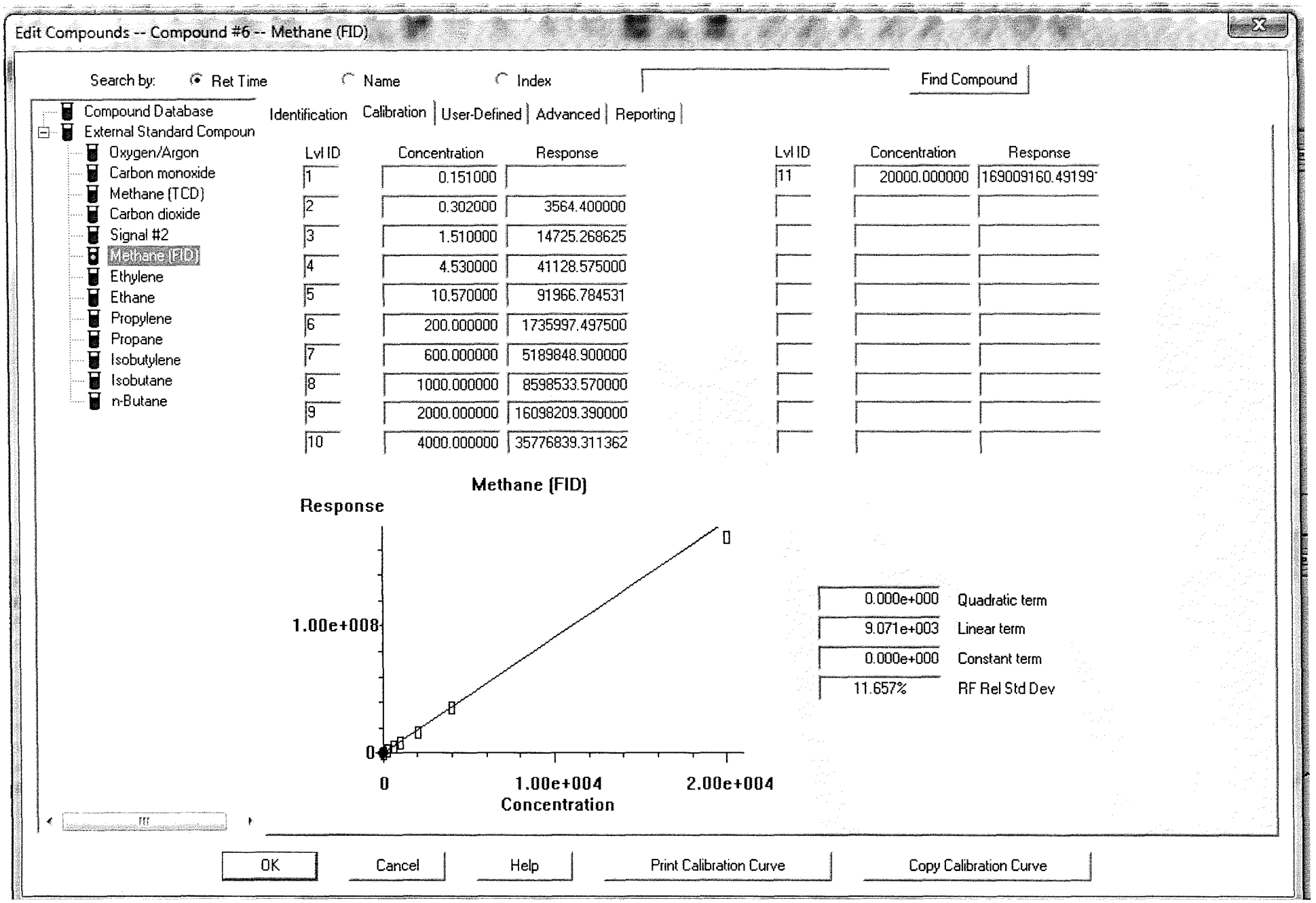
	Compound	1	2	3	4	5	6	Avg	%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793 E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594 E6	221.92
3)	Methane (TCD)						2.161	0.951 E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438 E2	4.44

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
Lvl ID Concentration Response
11 20000.000000 169009160.49199
Methane (FID)
Response
1.00e+008
0
0 1.00e+004 2.00e+004
Concentration
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

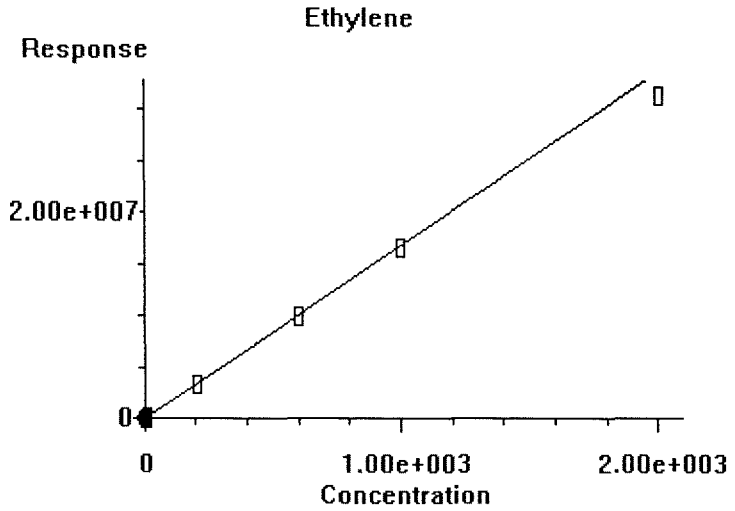
Search by: Ret Time Name Index Find Compound

- 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

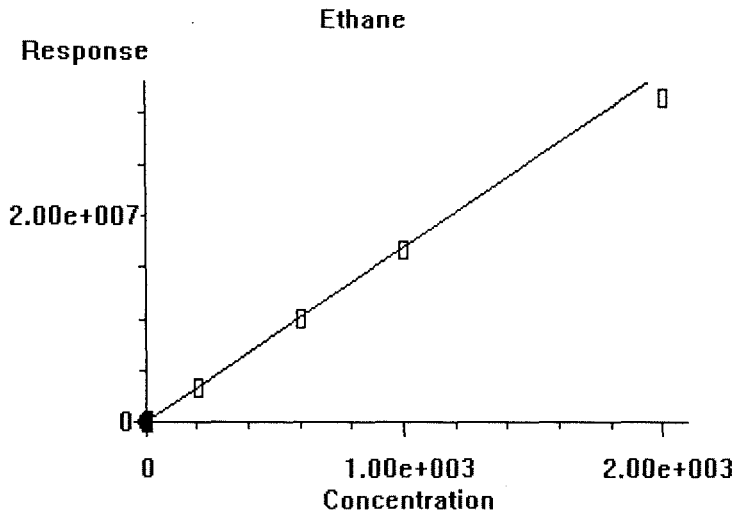
Search by: (•) Ret Time ( ) Name ( ) Index [ ] Find Compound

- 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

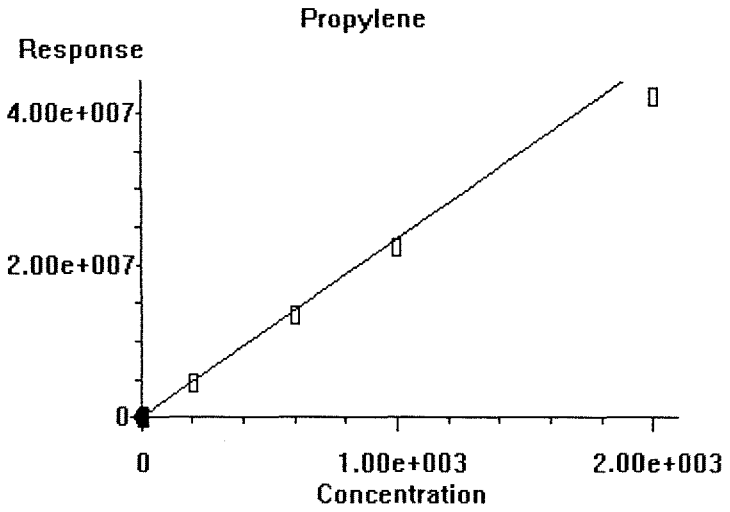
Search by: Ret Time Name Index Find Compound

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

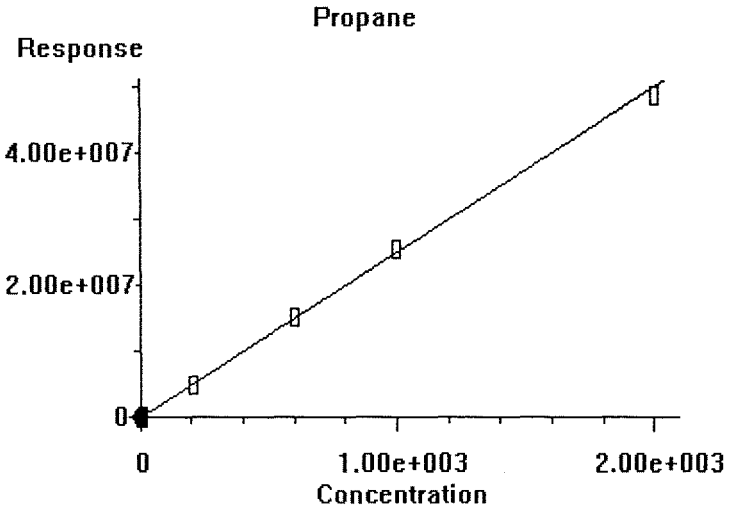
Search by: Ret Time Name Index Find Compound

- 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	

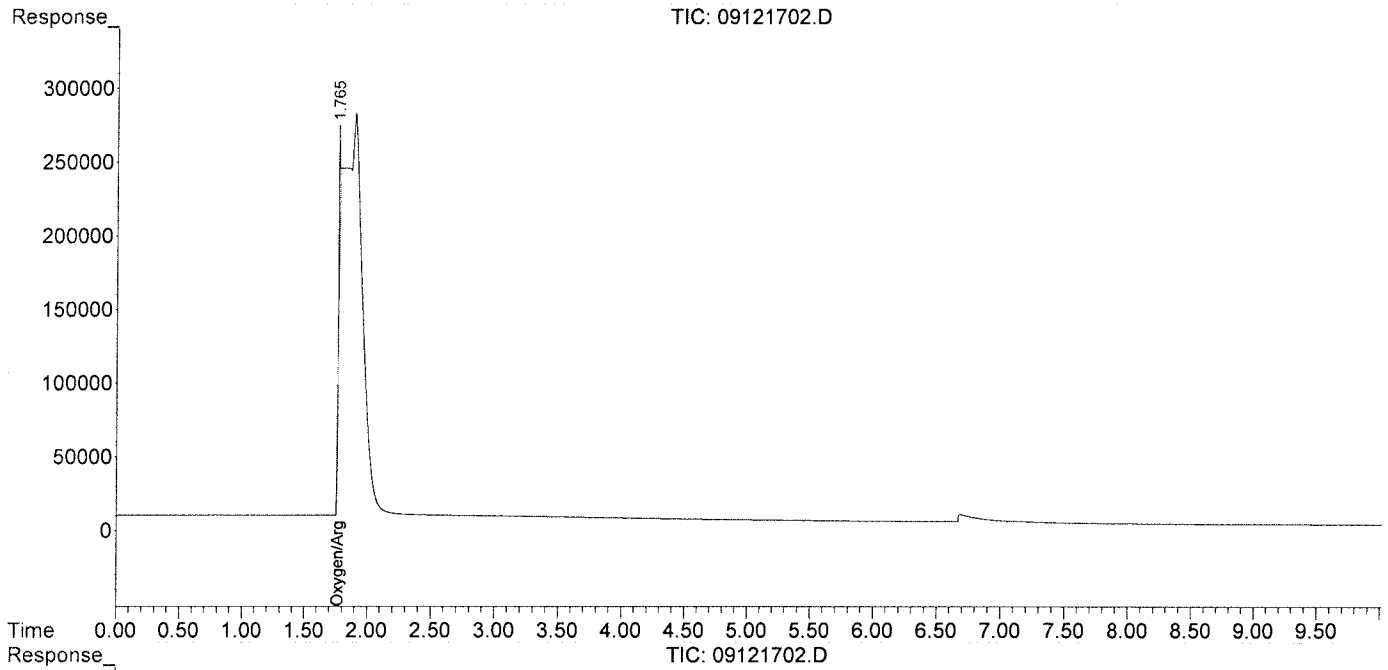
(f)=RT Delta > 1/2 Window (m)=manual int.

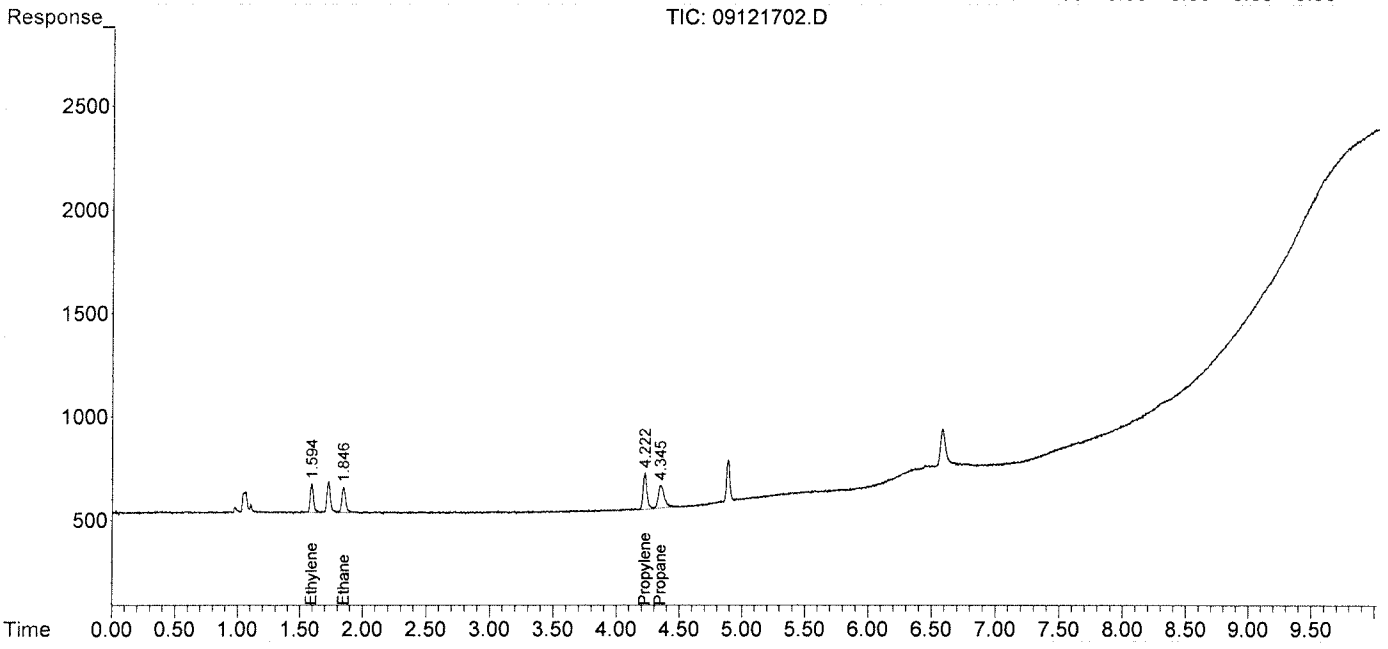
9/13/17

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 :

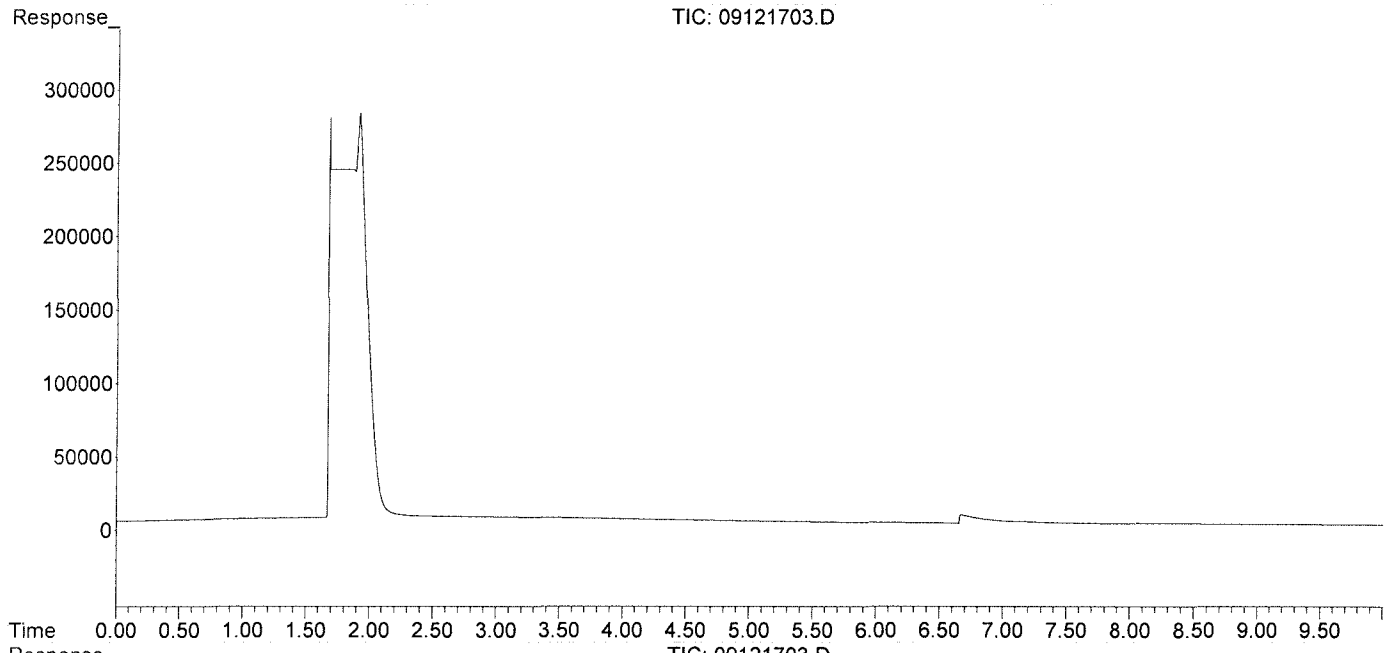
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.913f	-25181981	N.D.	ppm	
2)	Carbon monoxide	1.913f	-25181981	1.089	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.049	3564	0.391	ppm	m
7)	Ethylene	1.577	4947	0.292	ppm	
8)	Ethane	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	

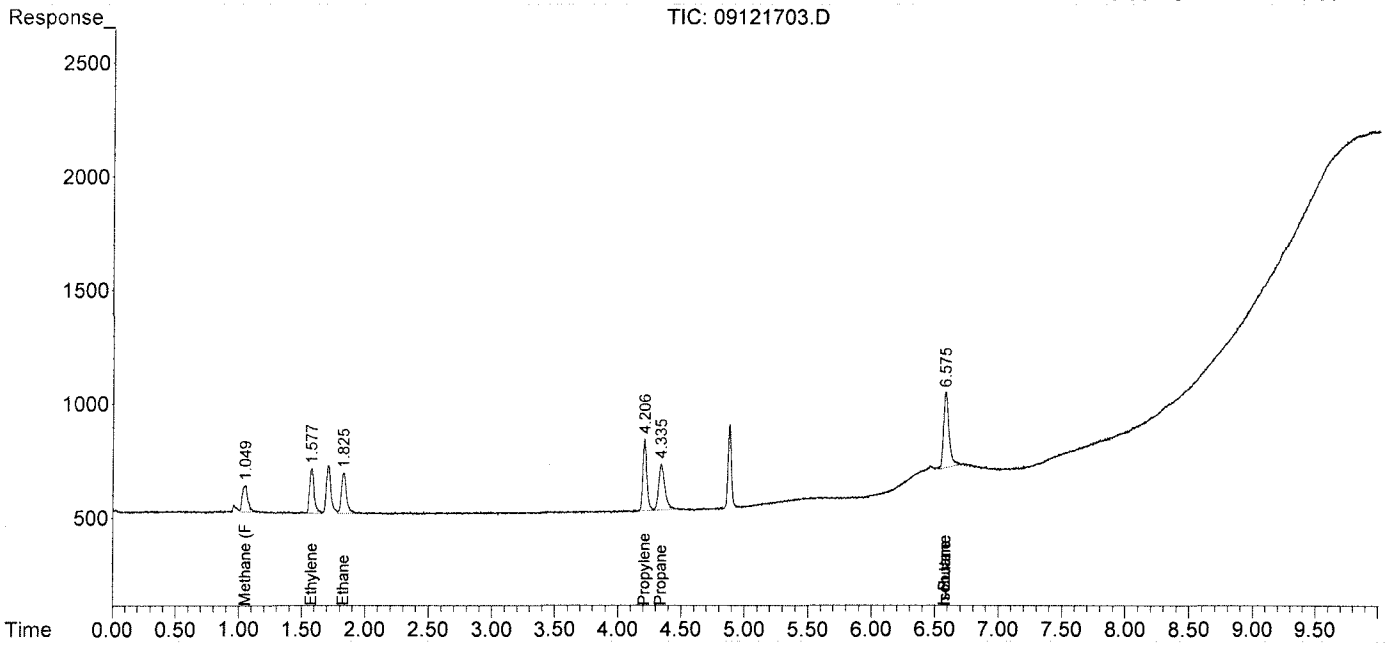
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

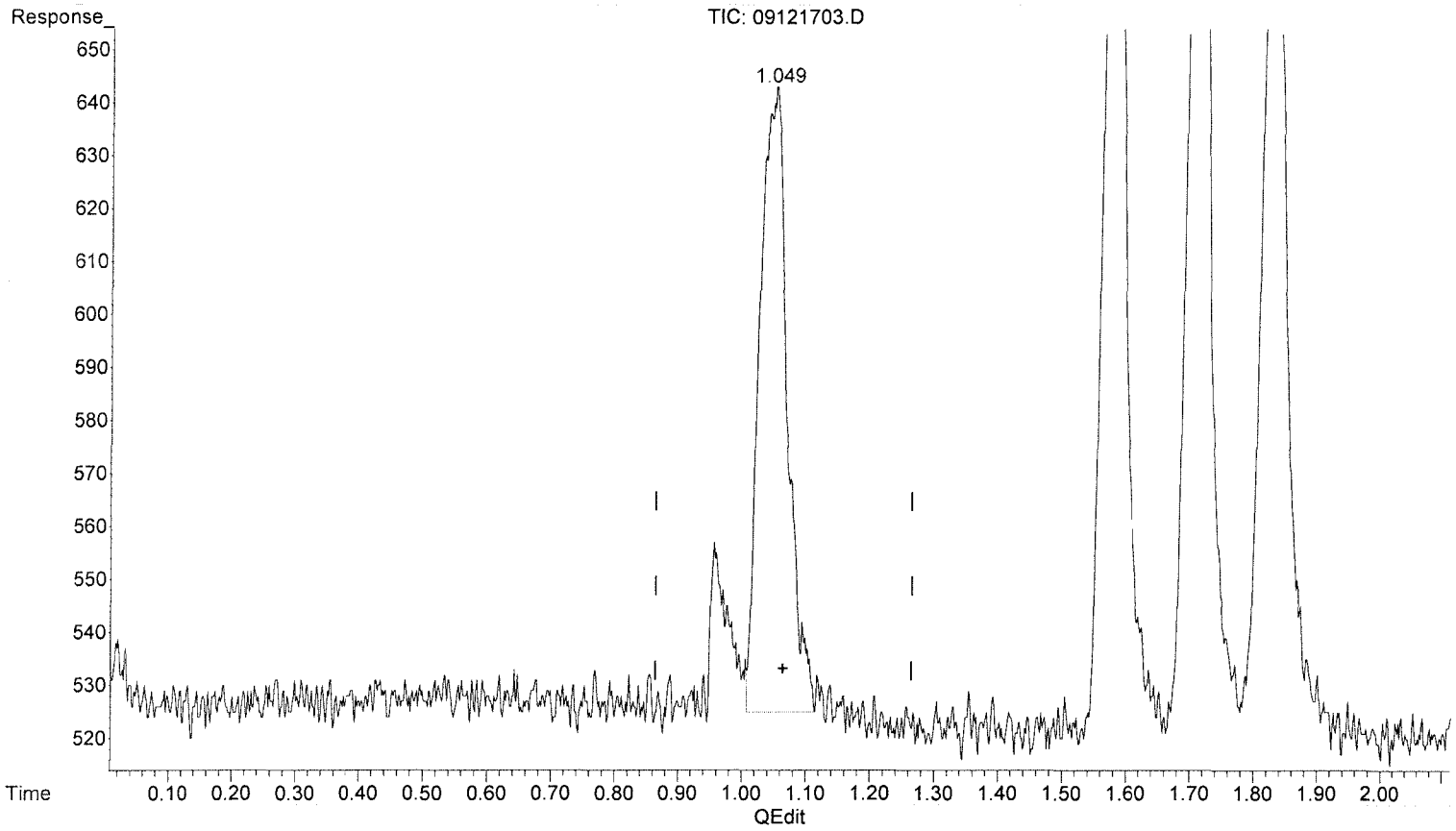




Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

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 :

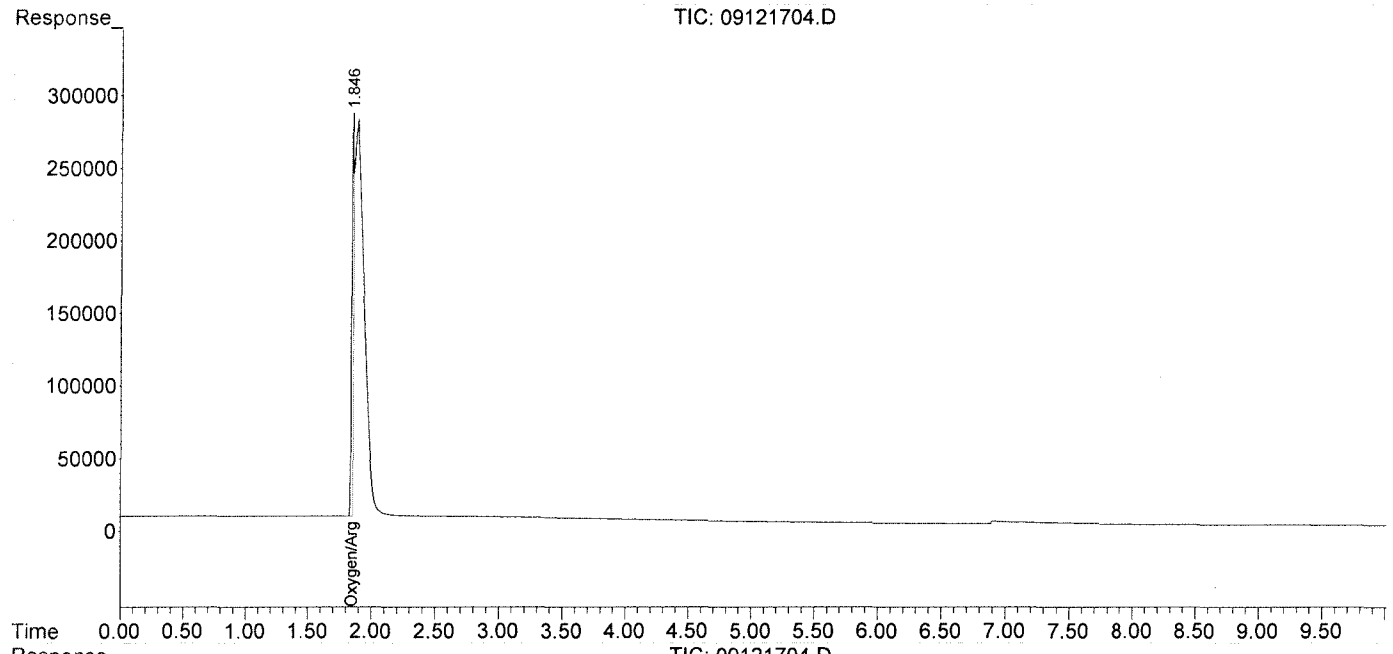
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.847	2536230	1.056	ppm
2)	Carbon monoxide	1.847	2536230	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.064	14725	1.613	ppm
7)	Ethylene	1.598	26885	1.582	ppm
8)	Ethane	1.851	26944	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

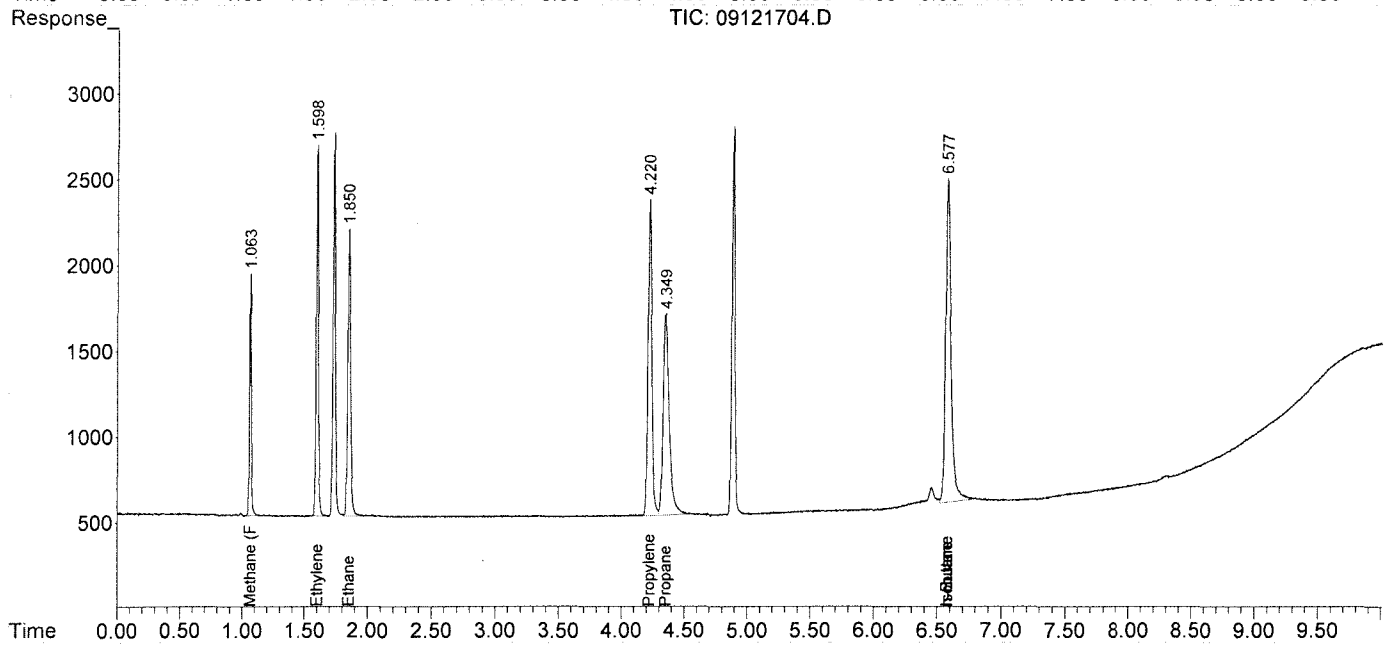
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

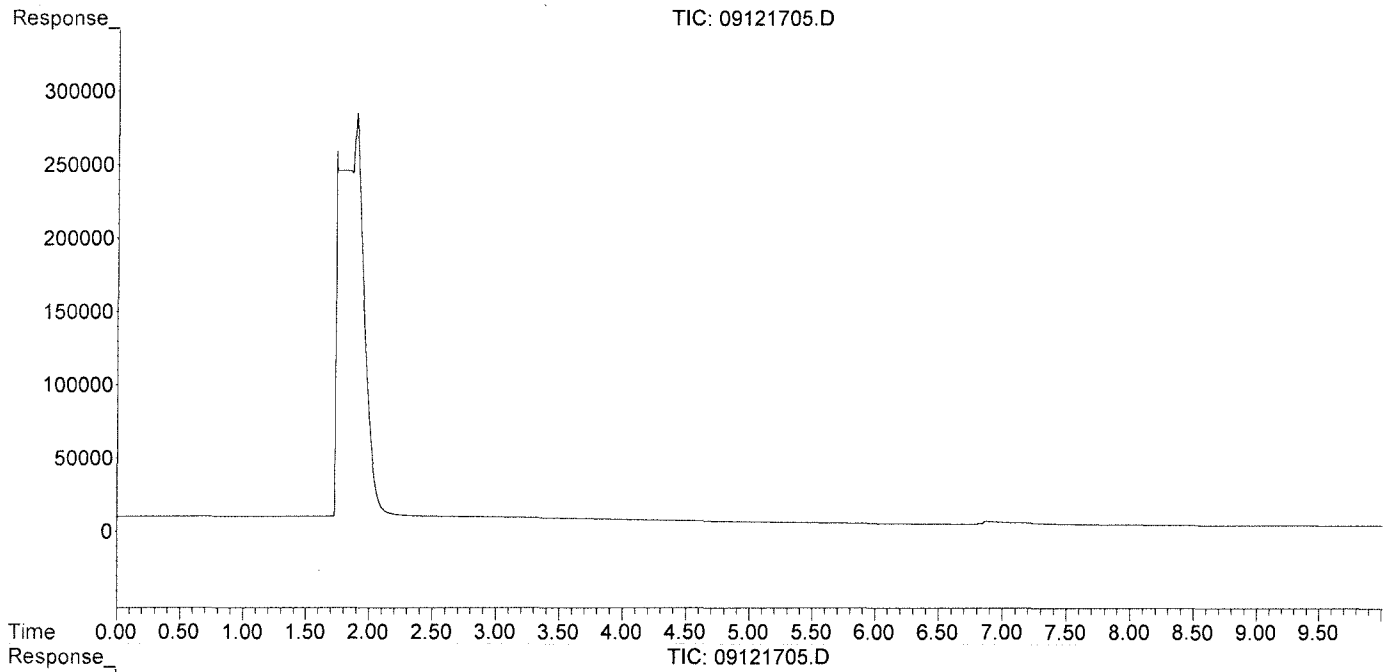
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	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

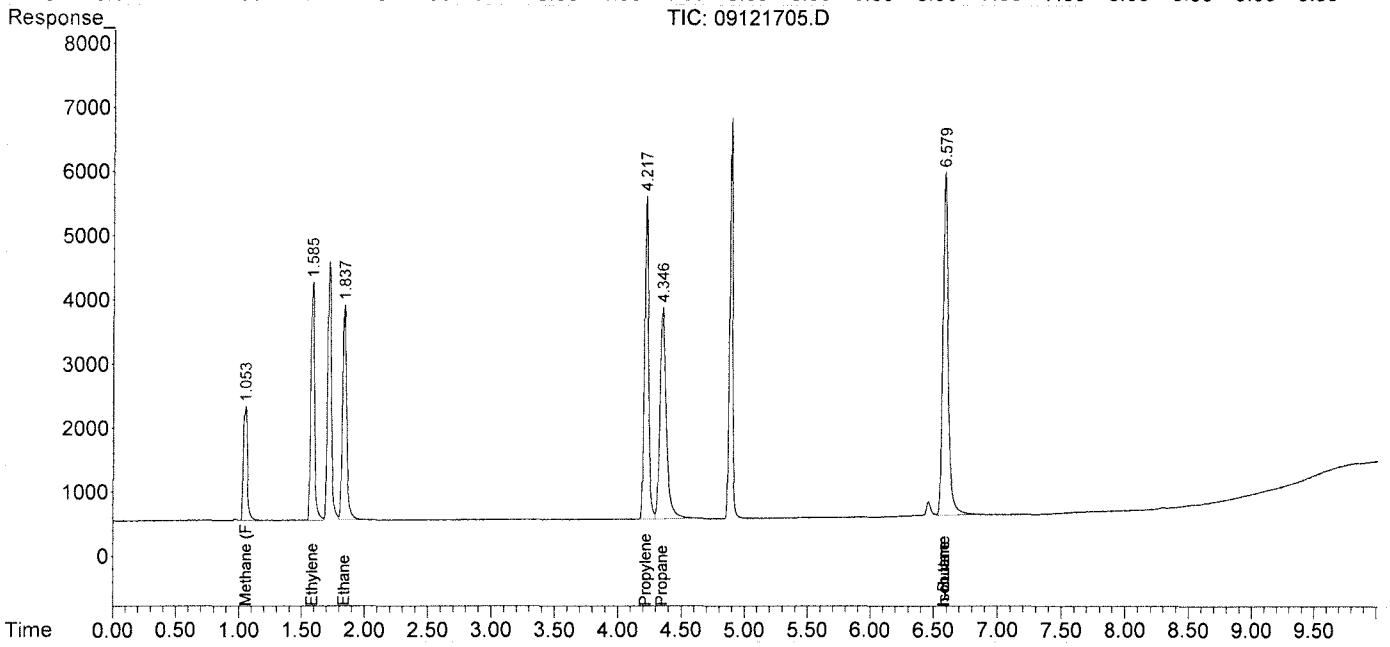
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

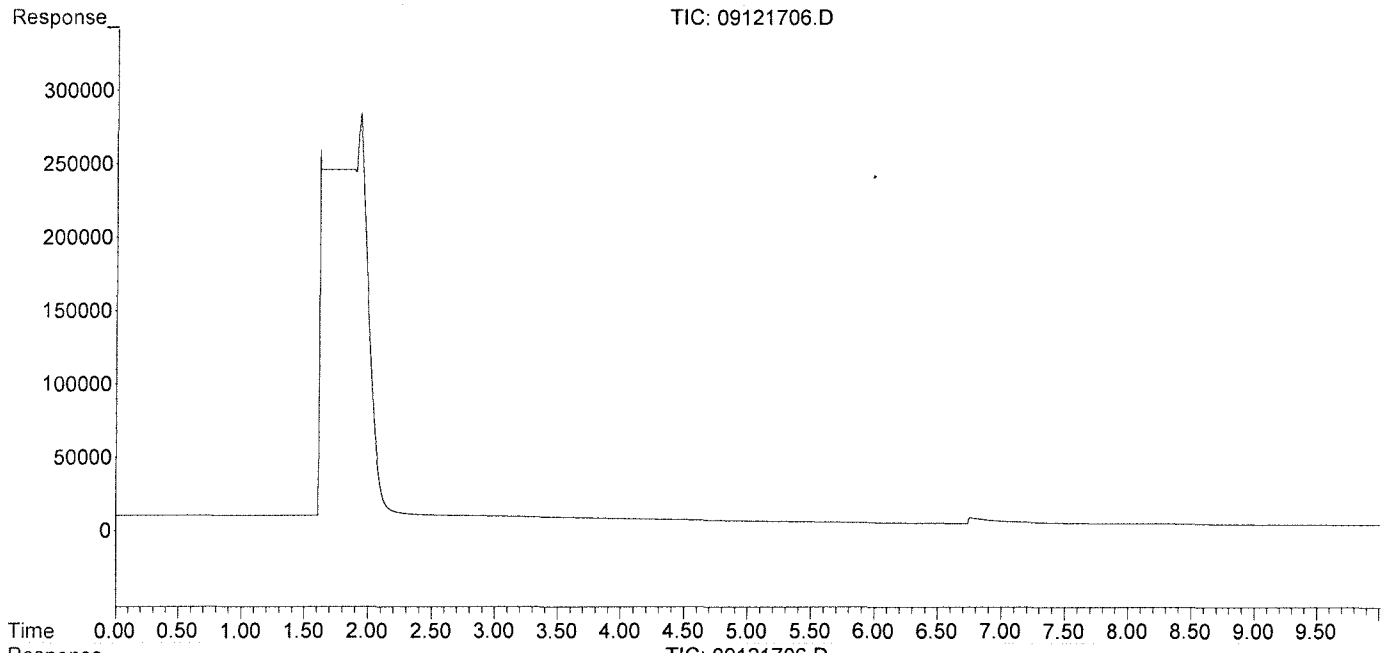
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.929f	-31871242	N.D.	ppm
2)	Carbon monoxide	1.929f	-31871242	1.818	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.025	91967	10.135	ppm
7)	Ethylene	1.568	172086	10.273	ppm
8)	Ethane	1.822	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

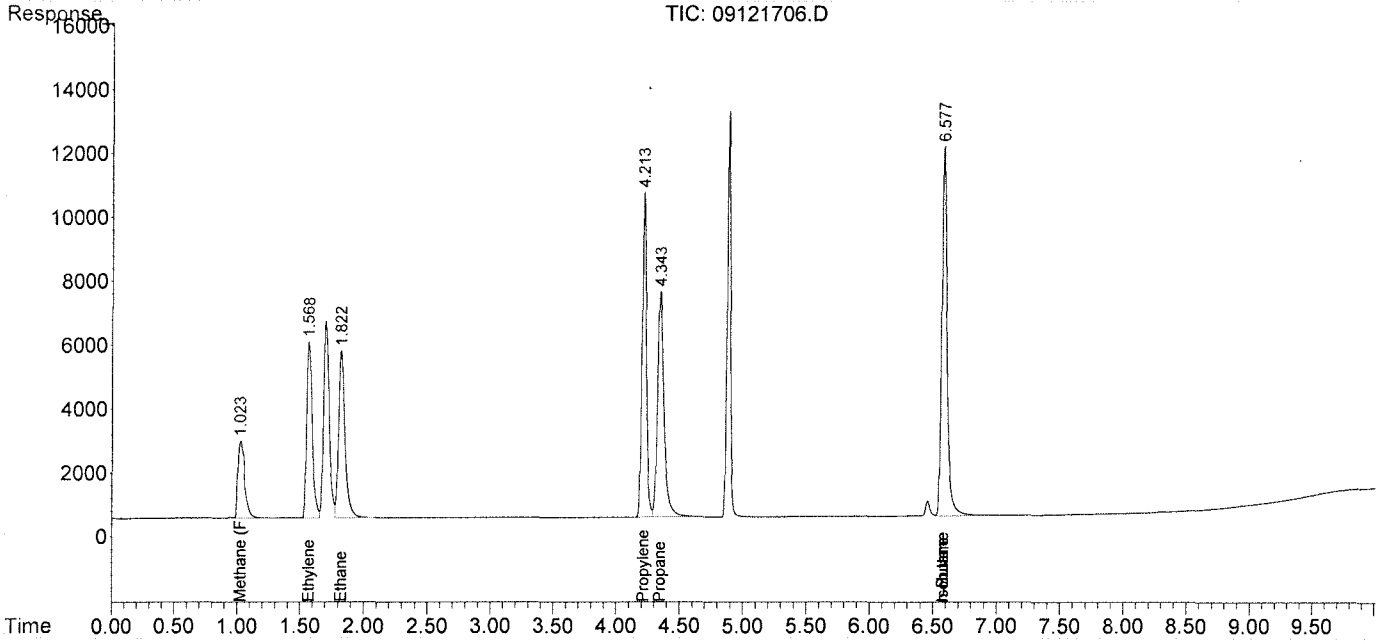
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

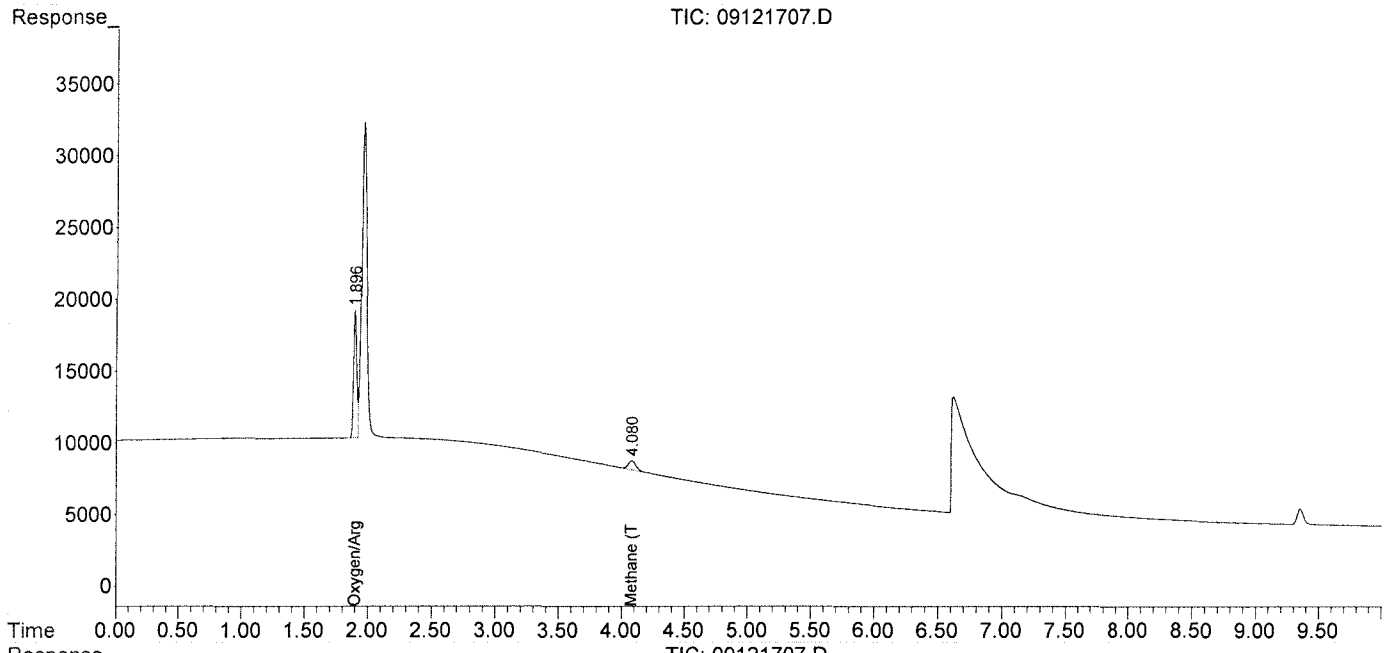
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	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

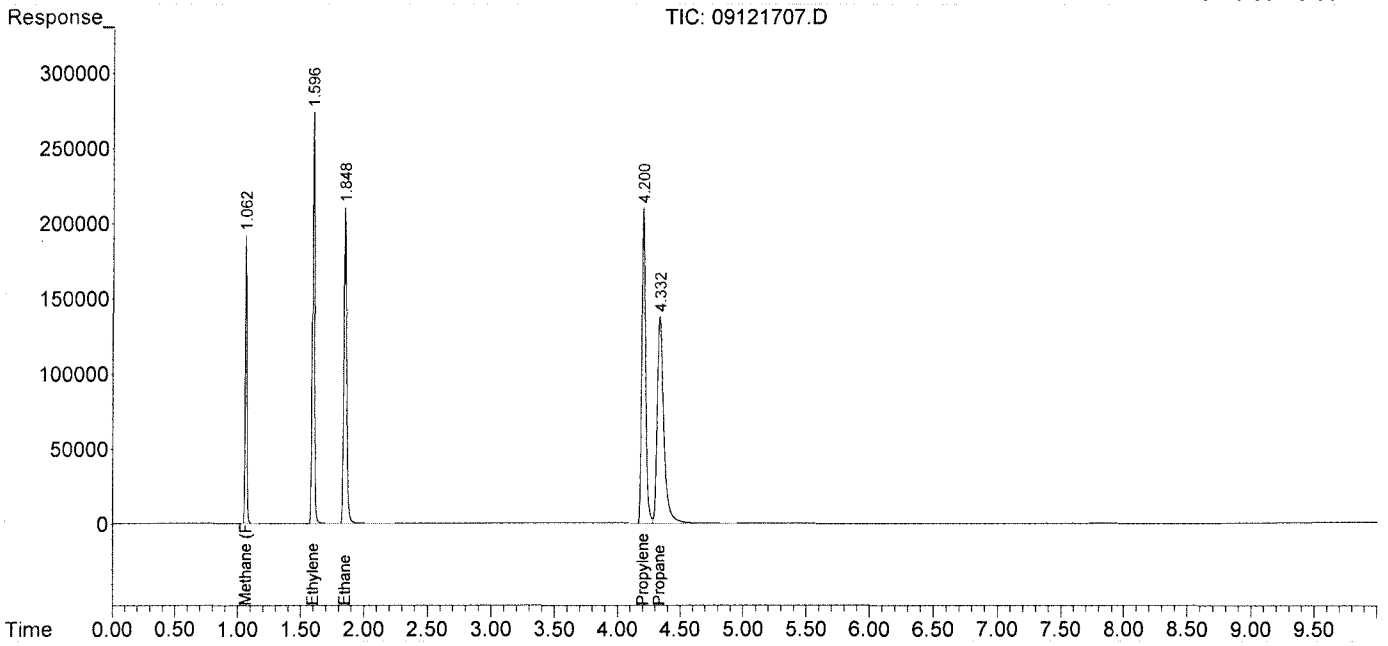
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

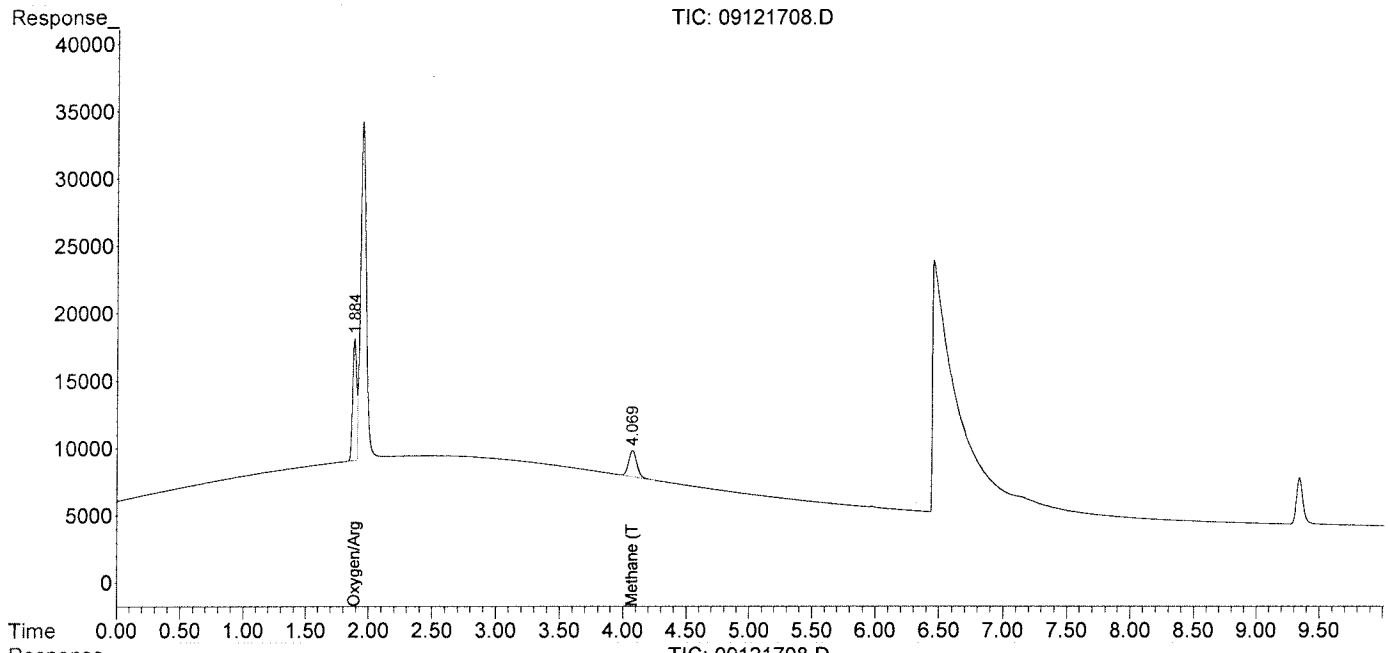
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	196022	0.124	ppm
2)	Carbon monoxide	1.884	196022	N.D.	ppm
3)	Methane (TCD)	4.070f	88282	782.730	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.044	5189849	539.759	ppm
7)	Ethylene	1.573	10007759	590.286	ppm
8)	Ethane	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

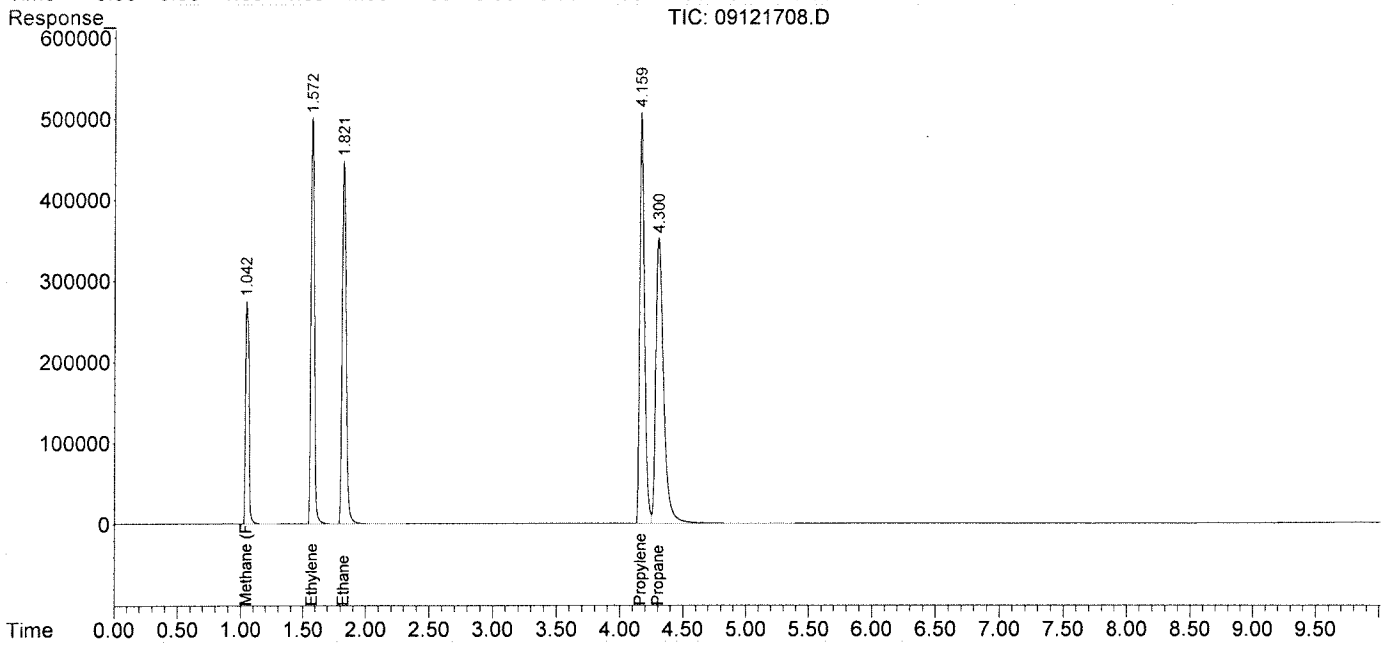
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

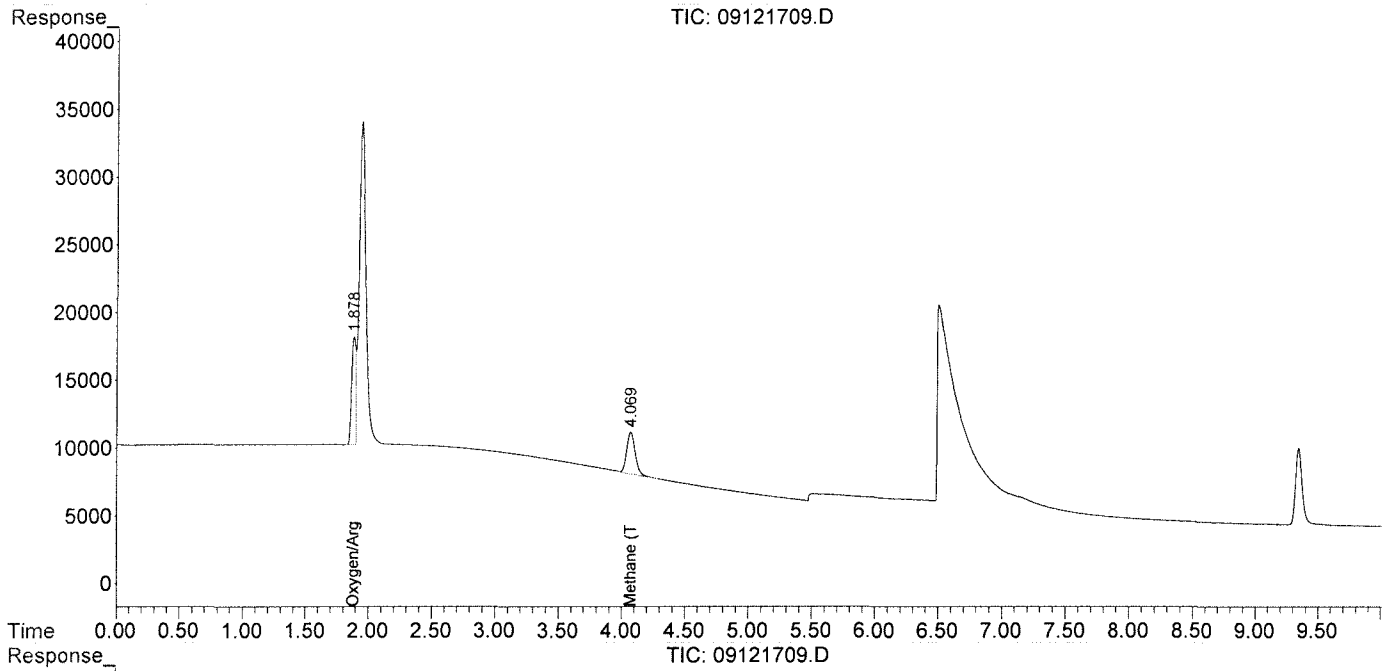
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	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

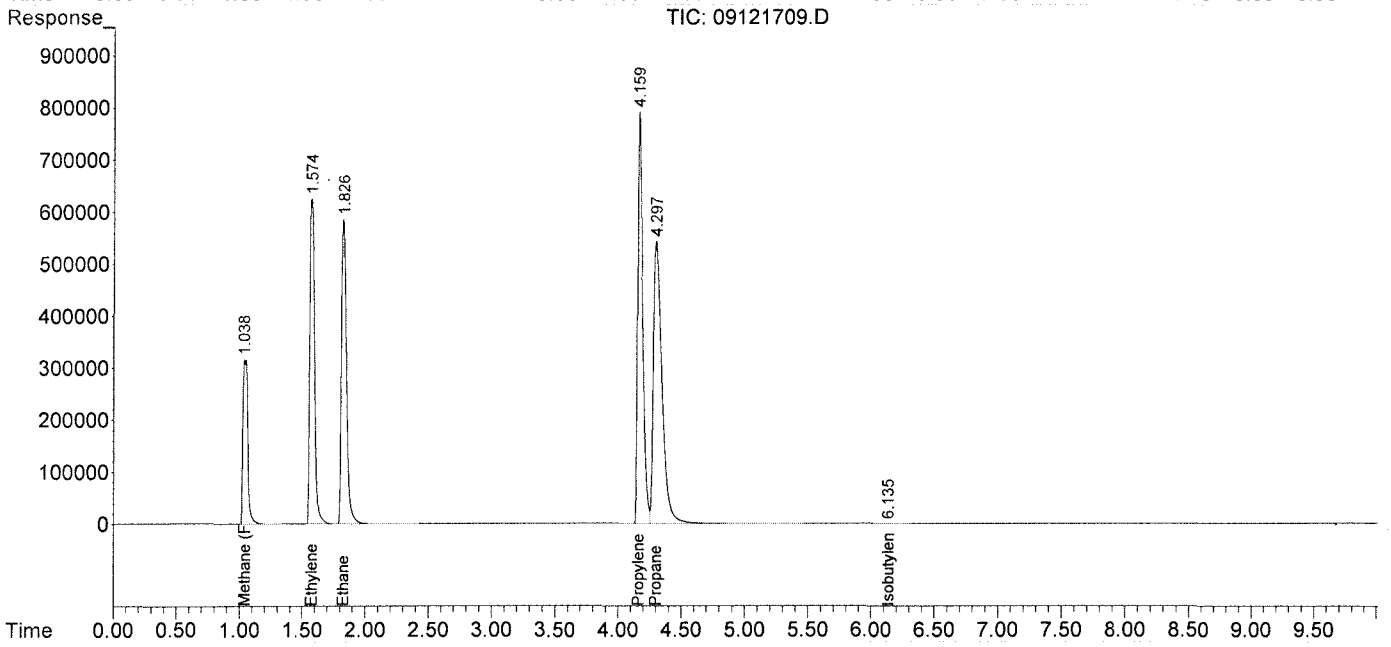
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

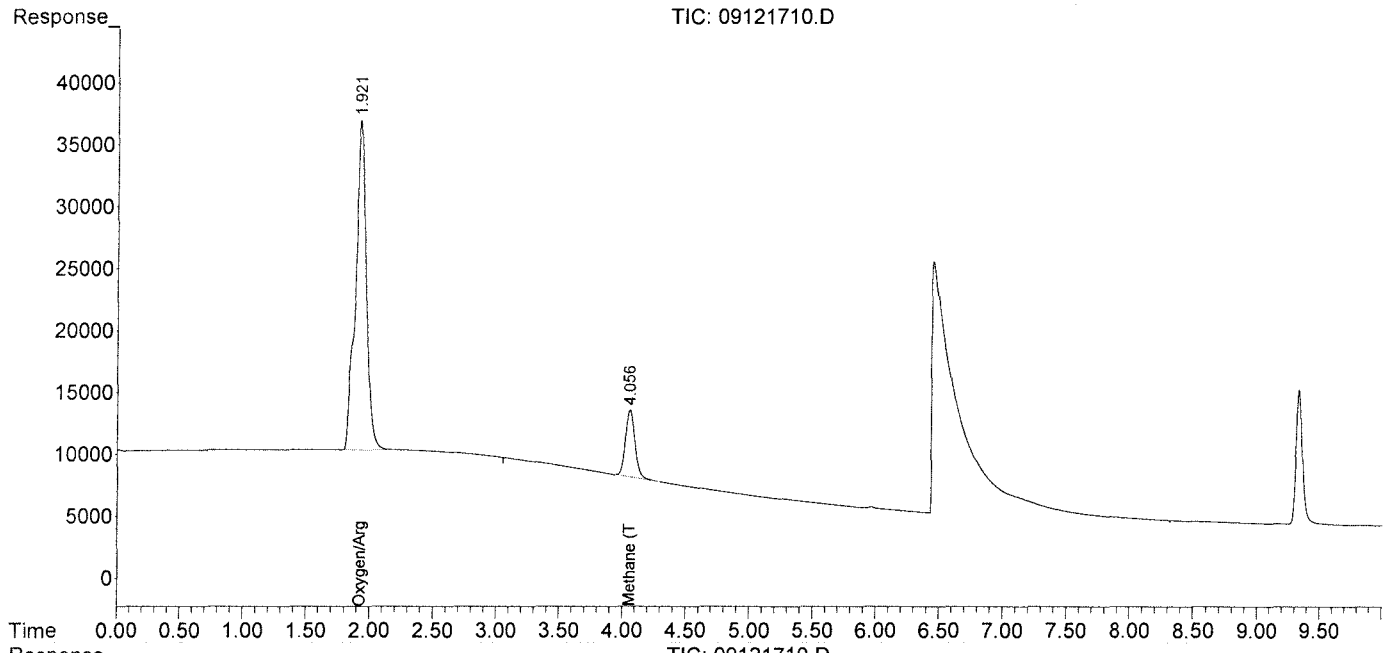
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	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	

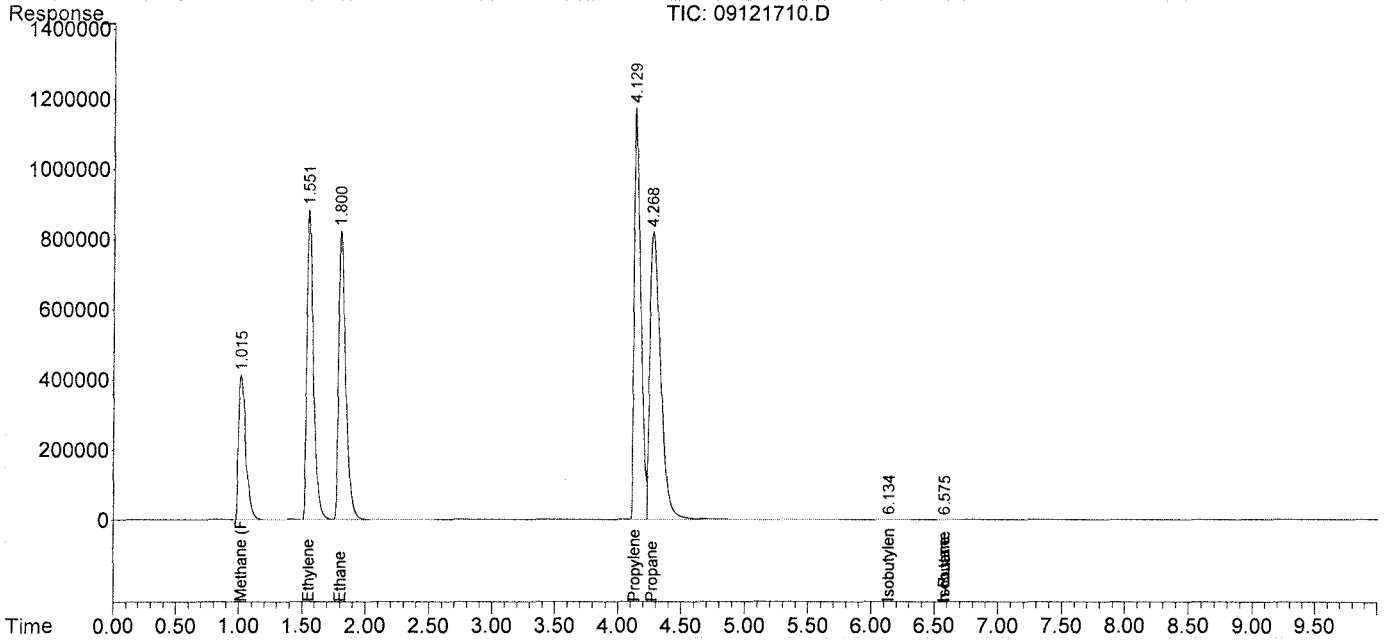
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



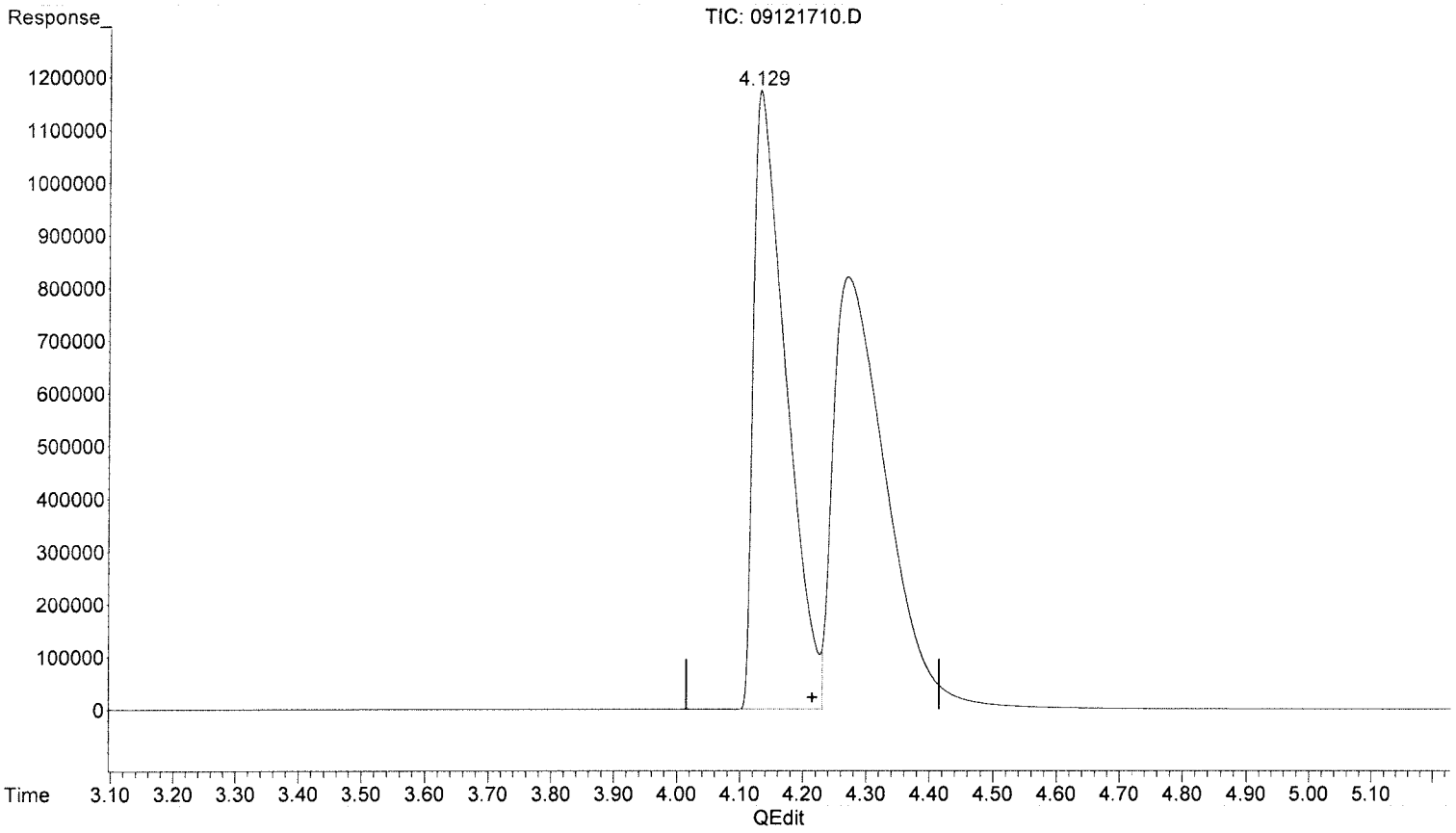


00998509

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 :

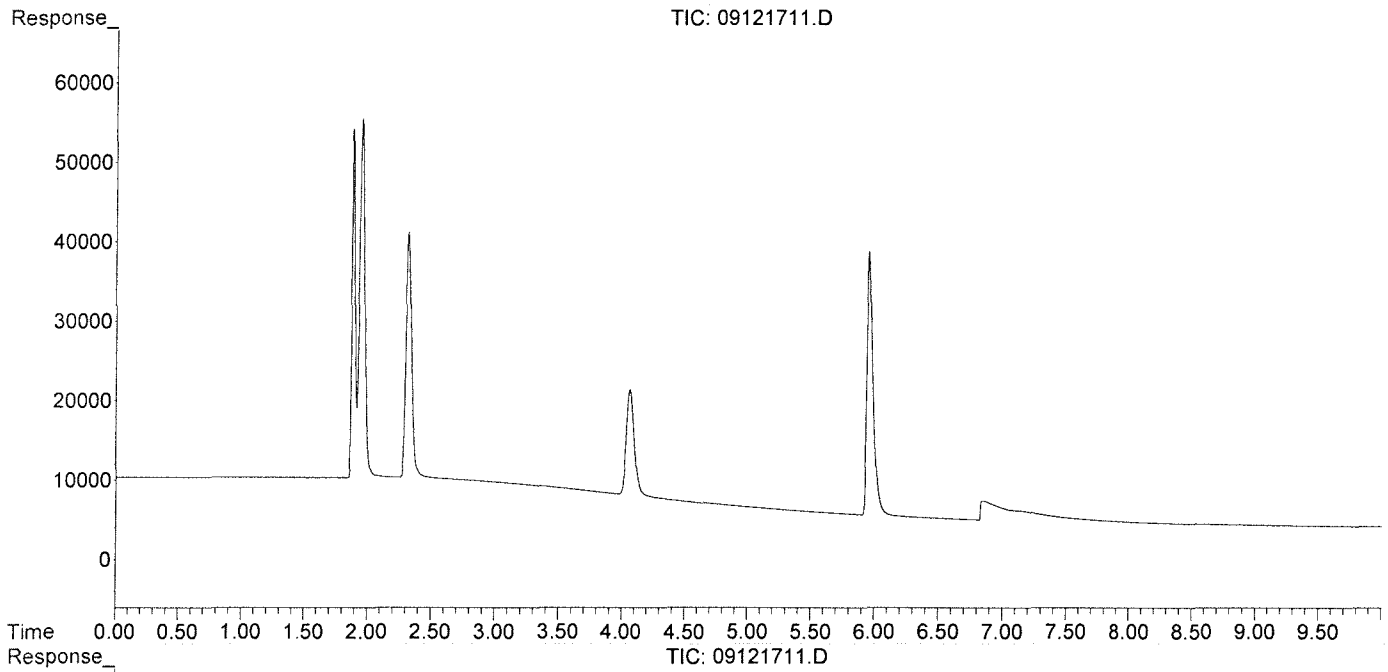
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	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	

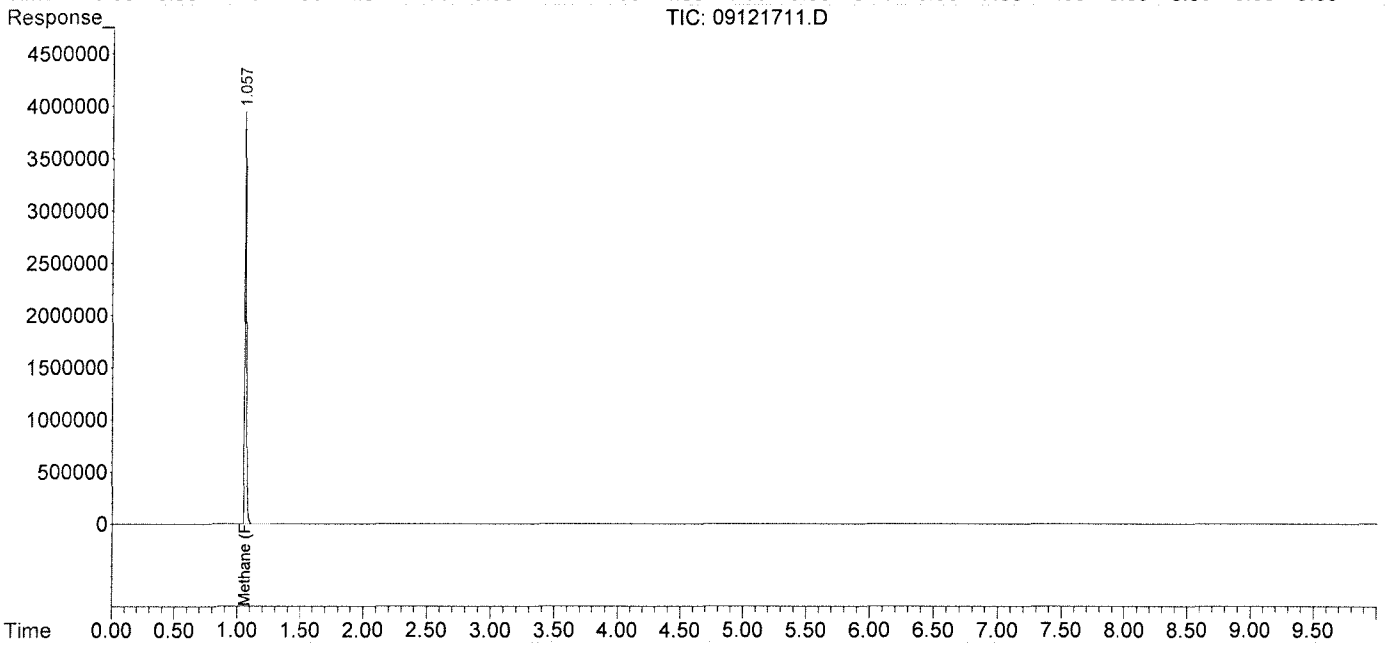
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

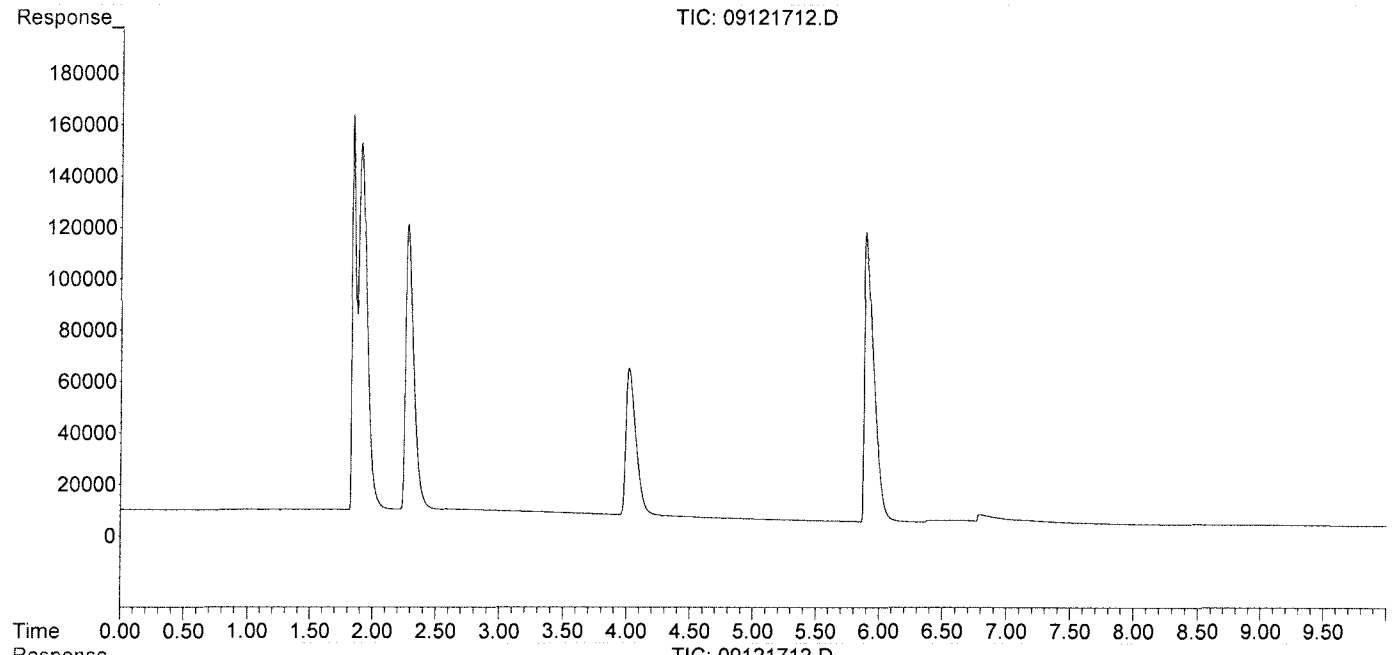
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	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	

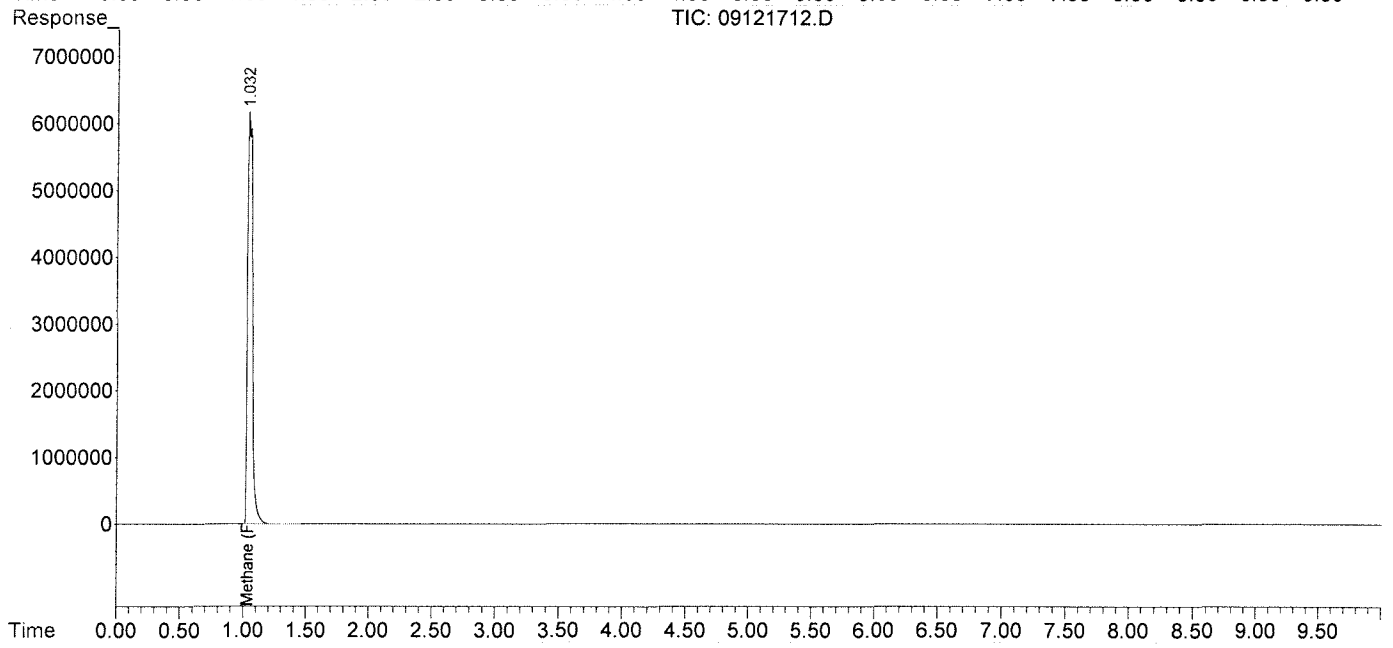
(f)=RT Delta > 1/2 Window (m)=manual int.

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		

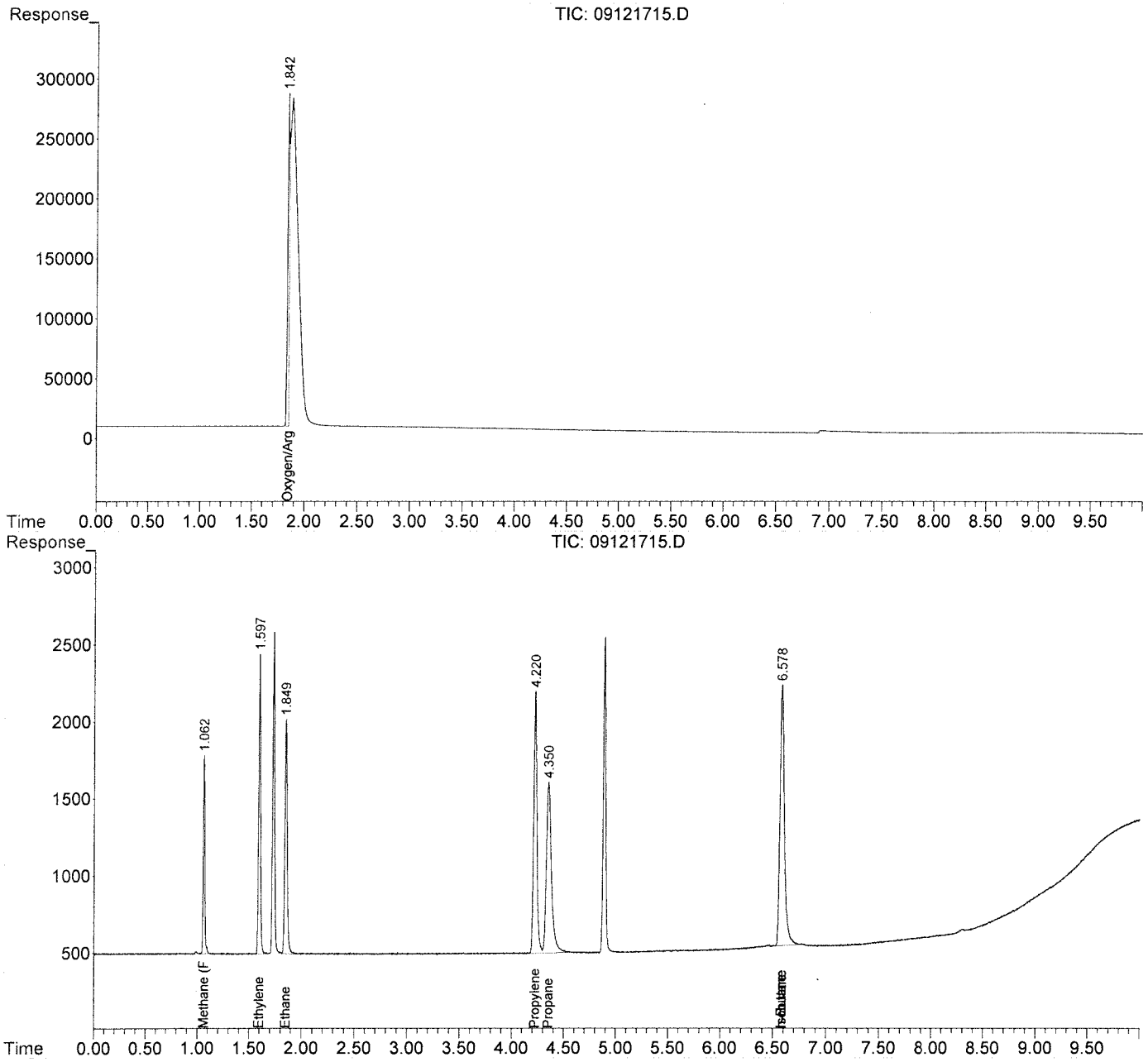
(f)=RT Delta > 1/2 Window (m)=manual int.

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

ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P2003560
Sample Vol. (ml) : 32.00 ml
Analyst : LD
Date Analysis : 07/01/20
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	95.229	101.520	101.160
ACTUAL		101.50	100.90	101.40
%Difference		6.2%	0.6%	0.2%
MCS 0.1ml	0.100	0.000	0.000	0.000
RB 0.1ml	0.100	0.131	0.000	0.000
LCS FID 0.1ml	0.100	1.430	1.054	1.201
LCSD FID 0.1ml	0.100	1.417	1.036	1.165
P2003560-001 0.1ml	0.100	1.014	0.000	0.000
P2003560-002 0.1ml	0.100	334.891	0.104	0.000
P2003560-003 0.1ml	0.100	769.772	2.727	0.000
P2003560-004 0.1ml	0.100	540.986	0.000	0.000

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	0.000	0.000	0.000
LCS FID 0.1ml	14.300	10.540	12.010
LCSD FID 0.1ml	14.170	10.360	11.650
P2003560-001 0.1ml	10.140	0.000	0.000
P2003560-002 0.1ml	3348.910	1.040	0.000
P2003560-003 0.1ml	7697.720	27.270	0.000
P2003560-004 0.1ml	5409.860	0.000	0.000

428 of 449

STD S32-05221901	88.197	93.300	92.540
ACTUAL	101.50	100.90	101.40
%Difference	13.1%	7.5%	8.7%

VP 07/01

00998517

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012001.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 12:25:59
Operator : LD
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: Jul 01 12:50:08 2020
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

LD 07/01

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

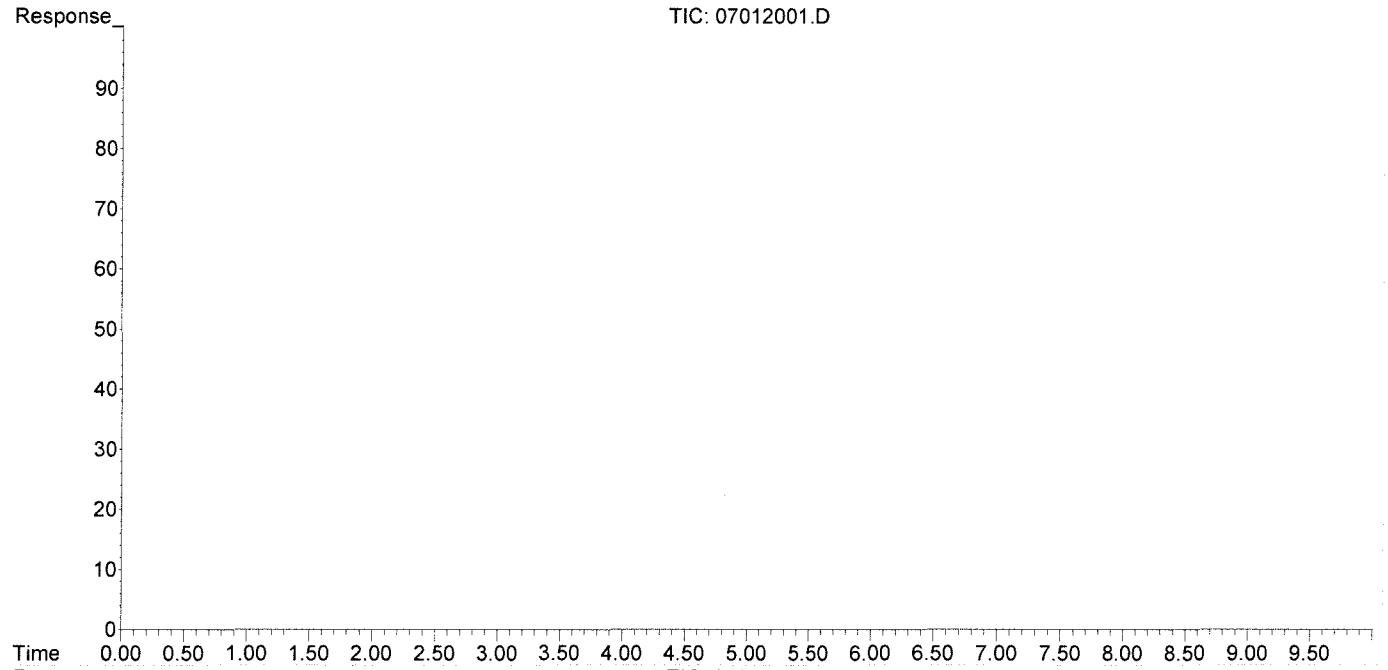
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.094	863792	95.229	ppm
7)	Ethylene	1.657	1698867	101.520	ppm
8)	Ethane	1.920	1714674	101.160	ppm
9)	Propylene	4.305	2500360	106.709	ppm
10)	Propane	4.427	2577356	103.591	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

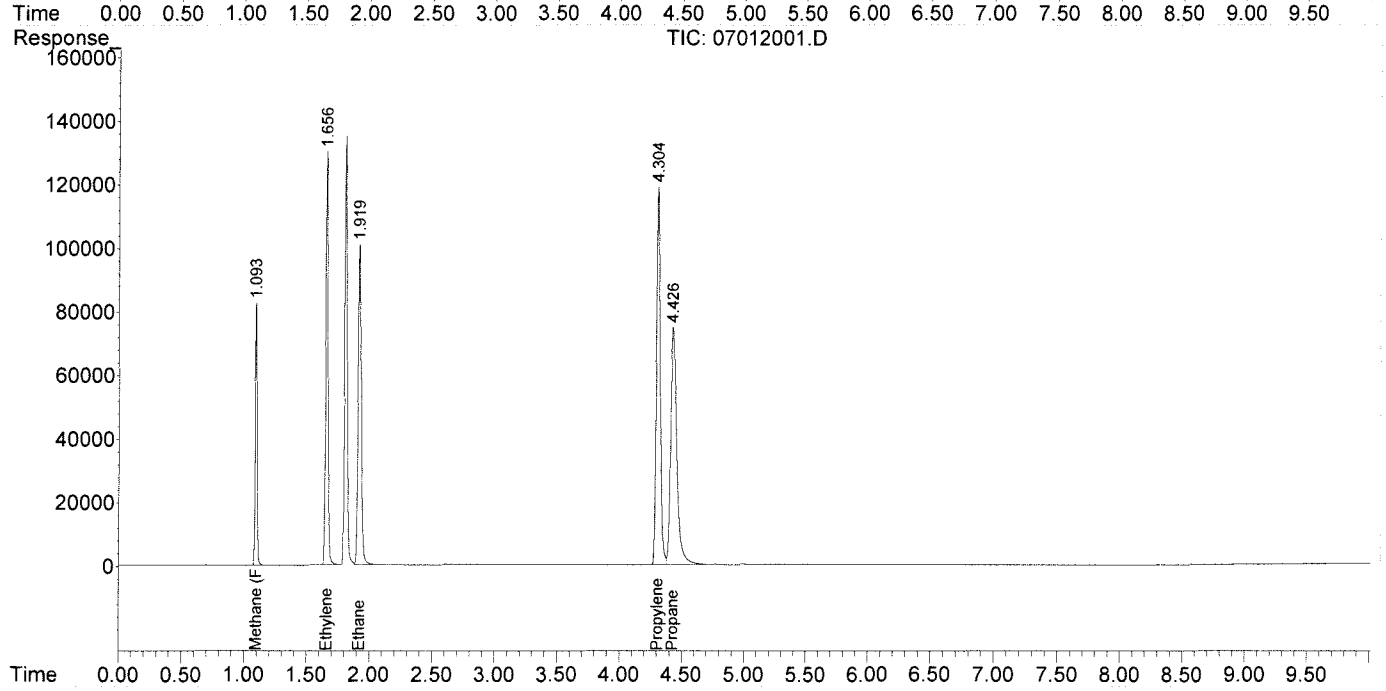
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012001.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 12:25:59
Operator : LD
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: Jul 01 12:50:08 2020
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 :





00998519

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012015.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 16:56:52
Operator : LD
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: Jul 01 17:17:22 2020
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 :

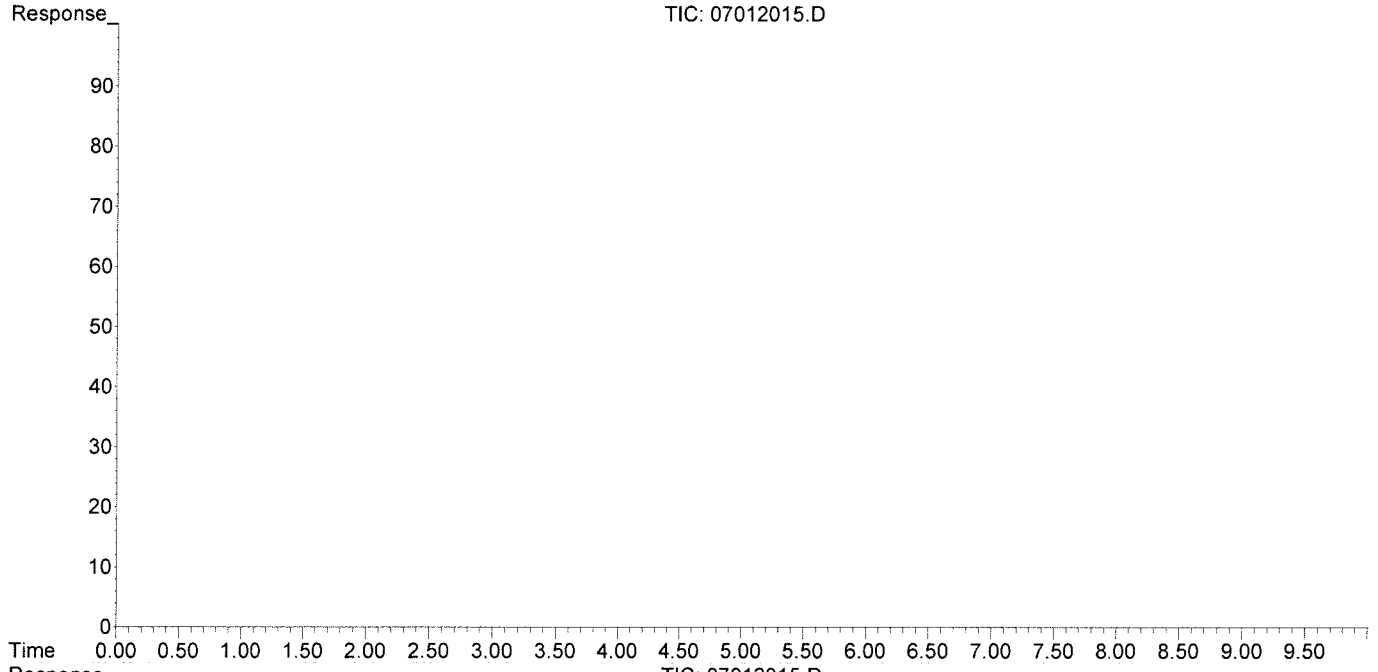
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.100	800006	88.197	ppm
7)	Ethylene	1.666	1561310	93.300	ppm
8)	Ethane	1.929	1568578	92.540	ppm
9)	Propylene	4.305	2269738	96.867	ppm
10)	Propane	4.427	2334081	93.813	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

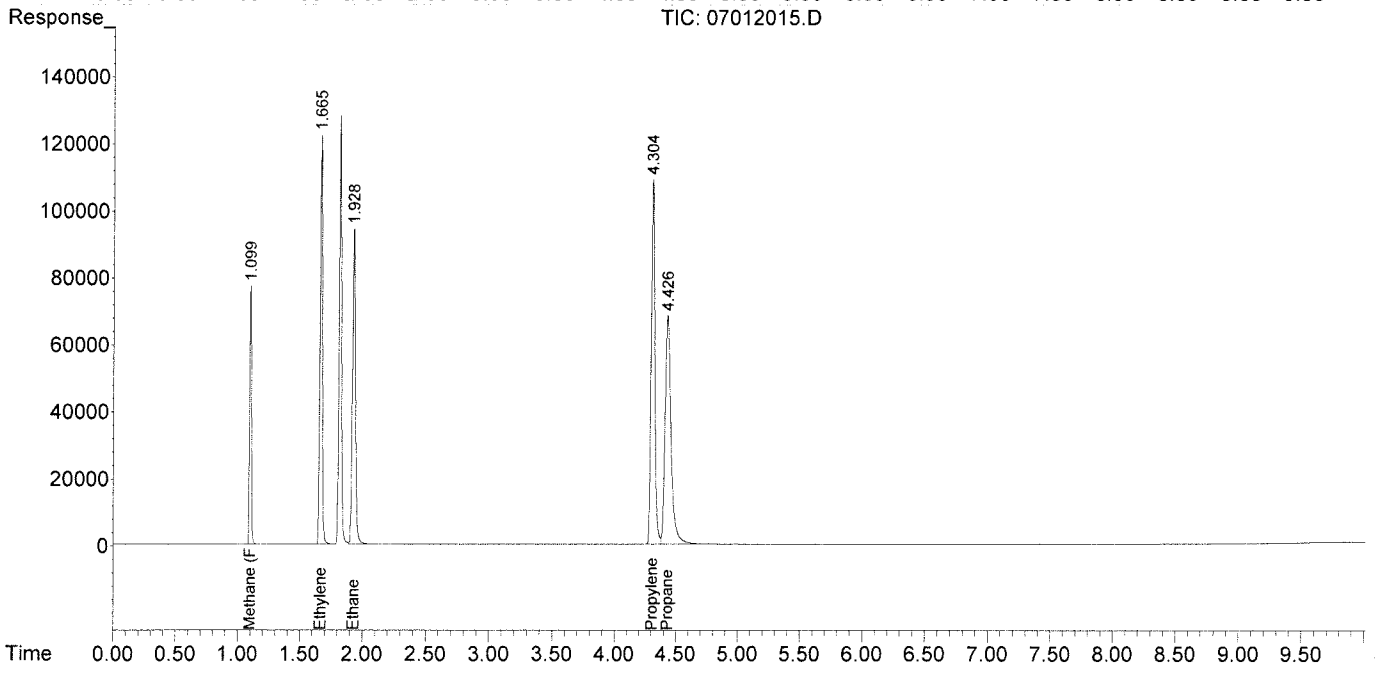
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012015.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 16:56:52
Operator : LD
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: Jul 01 17:17:22 2020
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\2020_07\01\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	01-Jul-20, 12:25:59	07012001.D	STD S32-05221901		LD	RSKBOTH.M	pass
2	01-Jul-20, 12:54:01	07012002.D	RB 0.1ml		LD	RSKBOTH.M	pass
3	01-Jul-20, 13:48:06	07012003.D	MCS 0.1ml		LD	RSKBOTH.M	pass
4	01-Jul-20, 14:01:52	07012004.D	LCS FID 0.1ml		LD	RSKBOTH.M	pass
5	01-Jul-20, 14:21:34	07012005.D	LCSD FID 0.1ml		LD	RSKBOTH.M	pass
6	01-Jul-20, 14:41:02	07012006.D	P2003560-001 0.1ml		LD	RSKBOTH.M	
7	01-Jul-20, 14:54:52	07012007.D	P2003560-002 0.1ml		LD	RSKBOTH.M	
8	01-Jul-20, 15:07:49	07012008.D	P2003560-003 0.1ml		LD	RSKBOTH.M	
9	01-Jul-20, 15:27:11	07012009.D	P2003560-004 0.1ml		LD	RSKBOTH.M	
10	01-Jul-20, 15:43:08	07012010.D	P2003597-001 0.1ml		LD	RSKBOTH.M	
11	01-Jul-20, 15:56:30	07012011.D	P2003597-002 0.1ml		LD	RSKBOTH.M	
12	01-Jul-20, 16:09:40	07012012.D	P2003597-003 0.1ml		LD	RSKBOTH.M	
13	01-Jul-20, 16:22:41	07012013.D	P2003597-004 0.1ml		LD	RSKBOTH.M	
14	01-Jul-20, 16:38:47	07012014.D	P2003597-005 0.1ml		LD	RSKBOTH.M	
15	01-Jul-20, 16:56:52	07012015.D	STD S32-05221901		LD	RSKBOTH.M	pass
16	01-Jul-20, 17:18:36	07012016.D	J2003335-054 0.1ml		LD	RSKBOTH.M	
17	01-Jul-20, 17:34:03	07012017.D	J2003335-055 0.1ml		LD	RSKBOTH.M	
18	01-Jul-20, 17:47:00	07012018.D	J2003335-056 0.1ml		LD	RSKBOTH.M	
19	01-Jul-20, 18:04:34	07012019.D	J2003335-057 0.1ml		LD	RSKBOTH.M	
20	01-Jul-20, 18:17:48	07012020.D	STD S32-05221901		LD	RSKBOTH.M	pass

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Client: RJ Modashia
ALS Laboratory Group
10450 Stancliff Rd
Suite 210
Houston, TX 77040

Phone: 281-575-2279

Fax:

Identifier: 088RF **Date Rec:** 06/24/2020 **Report Date:** 07/01/2020

Client Project #: NW01312.0150 **Client Project Name:** LHAAP-58

Purchase Order #:

Analysis Requested: CENSUS

Reviewed By:



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CENSUS

Client: **ALS Laboratory Group**
Project: LHAAP-58

MI Project Number: **088RF**
Date Received: 06/24/2020

Sample Information

Client Sample ID:		**03WW01_06232 0**	**35AWW08_062 320**	**35AWW11_062 320**
Sample Date:		06/23/2020	06/23/2020	06/23/2020
Units:		cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		HT	HT	HT
Dechlorinating Bacteria				
Dehalococcoides	*DHC*	**6.50E+03**	**5.94E+05**	**3.82E+02**
tceA Reductase	TCE	**7.42E+02**	**2.56E+05**	**7.82E+01**
BAV1 Vinyl Chloride Reductase	BVC	<5.00E-01	<1.00E+00	<1.10E+00
Vinyl Chloride Reductase	VCR	**2.41E+03**	**9.20E+04**	**1.99E+02**
Dehalobacter spp.	*DHBt*	**6.99E+02**	**2.95E+04**	**4.11E+04**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

Quality Assurance/Quality Control Data

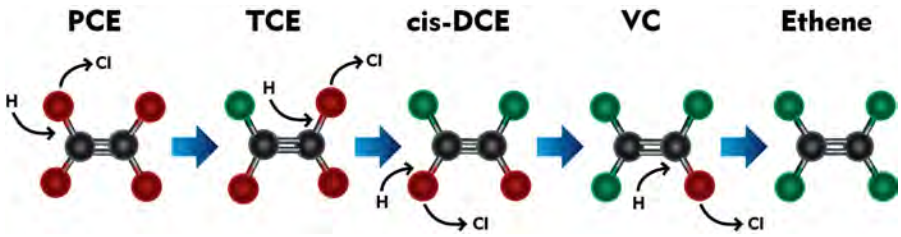
Samples Received **6/24/2020**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	06/24/2020	07/01/2020	1 °C	99%	non-detect	non-detect
BVC	06/24/2020	07/01/2020	1 °C	100%	non-detect	non-detect
DHBt	06/24/2020	07/01/2020	1 °C	106%	non-detect	non-detect
TCE	06/24/2020	07/01/2020	1 °C	100%	non-detect	non-detect
VCR	06/24/2020	07/01/2020	1 °C	100%	non-detect	non-detect

DHC Interpretation

Dehalococcoides 16S rRNA gene (qDHC)

Under anaerobic conditions, tetrachloroethene (PCE) and trichloroethene (TCE) can undergo sequential reductive dechlorination through the daughter products *cis*-dichloroethene (*cis*-DCE) and vinyl chloride to nontoxic ethene (1,2).



While a number of bacterial cultures capable of utilizing PCE and TCE as growth supporting electron acceptors have been isolated (3-7), *Dehalococcoides* spp. may be the most important because they are the only bacterial group that has been isolated to date which is capable of complete reductive dechlorination of PCE to ethene (8). In fact, the presence of *Dehalococcoides* spp. has been associated with complete dechlorination to ethene at sites across North America and Europe (9).

Status	*Dehalococcoides spp.*	Observation
	**≥ 10^4** (cells/mL)	Lu et al. proposed that a concentration of 1 x 10^4 DHC cells/mL could be used as a screening criterion to identify sites where reductive dechlorination will yield a generally useful biodegradation rate (10). Similarly, in an internal study conducted with nearly 1000 groundwater samples obtained from sites across the US, ethene production was observed in approximately 80% of samples in which CENSUS® qDHC results were greater than or equal to 10^4 DHC cells/mL.
	**10^1 to < 10^4** (cells/mL)	When vinyl chloride reductase genes (See DHC functional genes discussion below) are also detected, complete reductive dechlorination of PCE and TCE to ethene may still occur even with moderate DHC concentrations. When the DHC population is below the 10^4 cells/mL criterion proposed by Lu et al. (10), project managers should carefully consider other site-specific data to determine whether subsurface conditions may be limiting reductive dechlorination. For example, the addition of an electron donor may be able to stimulate DHC growth and enhance anaerobic bioremediation.
	**< 10^1** (cells/mL)	DHC concentrations are low suggesting that complete reductive dechlorination of PCE and TCE to ethene is unlikely to occur under existing conditions. Enhanced anaerobic bioremediation options (biostimulation or bioaugmentation) may need to be considered.

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DHC Interpretation

DHC Functional Genes (*tce*A, *bvc*A, *vcr*A)

A "stall" where daughter products *cis*-DCE and vinyl chloride accumulate can occur at PCE- and TCE-impacted sites especially under MNA conditions. The accumulation of vinyl chloride, generally considered more carcinogenic than the parent compounds, is particularly problematic. Although elevated *Dehalococcoides* concentrations correspond to ethene production in numerous studies, the range of chlorinated ethenes metabolized and cometabolized varies among species and strains within the *Dehalococcoides* genus. For example, *Dehalococcoides ethenogenes* str. 195 metabolizes PCE, TCE, and *cis*-DCE and cometabolizes vinyl chloride (8) to produce ethene. Conversely, *Dehalococcoides* sp. CBDB1 utilizes PCE and TCE but does not cometabolize additional chloroethenes (11). Other *Dehalococcoides* strains, such as BAV1, GT and VS, are known to fully dechlorinate cis-DCE and VC to ethene (14,16,19). Quantification of reductive dehalogenase genes is used to more definitively confirm the potential for reductive dechlorination of TCE, cis-DCE, and vinyl chloride (12-15).

Functional Gene	Observation
TCE Reductase	
***tce*A gene**	The *tce*A gene encodes the enzyme responsible for reductive dechlorination of TCE to *cis*-DCE in some strains of *Dehalococcoides*. Absence of *tce*A does not preclude the potential for reductive dechlorination of TCE in the field since the *tce*A gene is not universally distributed among all DHC and is not present in other microorganisms capable of reductive dechlorination of TCE (e.g. *Dehalobacter*). Detection of the *tce*A gene provides an additional line of evidence indicating the potential for dechlorination of TCE.
Vinyl Chloride Reductase	
***bvc*A gene**	The *bvc*A gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of vinyl chloride to ethene by *Dehalococcoides* sp. str. BAV1 (16). Presence of *bvc*A gene indicates the potential for reductive dechlorination of VC to ethene. Absence of both *bvc*A and *vcr*A genes suggests VC may accumulate. An internal study with ~1,000 samples showed ethene production was observed in 80% of the samples that the DHC population was greater than or equal to 10^4 cells/mL. The *bvc*A gene was detected in over 50% of these samples. Van Der Zaan et al (17) noted that the bvcA gene was the only VC reductase gene detected at three of their sites. Alfred Spormann's laboratory at Stanford University (18) reported that the *bvc*A gene was the most abundant and active at the outflow of a PCE fed column study. This section of the column was in the DCE to VC stages of reductive dechlorination thus confirming the importance of the *bvc*A gene for complete reductive dechlorination.
***vcr*A gene**	The *vcr*A gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of *cis*-DCE and vinyl chloride by *Dehalococcoides* sp. strain VS (14). Presence of *vcr*A gene indicates the potential for reductive dechlorination of DCE and/or VC to ethene. Absence of both *bvc*A and *vcr*A genes suggest VC may accumulate. As with the *bvc*A gene, detection of the *vcr*A gene is associated with ethene production in internal studies (67%) and vinyl chloride reduction in independent studies (14, 17).

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DHC Interpretation

Reporting

Microbial Insights can provide a variety of data packages and reporting levels to suit the needs of any project. Data packages range from simple analytical reports with results only to more complex data packages that include a report narrative, analytical results, QC data, and supporting materials including all raw data and chain-of-custody documentation. The figure below shows our standard report and explains the way values are reported.

Microbial Insights, Inc.

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CENSUS

Client: Company Name
Project: Your Project Name

MI Project Number: Unique Laboratory Identifier
Date Received: Date Samples Arrived

Sample Information

Client Sample ID:		Sample A	Sample B	Sample C
Sample Date:		00/00/0000	00/00/0000	00/00/0000
Units:		cells/mL	cells/mL	cells/mL
Analyst:		Intials	Intials	Intials
Dechlorinating Bacteria				
Dehalococcoides spp.	DHC	**1.84E+05**	**2.76E+02**	**2.28E+01 (J)**
Functional Genes				
tceA Reductase	TCE	**6.00E+01**	**3.23E+01**	<4.00E-01
bvcA Reductase	BVC	**1.17E+04**	**1.81E+01**	<4.00E-01
vcrA Reducatase	VCR	**8.42E+04**	**1.74E+02**	<4.00E-01

"J" value
Result is an estimated value. This data qualifier (flag) is used when the target gene is detected but at a concentration or abundance below the practical quantification limit (PQL).

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

< value
The target gene was not detected at the limit of quantitation (LOQ) reported for that sample.

"I" value
QA Procedure indicated that the sample may have exhibited PCR inhibition. Although relatively rare, PCR inhibition can occur due to the presence of metals or humic acids at high concentrations in the sample.

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Quality Assurance

Microbial Insights' comprehensive Quality Assurance (QA) Program is the foundation of all laboratory analyses, ensuring that our clients receive high-quality analytical services that are timely, reliable, and meet their intended purpose in a cost effective manner. MI is committed to providing quality data that surpasses regulatory and industry standards, thus enabling the client to make well-informed decisions. MI maintains strict standard operating procedures and QA/QC measures throughout all of the analyses offered. The following Table details specific QA/QC procedures that are used for CENSUS.

QA/QC	Description
Date of Extraction	DNA and RNA extractions are performed the day the samples are received by MI to minimize the possibility of any changes to the microbial community prior to analysis.
Laboratory Method Blanks	An extraction blank (no sample added) is processed alongside each set of field samples from DNA extraction through CENSUS® analysis to ensure that cross contamination has not occurred. Although MI has never experienced this issue, the detection of the CENSUS® target (e.g. *Dehalococcoides*) in an extraction blank is direct evidence of cross contamination with a sample or contamination of a reagent and would invalidate the results. If this were to occur, MI would re-extract the sample. If not possible to re-extract, MI would contact the client immediately and notate it on the laboratory report.
Laboratory Control Samples (LCS)	A laboratory control sample (LCS) or positive control (target DNA) is included with each CENSUS® plate to confirm amplification and as a continuing calibration check.
Negative Controls	A negative control (no DNA) is included with each CENSUS plate to ensure that cross contamination has not occurred during amplification. As with the extraction blank, detection of CENSUS target (e.g. DHC) in a negative control is direct evidence of contamination and would invalidate the results. If this were to occur, MI would rerun the analysis.

References

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2. DiStefano, T. D., J.M. Gossett, and S.H. Zinder. 1991. Reductive dechlorination of high concentrations of tetrachlorethene to ethene by an anaerobic enrichment culture in the absence of methanogenesis. Applied and Environmental Microbiology 57(8): 2287-2292.

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How to Retrieve and Use Estimated Percentile Ranks from the Microbial Insights Database

The MI Database

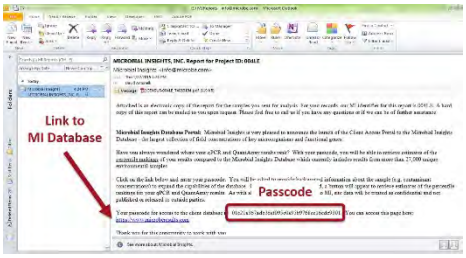
The Microbial Insights Database is the largest collection of field concentrations of key microorganisms and functional genes currently containing qPCR and QuantArray results for more than 40,000 unique groundwater, soil, and sediment samples from all 50 states and 33 countries worldwide.

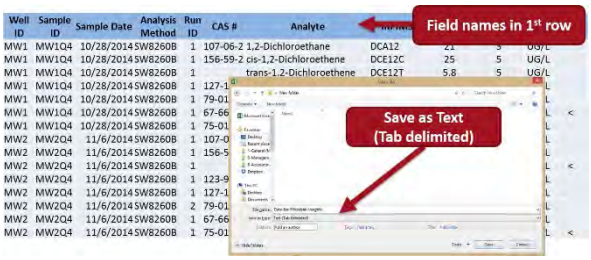
Is that low, medium or high?

In practice, biodegradation depends not just on the presence but the actual concentrations of the contaminant degrading microorganisms. The estimated percentile ranks retrieved from the MI Database answer the question "Is that low, medium or high?" by comparing your results to those of the literally thousands of other environmental samples submitted to MI for analysis over the last 20+ years.

Retrieving Estimated Percentile Ranks

With your report, you were emailed a passcode and link enabling you to login to the Client Portal. Just enter basic information about the sample (e.g. contaminant concentrations) to aid in understanding the links between environmental conditions and microbial populations and you can retrieve estimates of the percentile ranks of your results based on those compiled in the MI database at no additional charge.





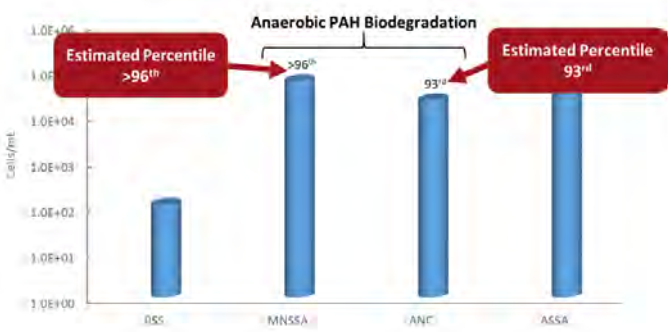
All site specific data will be treated as confidential and uploading is easy.

You can even upload chemical and geochemical data from EDDs. Just save as a Tab Delimited text file.

Example - Using Estimated Percentile for MNA Assessment at an MGP Site

CENSUS® qPCR was performed to quantify anaerobic naphthalene carboxylase (ANC) and naphthyl-2-methylsuccinate synthase (MNSSA) to assess anaerobic biodegradation of naphthalene and methyl-naphthalene under existing site conditions.

- Not only were ANC and MNSSA genes detected, but these functional genes responsible for anaerobic biodegradation of PAHs were present at concentrations "far better than average" based on the estimated percentile ranks.
- Demonstrating high concentrations of ANC and MNSSA gave an additional line of evidence indicating growth substantial populations of anaerobic PAH degraders and suggested a greater probability that monitored natural attenuation (MNA) will be successful.



How to Use Estimated Percentile Ranks from the Microbial Insights Database

The MI Database and Client Portal

The Microbial Insights Database is the largest collection of field concentrations of key microorganisms and functional genes currently containing qPCR and QuantArray results for more than 32,000 unique groundwater, soil, and sediment samples from all 50 states and 33 countries worldwide. Driven by field samples, the database reflects the impacts of common contaminants, geochemical conditions, and site management practices on critical microbial populations.

With your report, you received a passcode enabling you to retrieve estimates of the percentile ranks of your results based on those compiled in the MI database at no additional charge. When accessing the database, you will be asked to provide background information about the sample (e.g. contaminant concentrations) to aid in understanding the links between environmental conditions and microbial populations. As with all client information provided to MI, site specific data will be treated as confidential.

Is that low, medium or high?

In practice, biodegradation depends not just on the presence but the actual concentrations of the contaminant degrading microorganisms. Simply put, qPCR and QuantArray results demonstrating high concentrations of target microorganisms or functional genes suggest in situ selection, enrichment and growth of those specific contaminant degraders and therefore a greater probability that monitored natural attenuation (MNA) or bioremediation will be successful.

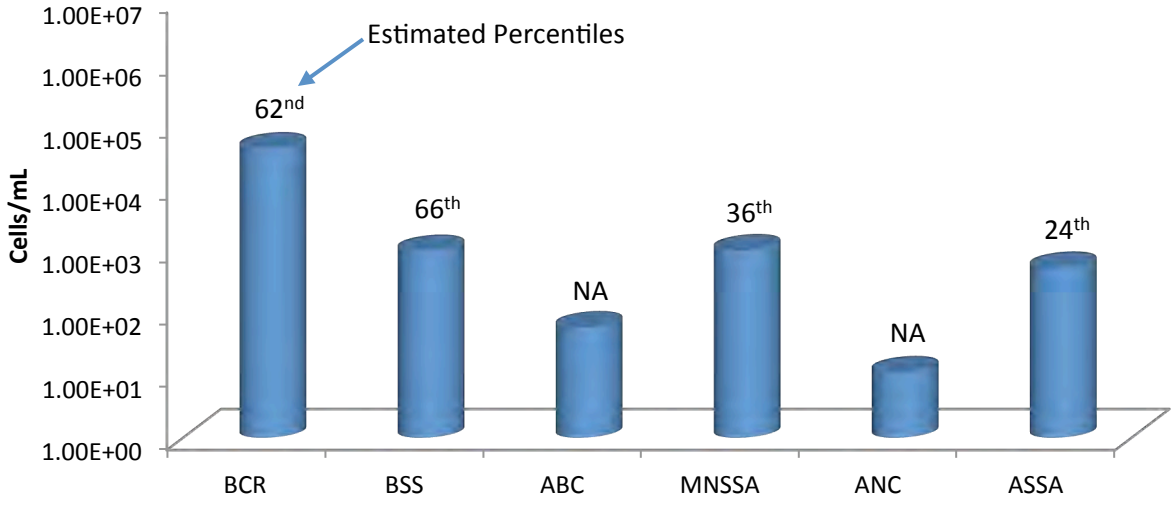
Is that a low, medium, or high concentration? The estimated percentile ranks retrieved from the MI Database answer that question by comparing your qPCR and QuantArray results to those of the literally thousands of other environmental samples submitted to MI for analysis over the last 20+ years.

Using the Estimated Percentile - Interpretation Examples

MNA Assessment – Petroleum Hydrocarbon Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between samples obtained from background and impacted wells. The estimated percentile ranks however provide an additional avenue for comparison and evaluation of treatment options as shown below.

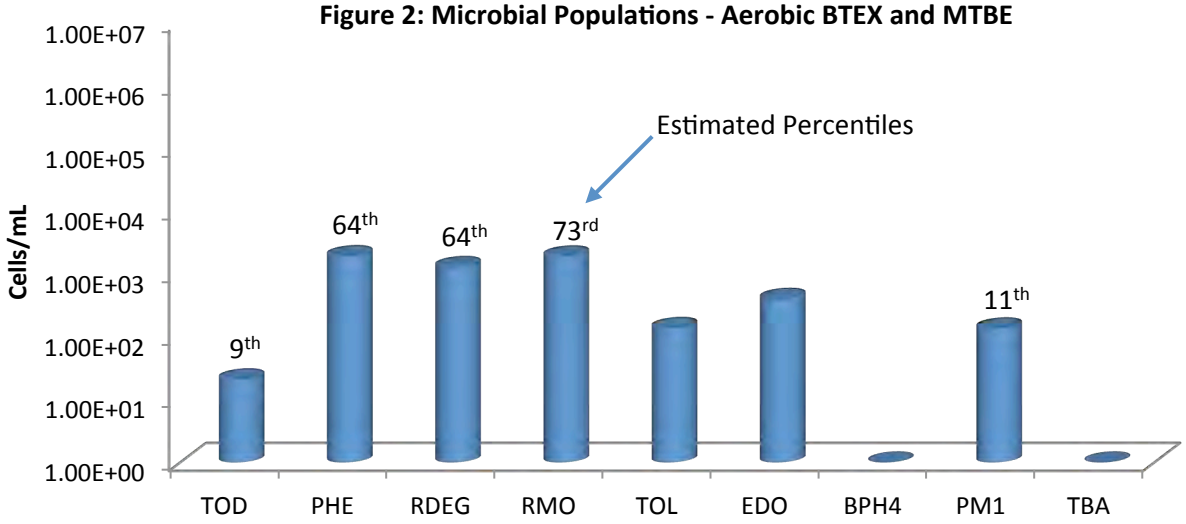
Figure 1: Microbial Populations - Anaerobic BTEX and PAHs



Anaerobic BTEX and PAH Biodegradation (Figure 1):

- With moderate concentrations of functional genes involved in anaerobic BTEX metabolism detected, the QuantArray-Petro® results were encouraging in terms of evaluating biodegradation potential under existing site conditions.
- More specifically, benzylsuccinate synthase (BSS) was detected on the order of nearly 10^3 cells/mL indicating the presence of a substantial population (66^{th} percentile) capable of anaerobic biodegradation of toluene and other alkyl substituted benzenes.
- Naphthyl-2-methylsuccinate synthase (MNSSA) and alkylsuccinate synthase (ASSA) genes were also detected indicating the potential for anaerobic biodegradation of 2-methylnaphthalene and normal alkanes.
- The concentration of MNSSA genes would be considered modest with an estimated percentile of 36^{th}.
- While the percentile rank for MNSSA would be "below average", a number of additional factors should be considered.
    - First, anaerobic hydrocarbon degraders are less prevalent than aerobic BTEX degraders and overall detection frequencies for many genes involved in anaerobic hydrocarbon biodegradation are less than 50%.
    - Therefore, the detection of genes like BSS, MNSSA, ASSA, anaerobic benzene carboxylase (ABC), and anaerobic naphthalene carboxylase (ANC) even at low concentrations is certainly noteworthy and inherently "better than average".
    - The estimated percentiles for all assays are based only on samples where the concentration of the target gene was greater than the practical quantitation limit (PQL).
    - For less commonly detected targets like many of the genes involved in anaerobic hydrocarbon biodegradation this is an especially important consideration.
    - Excluding samples where a gene target is below the PQL ensured that the median concentrations of less commonly detected targets would not be unduly biased low by the fact that the gene is not detected in most samples.
- Anaerobic benzene carboxylase (ABC) and naphthalene carboxylase (ANC) genes were also detected indicating the presence of bacterial populations capable of anaerobic biodegradation of benzene and naphthalene.
- For newly identified genes like ABC and ANC, estimated percentile ranks are not yet available due to the limited number of field samples that have been analyzed to date.
- However, like MNSSA and other genes involved in anaerobic hydrocarbon biodegradation, ABC and ANC detection frequencies are relatively low so the detection of these genes even at low concentrations should be considered when evaluating biodegradation potential under existing site conditions.

Figure 2: Microbial Populations - Aerobic BTEX and MTBE



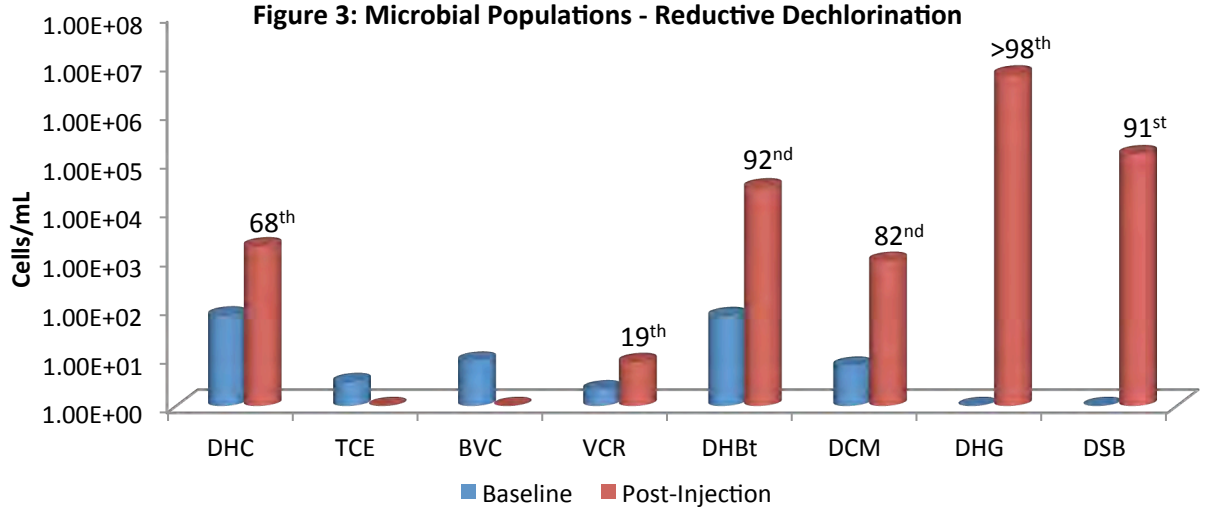
Aerobic BTEX and MTBE Biodegradation (Figure 2):

- With growing evidence that aromatic oxygenases function at low dissolved oxygen concentrations, aerobic BTEX biodegradation pathways should also be evaluated when considering MNA.
- Again, the QuantArray-Petro results were encouraging – genes encoding the first step in multiple pathways for aerobic BTEX biodegradation were detected indicating the presence of a diverse population of aerobic BTEX degraders.
- However, aerobic BTEX degraders are often considered ubiquitous. Therefore answering the question "Is that low, medium or high?" becomes especially important when evaluating aerobic BTEX biodegradation at petroleum hydrocarbon sites.
- In this case, the estimated percentile ranks of the concentrations of toluene/benzene monooxygenase (RMO and RDEG) and phenol hydroxylase (PHE) genes ranged from the 64th to 73rd percentile.
- In other words, the concentrations of RMO, RDEG, and PHE detected in this groundwater sample were greater than the concentrations detected in 64% to 73% of all other groundwater samples where these genes were analyzed and detected above the PQL.
- Aerobic BTEX degraders are common in the environment, but in this sample concentrations of toluene/benzene monooxygenase genes could be viewed as "better than average" when compared to the MI Database.

Biostimulation – Chlorinated Solvent Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between baseline and post-injection monitoring events as shown below (Figure 3). The estimated percentile ranks however provide an additional avenue for comparison and evaluation of remedy performance.

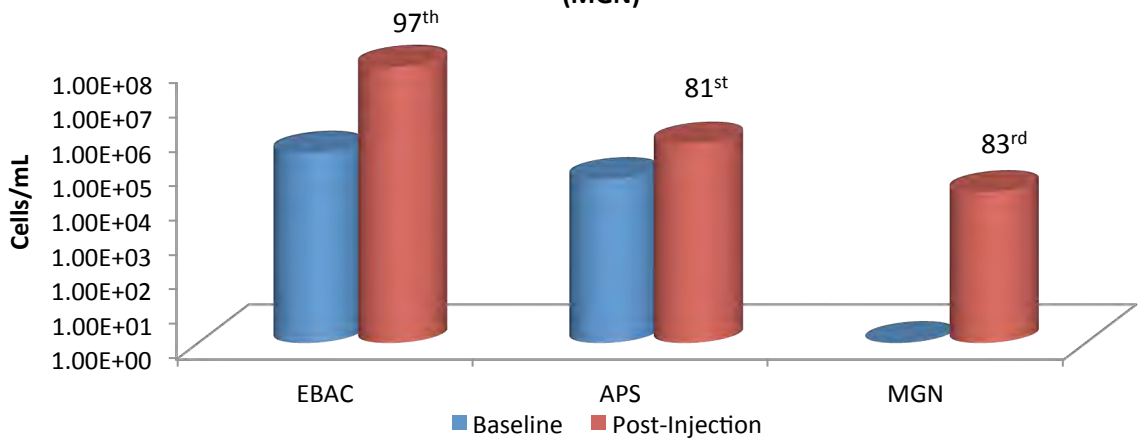
Figure 3: Microbial Populations - Reductive Dechlorination



- During the baseline groundwater sampling event, *Dehalococcoides* and vinyl chloride reductase genes were detected indicating the potential for complete reductive dechlorination of PCE and TCE to ethene.
- However, the *Dehalococcoides* concentration was well below the 10^4 cells/mL recommended by Lu et al. (2006) for generally effective rates of reductive dechlorination.
- Based on qPCR results as well as traditional groundwater monitoring, biostimulation with electron donor addition was selected as the site management plan.
- By the first monitoring event after injection, populations of halorespiring bacteria had increased substantially in response to electron donor addition.
    - *Dehalobacter* populations increased by more than two orders of magnitude to post-injection concentrations greater than 10^4 cells/mL (92^{nd} percentile).
    - *Dehalogenimonas* (10^6 cells/mL) and *Desulfitobacterium* (10^5 cells/mL) which had not been detected prior electron donor addition were present at concentrations greater than observed in over 90% of other groundwater samples where these halorespiring bacteria were detected.
- After injection, *Dehalococcoides* populations increased by more than an order of magnitude to a concentration of over 10^3 cells/mL (68^{th} percentile) demonstrating growth of this key group of halorespiring bacteria.
- Despite a substantial increase and a "better than average" concentration, the *Dehalococcoides* population was still below the 10^4 cells/mL threshold and vinyl chloride reductase gene copies were low (19^{th} percentile).
    - In terms of electron donors and acceptors, the metabolic capabilities of *Dehalococcoides* are rather specialized (hydrogen utilizing obligate halorespiring bacteria) so the median concentration is low. With a low median concentration across the database, a "better than average" *Dehalococcoides* concentration in a given sample may not exceed the 10^4 cells/mL threshold established for effective reductive dechlorination (Lu et al. 2006) and ethene production (Microbial Insights, unpublished data).

- In this case, the initial growth of *Dehalococcoides* was substantial but may have been somewhat hindered by competition with sulfate reducing bacteria (Figure 4 below).
    - The baseline population of sulfate reducing bacteria was moderate (10^4 cells/mL; 63rd percentile). Consistent with an observed decreased in dissolved sulfate concentrations, populations of sulfate reducing bacteria increased and were detected at a relatively high concentration (81st percentile) after electron donor addition.
    - After injection, methanogen populations also increased to a relatively high concentration (83rd percentile) suggesting generation of methanogenic conditions.
- With sulfate depletion and generation of highly anaerobic conditions more conducive to reductive dechlorination, *Dehalococcoides* populations may continue to increase and exceed the 10^4 *Dehalococcoides* cells/mL threshold in subsequent monitoring events.
- Overall, QuantArray analysis conclusively demonstrated that electron donor addition stimulated growth of halorespiring bacteria with the estimated percentiles retrieved from the MI Database providing the "low, medium or high" perspective to the observed changes in microbial populations.

Figure 4: Total Bacteria (EBAC), Sulfate Reducering Bacteria (APS) and Methanogens (MGN)



References

Lu, X., J.T. Wilson, and D.H. Kampbell. 2006. Relationship between *Dehalococcoides* DNA in ground water and rates of reductive dechlorination at field scale. *Water Research* 40 no. 16: 3131-3140.

REPORT TO:
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Company: BHATE ENVIRONMENTAL
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email: molive@bhate.com
Phone: 303-725-7631
Fax:

INVOICE TO: (For invoices paid by a third party it is imperative that all information be provided)
Name:
Company:
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email:
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Project Manager: Kim Nemmers
Project Name: LHAAP-58
Project No.: NW01312.0150

Purchase Order No.
Subcontract No.
MI Quote No.

Please Check One:
☒ More samples to follow
☐ No Additional Samples

Report Type: ☒ Standard (default) ☐ Microbial Insights Level III raw data(15% surcharge) ☐ Microbial Insights Level IV (25% surcharge) ☐ Comprehensive Interpretive(15%) ☐ Historical Interpretive (30%)
EDD type: ☐ Microbial Insights Standard (default) ☐ All other available EDDs (5% surcharge) Specify EDD Type:

Please contact us with any questions about the analyses or filling out the COC at (865) 573-8188 (9:00 am to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com

Sample Information					Analyses					CENSUS: Please select the target organism/gene																								
MI ID (Laboratory Use Only)	Sample Name	Date Sampled	Time Sampled	Matrix	PLFA	DGGE+3ID	DGGE+5ID	QuantArray Chlor	QuantArray Petro	DHC (Dehalococcoides)	DHC Functional genes (bvc, tca, vcr)	DHBt (Dehalobacter)	DSM (Desulfuromonas)	DSB (Desulfitobacterium)	EBAC (Total)	SRB (Sulfate Reducing Bacteria-APS)	MGN (Methanogens)	MOB (Methanotrophs)	SMMO	DNF (Denitrifiers-nirS and nirK)	AOB (ammonia oxidizing bacteria)	PM1 (MTBE aerobic)	RMO (Toluene Monooxygenase)	RDEG (Toluene Monooxygenase)	PHE (Phenol Hydroxylase)	NAH (Napthalene-aerobic)	BSSA (Toluene/Xylene-Anaerobic)	add. qPCR:	add. qPCR:	RNA (Expression Option)*	Other:	Other:	Other:
0882RF1	03WW01-062320	6/23/20	1100	WG							X	X																						
2	35AWW08-062320	6/23/20	1105	WG							X	X																						
3	35AWW11-062320	6/23/20	1325	WG							X	X																						

Relinquished by: [signature] 6/23/20 1430
Received by: [signature] Date 6/24/2020 940

It is vital that chain of custody is filled out correctly & that all relative information is provided.
Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable.

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July 17, 2020

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS20061218**

Laboratory Results for: **LHAAP-58**

Dear Marcia Olive,

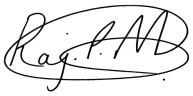
ALS Environmental received 7 sample(s) on Jun 25, 2020 for the analysis presented in the following report.

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: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS20061218

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20061218-01	35AWW19_062420	Groundwater		24-Jun-2020 08:30	25-Jun-2020 09:00	☐
HS20061218-02	35AWW20_062420	Groundwater		24-Jun-2020 09:25	25-Jun-2020 09:00	☐
HS20061218-03	LHSMW07_062420	Groundwater		24-Jun-2020 10:15	25-Jun-2020 09:00	☐
HS20061218-04	35AWW06_062420	Groundwater		24-Jun-2020 11:05	25-Jun-2020 09:00	☐
HS20061218-05	35AWW23_062420	Groundwater		24-Jun-2020 12:00	25-Jun-2020 09:00	☐
HS20061218-06	35AWW22_062420	Groundwater		24-Jun-2020 13:05	25-Jun-2020 09:00	☐
HS20061218-07	Trip Blank	Water	CG 032420 -140	24-Jun-2020 00:00	25-Jun-2020 09:00	☐

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: LHAAP-58
Work Order: HS20061218

Work Order Comments

- The analyses for Volatile Fatty Acids were subcontracted to ALS Environmental in Rochester, NY. Final Report attached.

  The analysis for TOC was subcontracted to ALS Environmental in Kelso, WA. Final Report attached.

  The analyses for RSK-175 Dissolved Gases and CO2 were subcontracted to ALS Environmental in Simi Valley, CA. Final Report attached

  The analyses for DHC/DHB were subcontracted to Microbial Insights in Knoxville, TN. Final Report attached

GCMS Volatiles by Method SW8260

Batch ID: R364717

Sample ID: 35AWW19_062420(HS20061218-01MS/MSD)

- The recovery of the Matrix Spike (MS) and the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MS/MSD may be due to sample matrix interference. Acetone

Metals by Method SW6020

Batch ID: 154955

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: R364863

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW19_062420
Collection Date: 24-Jun-2020 08:30

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-01
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	07-Jul-2020 21:31
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:31
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 21:31
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
1,1-Dichloroethane	**0.85**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	07-Jul-2020 21:31
1,1-Dichloroethene	**4.6**		**0.20**	**0.50**	**1.0**	**UG/L**	1	07-Jul-2020 21:31
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:31
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 21:31
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 21:31
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:31
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:31
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 21:31
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:31
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 21:31
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:31
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:31
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:31
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	07-Jul-2020 21:31
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	07-Jul-2020 21:31
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:31
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	07-Jul-2020 21:31
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	07-Jul-2020 21:31
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:31
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:31
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:31
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:31
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:31
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:31
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	07-Jul-2020 21:31
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 21:31
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:31

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW19_062420
Collection Date: 24-Jun-2020 08:30

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:31
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:31
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	07-Jul-2020 21:31
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:31
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	07-Jul-2020 21:31
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	07-Jul-2020 21:31
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	07-Jul-2020 21:31
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:31
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:31
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:31
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:31
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:31
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:31
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:31
Surr: 1,2-Dichloroethane-d4	*87.4*			**0**	*81-118*	*%REC*	*1*	*07-Jul-2020 21:31*
Surr: 4-Bromofluorobenzene	*100.0*			**0**	*85-114*	*%REC*	*1*	*07-Jul-2020 21:31*
Surr: Dibromofluoromethane	*92.2*			**0**	*80-119*	*%REC*	*1*	*07-Jul-2020 21:31*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*07-Jul-2020 21:31*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**934**		**10.0**	**25.0**	**25.0**	**mg/L**	50	25-Jun-2020 22:21
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	25-Jun-2020 19:56
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	25-Jun-2020 19:56
Sulfate	**1,020**		**10.0**	**25.0**	**25.0**	**mg/L**	50	25-Jun-2020 22:21
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Jul-2020 12:17
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2020 17:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW19_062420
Collection Date: 24-Jun-2020 08:30

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	17-Jul-2020 16:35
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Jul-2020 09:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW20_062420
Collection Date: 24-Jun-2020 09:25

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-02
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	07-Jul-2020 21:55
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:55
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 21:55
1,1,2-Trichloroethane	**73**		**0.30**	**1.0**	**1.0**	**UG/L**	1	07-Jul-2020 21:55
1,1-Dichloroethane	**510**		**5.0**	**12**	**25**	**UG/L**	25	07-Jul-2020 23:07
1,1-Dichloroethene	**1,100**		**5.0**	**12**	**25**	**UG/L**	25	07-Jul-2020 23:07
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:55
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 21:55
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 21:55
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:55
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:55
1,2-Dichlorobenzene	**21**		**0.50**	**1.0**	**1.0**	**UG/L**	1	07-Jul-2020 21:55
1,2-Dichloroethane	**18**		**0.20**	**0.50**	**1.0**	**UG/L**	1	07-Jul-2020 21:55
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 21:55
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
1,3-Dichlorobenzene	**0.97**	J	**0.40**	**1.0**	**1.0**	**UG/L**	1	07-Jul-2020 21:55
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
1,4-Dichlorobenzene	**3.6**		**0.40**	**1.0**	**1.0**	**UG/L**	1	07-Jul-2020 21:55
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:55
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	07-Jul-2020 21:55
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	07-Jul-2020 21:55
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:55
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	07-Jul-2020 21:55
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	07-Jul-2020 21:55
Benzene	**8.5**		**0.20**	**0.50**	**1.0**	**UG/L**	1	07-Jul-2020 21:55
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:55
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:55
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:55
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:55
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:55
Carbon disulfide	**3.7**		**0.60**	**1.0**	**2.0**	**UG/L**	1	07-Jul-2020 21:55
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 21:55
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:55

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW20_062420
Collection Date: 24-Jun-2020 09:25

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:55
cis-1,2-Dichloroethene	**63**		**0.20**	**0.50**	**1.0**	**UG/L**	1	07-Jul-2020 21:55
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	07-Jul-2020 21:55
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:55
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	07-Jul-2020 21:55
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	07-Jul-2020 21:55
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	07-Jul-2020 21:55
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:55
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
Tetrachloroethene	**0.61**	J	**0.30**	**1.0**	**1.0**	**UG/L**	1	07-Jul-2020 21:55
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:55
trans-1,2-Dichloroethene	**7.2**		**0.20**	**0.50**	**1.0**	**UG/L**	1	07-Jul-2020 21:55
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:55
Trichloroethene	**94**		**0.20**	**0.50**	**1.0**	**UG/L**	1	07-Jul-2020 21:55
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:55
Vinyl chloride	**2,000**		**5.0**	**12**	**25**	**UG/L**	25	07-Jul-2020 23:07
Surr: 1,2-Dichloroethane-d4	*87.9*			**0**	*81-118*	*%REC*	*25*	*07-Jul-2020 23:07*
Surr: 1,2-Dichloroethane-d4	*90.6*			**0**	*81-118*	*%REC*	*1*	*07-Jul-2020 21:55*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*07-Jul-2020 21:55*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*25*	*07-Jul-2020 23:07*
Surr: Dibromofluoromethane	*94.2*			**0**	*80-119*	*%REC*	*1*	*07-Jul-2020 21:55*
Surr: Dibromofluoromethane	*92.3*			**0**	*80-119*	*%REC*	*25*	*07-Jul-2020 23:07*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*07-Jul-2020 21:55*
Surr: Toluene-d8	*98.6*			**0**	*89-112*	*%REC*	*25*	*07-Jul-2020 23:07*
METALS BY ICPMS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 29-Jun-2020		Analyst: JHD
Arsenic	**0.00119**	J	**0.000400**	**0.000500**	**0.00500**	**mg/L**	1	02-Jul-2020 12:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW20_062420
Collection Date: 24-Jun-2020 09:25

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**911**		**10.0**	**25.0**	**25.0**	**mg/L**	50	25-Jun-2020 22:39
Nitrogen, Nitrate (As N)	**0.747**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	25-Jun-2020 20:14
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	25-Jun-2020 20:14
Sulfate	**1,270**		**10.0**	**25.0**	**25.0**	**mg/L**	50	25-Jun-2020 22:39
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Jul-2020 12:17
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2020 17:50
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	17-Jul-2020 16:35
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Jul-2020 09:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW07_062420
Collection Date: 24-Jun-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-03
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	07-Jul-2020 23:31
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:31
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 23:31
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
1,1-Dichloroethane	**9.0**		**0.20**	**0.50**	**1.0**	**UG/L**	1	07-Jul-2020 23:31
1,1-Dichloroethene	**130**		**0.20**	**0.50**	**1.0**	**UG/L**	1	07-Jul-2020 23:31
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 23:31
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 23:31
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 23:31
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:31
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:31
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 23:31
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:31
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 23:31
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 23:31
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 23:31
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:31
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	07-Jul-2020 23:31
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	07-Jul-2020 23:31
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 23:31
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	07-Jul-2020 23:31
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	07-Jul-2020 23:31
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:31
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 23:31
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:31
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:31
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 23:31
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 23:31
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	07-Jul-2020 23:31
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 23:31
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:31

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW07_062420
Collection Date: 24-Jun-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:31
cis-1,2-Dichloroethene	**1.0**		**0.20**	**0.50**	**1.0**	**UG/L**	1	07-Jul-2020 23:31
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	07-Jul-2020 23:31
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:31
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	07-Jul-2020 23:31
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	07-Jul-2020 23:31
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	07-Jul-2020 23:31
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 23:31
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:31
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:31
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:31
Trichloroethene	**2.5**		**0.20**	**0.50**	**1.0**	**UG/L**	1	07-Jul-2020 23:31
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:31
Vinyl chloride	**44**		**0.20**	**0.50**	**1.0**	**UG/L**	1	07-Jul-2020 23:31
Surr: 1,2-Dichloroethane-d4	*89.8*			**0**	*81-118*	*%REC*	*1*	*07-Jul-2020 23:31*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*07-Jul-2020 23:31*
Surr: Dibromofluoromethane	*93.5*			**0**	*80-119*	*%REC*	*1*	*07-Jul-2020 23:31*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*07-Jul-2020 23:31*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**2,010**		**10.0**	**25.0**	**25.0**	**mg/L**	50	25-Jun-2020 22:57
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	25-Jun-2020 21:27
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	25-Jun-2020 21:27
Sulfate	**3,000**		**10.0**	**25.0**	**25.0**	**mg/L**	50	25-Jun-2020 22:57
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Jul-2020 12:17
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2020 17:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW07_062420
Collection Date: 24-Jun-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	17-Jul-2020 16:35
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Jul-2020 09:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06_062420
Collection Date: 24-Jun-2020 11:05

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-04
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	07-Jul-2020 23:55
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:55
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 23:55
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:55
1,1-Dichloroethene	**0.99**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	07-Jul-2020 23:55
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 23:55
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 23:55
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 23:55
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:55
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:55
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 23:55
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:55
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 23:55
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 23:55
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 23:55
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:55
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	07-Jul-2020 23:55
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	07-Jul-2020 23:55
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 23:55
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	07-Jul-2020 23:55
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	07-Jul-2020 23:55
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:55
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 23:55
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:55
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:55
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 23:55
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 23:55
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	07-Jul-2020 23:55
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 23:55
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:55

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06_062420
Collection Date: 24-Jun-2020 11:05

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:55
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:55
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	07-Jul-2020 23:55
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:55
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	07-Jul-2020 23:55
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	07-Jul-2020 23:55
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	07-Jul-2020 23:55
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 23:55
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:55
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:55
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:55
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 23:55
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 23:55
Vinyl chloride	**0.51**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	07-Jul-2020 23:55
Surr: 1,2-Dichloroethane-d4	*90.4*			**0**	*81-118*	*%REC*	*1*	*07-Jul-2020 23:55*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*07-Jul-2020 23:55*
Surr: Dibromofluoromethane	*93.5*			**0**	*80-119*	*%REC*	*1*	*07-Jul-2020 23:55*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*07-Jul-2020 23:55*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**1,080**		**10.0**	**25.0**	**25.0**	**mg/L**	50	25-Jun-2020 23:15
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	25-Jun-2020 21:45
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	25-Jun-2020 21:45
Sulfate	**35.1**		**0.200**	**0.500**	**0.500**	**mg/L**	1	25-Jun-2020 21:45
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Jul-2020 12:17
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2020 17:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06_062420
Collection Date: 24-Jun-2020 11:05

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	17-Jul-2020 16:35
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Jul-2020 09:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW23_062420
Collection Date: 24-Jun-2020 12:00

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-05
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	08-Jul-2020 00:20
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 00:20
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 00:20
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 00:20
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 00:20
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 00:20
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 00:20
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 00:20
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 00:20
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20
2-Butanone	**160**		**0.50**	**1.0**	**2.0**	**UG/L**	1	08-Jul-2020 00:20
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	08-Jul-2020 00:20
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 00:20
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	08-Jul-2020 00:20
Acetone	**190**		**0.40**	**1.0**	**2.0**	**UG/L**	1	08-Jul-2020 00:20
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 00:20
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 00:20
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 00:20
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Jul-2020 00:20
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 00:20
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW23_062420
Collection Date: 24-Jun-2020 12:00

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20
cis-1,2-Dichloroethene	**5.0**		**0.20**	**0.50**	**1.0**	**UG/L**	1	08-Jul-2020 00:20
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Jul-2020 00:20
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Jul-2020 00:20
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 00:20
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 00:20
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 00:20
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:20
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:20
Surr: 1,2-Dichloroethane-d4	*90.3*			**0**	*81-118*	*%REC*	*1*	*08-Jul-2020 00:20*
Surr: 4-Bromofluorobenzene	*97.6*			**0**	*85-114*	*%REC*	*1*	*08-Jul-2020 00:20*
Surr: Dibromofluoromethane	*92.6*			**0**	*80-119*	*%REC*	*1*	*08-Jul-2020 00:20*
Surr: Toluene-d8	*109*			**0**	*89-112*	*%REC*	*1*	*08-Jul-2020 00:20*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: YP
Chloride	**1,160**		**10.0**	**25.0**	**25.0**	**mg/L**	50	25-Jun-2020 23:33
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	25-Jun-2020 22:03
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	25-Jun-2020 22:03
Sulfate	**1.26**		**0.200**	**0.500**	**0.500**	**mg/L**	1	25-Jun-2020 22:03
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	01-Jul-2020 12:17
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	06-Jul-2020 17:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW23_062420
Collection Date: 24-Jun-2020 12:00

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - TOC ANALYSIS		**Method:NA**						Analyst: SUBK
Subcontract Analysis	See Attached		0	0		NA	1	17-Jul-2020 16:35
SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	13-Jul-2020 09:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW22_062420
Collection Date: 24-Jun-2020 13:05

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-06
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	08-Jul-2020 00:44
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 00:44
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 00:44
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 00:44
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 00:44
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 00:44
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 00:44
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 00:44
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 00:44
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 00:44
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	08-Jul-2020 00:44
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 00:44
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	08-Jul-2020 00:44
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 00:44
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 00:44
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 00:44
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 00:44
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Jul-2020 00:44
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 00:44
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW22_062420
Collection Date: 24-Jun-2020 13:05

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Jul-2020 00:44
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Jul-2020 00:44
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 00:44
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 00:44
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 00:44
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 00:44
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 00:44
Surr: 1,2-Dichloroethane-d4	*88.3*			**0**	*81-118*	*%REC*	*1*	*08-Jul-2020 00:44*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*08-Jul-2020 00:44*
Surr: Dibromofluoromethane	*93.0*			**0**	*80-119*	*%REC*	*1*	*08-Jul-2020 00:44*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*08-Jul-2020 00:44*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 24-Jun-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-07
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	07-Jul-2020 20:43
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 20:43
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 20:43
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 20:43
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 20:43
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 20:43
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 20:43
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 20:43
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 20:43
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	07-Jul-2020 20:43
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	07-Jul-2020 20:43
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 20:43
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	07-Jul-2020 20:43
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	07-Jul-2020 20:43
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 20:43
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 20:43
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 20:43
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	07-Jul-2020 20:43
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 20:43
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 24-Jun-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20061218
Lab ID:HS20061218-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	07-Jul-2020 20:43
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	07-Jul-2020 20:43
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	07-Jul-2020 20:43
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	07-Jul-2020 20:43
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 20:43
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 20:43
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 20:43
Surr: 1,2-Dichloroethane-d4	*88.0*			**0**	*81-118*	*%REC*	*1*	*07-Jul-2020 20:43*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*07-Jul-2020 20:43*
Surr: Dibromofluoromethane	*92.5*			**0**	*80-119*	*%REC*	*1*	*07-Jul-2020 20:43*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*07-Jul-2020 20:43*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 17-Jul-20

Weight / Prep Log

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061218

Batch ID: 154955 **Start Date:** 29 Jun 2020 10:30 **End Date:** 29 Jun 2020 14:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20061218-02		10 (mL)	10 (mL)	1

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061218

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 154955 (0)	**Test Name :** METALS BY ICPMS BY SW6020A				**Matrix:** Groundwater	
HS20061218-02	35AWW20_062420	24 Jun 2020 09:25		29 Jun 2020 14:30	02 Jul 2020 12:33	1
Batch ID: R364318 (0)	**Test Name :** SUBCONTRACT ANALYSIS - DHC/DHB				**Matrix:** Groundwater	
HS20061218-01	35AWW19_062420	24 Jun 2020 08:30			01 Jul 2020 12:17	1
HS20061218-02	35AWW20_062420	24 Jun 2020 09:25			01 Jul 2020 12:17	1
HS20061218-03	LHSMW07_062420	24 Jun 2020 10:15			01 Jul 2020 12:17	1
HS20061218-04	35AWW06_062420	24 Jun 2020 11:05			01 Jul 2020 12:17	1
HS20061218-05	35AWW23_062420	24 Jun 2020 12:00			01 Jul 2020 12:17	1
Batch ID: R364574 (0)	**Test Name :** SUBCONTRACT ANALYSIS - RSK				**Matrix:** Groundwater	
HS20061218-01	35AWW19_062420	24 Jun 2020 08:30			06 Jul 2020 17:50	1
HS20061218-02	35AWW20_062420	24 Jun 2020 09:25			06 Jul 2020 17:50	1
HS20061218-03	LHSMW07_062420	24 Jun 2020 10:15			06 Jul 2020 17:50	1
HS20061218-04	35AWW06_062420	24 Jun 2020 11:05			06 Jul 2020 17:50	1
HS20061218-05	35AWW23_062420	24 Jun 2020 12:00			06 Jul 2020 17:50	1
Batch ID: R364717 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS20061218-07	Trip Blank	24 Jun 2020 00:00			07 Jul 2020 20:43	1
Batch ID: R364717 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20061218-01	35AWW19_062420	24 Jun 2020 08:30			07 Jul 2020 21:31	1
HS20061218-02	35AWW20_062420	24 Jun 2020 09:25			07 Jul 2020 23:07	25
HS20061218-02	35AWW20_062420	24 Jun 2020 09:25			07 Jul 2020 21:55	1
HS20061218-03	LHSMW07_062420	24 Jun 2020 10:15			07 Jul 2020 23:31	1
HS20061218-04	35AWW06_062420	24 Jun 2020 11:05			07 Jul 2020 23:55	1
HS20061218-05	35AWW23_062420	24 Jun 2020 12:00			08 Jul 2020 00:20	1
HS20061218-06	35AWW22_062420	24 Jun 2020 13:05			08 Jul 2020 00:44	1
Batch ID: R364863 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS20061218-01	35AWW19_062420	24 Jun 2020 08:30			25 Jun 2020 22:21	50
HS20061218-01	35AWW19_062420	24 Jun 2020 08:30			25 Jun 2020 19:56	1
HS20061218-02	35AWW20_062420	24 Jun 2020 09:25			25 Jun 2020 22:39	50
HS20061218-02	35AWW20_062420	24 Jun 2020 09:25			25 Jun 2020 20:14	1
HS20061218-03	LHSMW07_062420	24 Jun 2020 10:15			25 Jun 2020 22:57	50
HS20061218-03	LHSMW07_062420	24 Jun 2020 10:15			25 Jun 2020 21:27	1
HS20061218-04	35AWW06_062420	24 Jun 2020 11:05			25 Jun 2020 23:15	50
HS20061218-04	35AWW06_062420	24 Jun 2020 11:05			25 Jun 2020 21:45	1
HS20061218-05	35AWW23_062420	24 Jun 2020 12:00			25 Jun 2020 23:33	50
HS20061218-05	35AWW23_062420	24 Jun 2020 12:00			25 Jun 2020 22:03	1

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061218

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R364908 (0)	**Test Name :** SUBCONTRACT ANALYSIS - VOLATILE FATTY ACIDS				**Matrix:** Groundwater	
HS20061218-01	35AWW19_062420	24 Jun 2020 08:30			13 Jul 2020 09:49	1
HS20061218-02	35AWW20_062420	24 Jun 2020 09:25			13 Jul 2020 09:49	1
HS20061218-03	LHSMW07_062420	24 Jun 2020 10:15			13 Jul 2020 09:49	1
HS20061218-04	35AWW06_062420	24 Jun 2020 11:05			13 Jul 2020 09:49	1
HS20061218-05	35AWW23_062420	24 Jun 2020 12:00			13 Jul 2020 09:49	1
Batch ID: R365263 (0)	**Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS				**Matrix:** Groundwater	
HS20061218-01	35AWW19_062420	24 Jun 2020 08:30			17 Jul 2020 16:35	1
HS20061218-02	35AWW20_062420	24 Jun 2020 09:25			17 Jul 2020 16:35	1
HS20061218-03	LHSMW07_062420	24 Jun 2020 10:15			17 Jul 2020 16:35	1
HS20061218-04	35AWW06_062420	24 Jun 2020 11:05			17 Jul 2020 16:35	1
HS20061218-05	35AWW23_062420	24 Jun 2020 12:00			17 Jul 2020 16:35	1

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061218

QC BATCH REPORT

Batch ID: 154955 (0) **Instrument: ICPMS06** **Method: METALS BY ICPMS BY SW6020A**

MBLK Sample ID: **MBLK-154955** Units: **mg/L** Analysis Date: **02-Jul-2020 12:25**
Client ID: Run ID: **ICPMS06_364391** SeqNo: **5648603** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.000500	0.00500								U

LCS Sample ID: **LCS-154955** Units: **mg/L** Analysis Date: **02-Jul-2020 12:27**
Client ID: Run ID: **ICPMS06_364391** SeqNo: **5648604** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04816	0.00500	0.05	0	96.3	84 - 116				

MS Sample ID: **HS20061218-02MS** Units: **mg/L** Analysis Date: **02-Jul-2020 12:37**
Client ID: **35AWW20_062420** Run ID: **ICPMS06_364391** SeqNo: **5648607** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04966	0.00500	0.05	0.001189	96.9	84 - 116				

MSD Sample ID: **HS20061218-02MSD** Units: **mg/L** Analysis Date: **02-Jul-2020 12:39**
Client ID: **35AWW20_062420** Run ID: **ICPMS06_364391** SeqNo: **5648608** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04875	0.00500	0.05	0.001189	95.1	84 - 116	0.04966	1.85	20	

PDS Sample ID: **HS20061218-02PDS** Units: **mg/L** Analysis Date: **02-Jul-2020 12:41**
Client ID: **35AWW20_062420** Run ID: **ICPMS06_364391** SeqNo: **5648609** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1122	0.00500	0.1	0.001189	111	80 - 120				

SD Sample ID: **HS20061218-02SD** Units: **mg/L** Analysis Date: **02-Jul-2020 12:35**
Client ID: **35AWW20_062420** Run ID: **ICPMS06_364391** SeqNo: **5648606** PrepDate: **29-Jun-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.00250	0.0250					0.001189	0	10	U

The following samples were analyzed in this batch: HS20061218-02

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061218

QC BATCH REPORT

Batch ID: R364717 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-200707** Units: **UG/L** Analysis Date: **07-Jul-2020 20:19**
Client ID: Run ID: **VOA6_364717** SeqNo: **5654689** 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-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	1.0	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
Bromomethane	1.0	1.0								U

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061218

QC BATCH REPORT

Batch ID: R364717 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200707** Units: **UG/L** Analysis Date: **07-Jul-2020 20:19**
Client ID: Run ID: **VOA6_364717** SeqNo: **5654689** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	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	1.0	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	*45.09*	*1.0*	*50*	*0*	*90.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.93*	*1.0*	*50*	*0*	*99.9*	*85 - 114*				
Surr: Dibromofluoromethane	*47.53*	*1.0*	*50*	*0*	*95.1*	*80 - 119*				
Surr: Toluene-d8	*52.44*	*1.0*	*50*	*0*	*105*	*89 - 112*				

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061218

QC BATCH REPORT

Batch ID: R364717 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200707** Units: **UG/L** Analysis Date: **07-Jul-2020 19:07**
Client ID: Run ID: **VOA6_364717** SeqNo: **5654688** 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	19.11	1.0	20	0	95.6	78 - 124				
1,1,1-Trichloroethane	19.23	1.0	20	0	96.2	74 - 131				
1,1,2,2-Tetrachloroethane	17.51	1.0	20	0	87.5	71 - 121				
1,1,2-Trichloroethane	19.46	1.0	20	0	97.3	80 - 119				
1,1-Dichloroethane	18.92	1.0	20	0	94.6	77 - 125				
1,1-Dichloroethene	18.58	1.0	20	0	92.9	71 - 131				
1,1-Dichloropropene	18.5	1.0	20	0	92.5	78 - 125				
1,2,3-Trichlorobenzene	21.89	1.0	20	0	109	69 - 129				
1,2,3-Trichloropropane	17.75	1.0	20	0	88.8	73 - 122				
1,2,4-Trichlorobenzene	21.7	1.0	20	0	109	69 - 130				
1,2,4-Trimethylbenzene	19.22	1.0	20	0	96.1	76 - 124				
1,2-Dibromo-3-chloropropane	17	1.0	20	0	85.0	62 - 128				
1,2-Dibromoethane	18.84	1.0	20	0	94.2	77 - 121				
1,2-Dichlorobenzene	18.58	1.0	20	0	92.9	80 - 119				
1,2-Dichloroethane	19.27	1.0	20	0	96.4	73 - 128				
1,2-Dichloropropane	19.62	1.0	20	0	98.1	78 - 122				
1,3,5-Trimethylbenzene	19.61	1.0	20	0	98.0	75 - 124				
1,3-Dichlorobenzene	19.23	1.0	20	0	96.2	80 - 119				
1,3-Dichloropropane	18.7	1.0	20	0	93.5	80 - 119				
1,4-Dichlorobenzene	19.46	1.0	20	0	97.3	79 - 118				
2,2-Dichloropropane	19.54	1.0	20	0	97.7	60 - 139				
2-Butanone	33.92	2.0	40	0	84.8	56 - 143				
2-Chlorotoluene	19.36	1.0	20	0	96.8	79 - 122				
2-Hexanone	33.58	2.0	40	0	83.9	57 - 139				
4-Chlorotoluene	19.74	1.0	20	0	98.7	78 - 122				
4-Isopropyltoluene	19.67	1.0	20	0	98.3	77 - 127				
4-Methyl-2-pentanone	35.65	2.0	40	0	89.1	67 - 130				
Acetone	29.57	2.0	40	0	73.9	39 - 160				
Benzene	19.33	1.0	20	0	96.7	79 - 120				
Bromobenzene	19.57	1.0	20	0	97.8	80 - 120				
Bromochloromethane	18.46	1.0	20	0	92.3	78 - 123				
Bromodichloromethane	19.55	1.0	20	0	97.7	79 - 125				
Bromoform	18.49	1.0	20	0	92.5	66 - 130				
Bromomethane	22.4	1.0	20	0	112	53 - 141				

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061218

QC BATCH REPORT

Batch ID: R364717 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200707** Units: **UG/L** Analysis Date: **07-Jul-2020 19:07**
Client ID: Run ID: **VOA6_364717** SeqNo: **5654688** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	39.21	2.0	40	0	98.0	64 - 133				
Carbon tetrachloride	19.04	1.0	20	0	95.2	72 - 136				
Chlorobenzene	19.09	1.0	20	0	95.5	82 - 118				
Chloroethane	20.35	1.0	20	0	102	60 - 138				
Chloroform	18.97	1.0	20	0	94.9	79 - 124				
Chloromethane	20.38	1.0	20	0	102	50 - 139				
cis-1,2-Dichloroethene	19.5	1.0	20	0	97.5	78 - 123				
cis-1,3-Dichloropropene	19.34	1.0	20	0	96.7	75 - 124				
Dibromochloromethane	18.78	1.0	20	0	93.9	74 - 126				
Dibromomethane	19.11	1.0	20	0	95.6	79 - 123				
Dichlorodifluoromethane	18.5	1.0	20	0	92.5	32 - 152				
Ethylbenzene	19.2	1.0	20	0	96.0	79 - 121				
Hexachlorobutadiene	24.19	1.0	20	0	121	66 - 134				
Isopropylbenzene	19.4	1.0	20	0	97.0	72 - 131				
m,p-Xylene	38.14	2.0	40	0	95.3	80 - 121				
Methylene chloride	23.44	2.0	20	0	117	74 - 124				
Naphthalene	19.05	1.0	20	0	95.2	61 - 128				
n-Butylbenzene	19.47	1.0	20	0	97.3	75 - 128				
n-Propylbenzene	19.55	1.0	20	0	97.8	76 - 126				
o-Xylene	19.04	1.0	20	0	95.2	78 - 122				
sec-Butylbenzene	19.73	1.0	20	0	98.6	77 - 126				
Styrene	19.49	1.0	20	0	97.5	78 - 123				
tert-Butylbenzene	20	1.0	20	0	100.0	78 - 124				
Tetrachloroethene	19.63	1.0	20	0	98.2	74 - 129				
Toluene	19.44	1.0	20	0	97.2	80 - 121				
trans-1,2-Dichloroethene	19.93	1.0	20	0	99.7	75 - 124				
trans-1,3-Dichloropropene	19.75	1.0	20	0	98.7	73 - 127				
Trichloroethene	19.25	1.0	20	0	96.2	79 - 123				
Trichlorofluoromethane	19.16	1.0	20	0	95.8	65 - 141				
Vinyl chloride	18.79	1.0	20	0	93.9	58 - 137				
Surr: 1,2-Dichloroethane-d4	*50.46*	*1.0*	*50*	*0*	*101*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.76*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*51.48*	*1.0*	*50*	*0*	*103*	*80 - 119*				
Surr: Toluene-d8	*48.46*	*1.0*	*50*	*0*	*96.9*	*89 - 112*				

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061218

QC BATCH REPORT

Batch ID: R364717 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS20061218-01MS** Units: **UG/L** Analysis Date: **07-Jul-2020 22:19**
Client ID: **35AWW19_062420** Run ID: **VOA6_364717** SeqNo: **5654694** 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	19.74	1.0	20	0	98.7	78 - 124				
1,1,1-Trichloroethane	19.26	1.0	20	0	96.3	74 - 131				
1,1,2,2-Tetrachloroethane	19	1.0	20	0	95.0	71 - 121				
1,1,2-Trichloroethane	19.78	1.0	20	0	98.9	80 - 119				
1,1-Dichloroethane	19.12	1.0	20	0.8538	91.3	77 - 125				
1,1-Dichloroethene	23.4	1.0	20	4.618	93.9	71 - 131				
1,1-Dichloropropene	19.53	1.0	20	0	97.7	78 - 125				
1,2,3-Trichlorobenzene	14.27	1.0	20	0	71.3	69 - 129				
1,2,3-Trichloropropane	18.12	1.0	20	0	90.6	73 - 122				
1,2,4-Trichlorobenzene	17.18	1.0	20	0	85.9	69 - 130				
1,2,4-Trimethylbenzene	20.96	1.0	20	0	105	76 - 124				
1,2-Dibromo-3-chloropropane	13.77	1.0	20	0	68.9	62 - 128				
1,2-Dibromoethane	18.98	1.0	20	0	94.9	77 - 121				
1,2-Dichlorobenzene	19.82	1.0	20	0	99.1	80 - 119				
1,2-Dichloroethane	19.74	1.0	20	0	98.7	73 - 128				
1,2-Dichloropropane	19.73	1.0	20	0	98.6	78 - 122				
1,3,5-Trimethylbenzene	21.64	1.0	20	0	108	75 - 124				
1,3-Dichlorobenzene	20.47	1.0	20	0	102	80 - 119				
1,3-Dichloropropane	19.06	1.0	20	0	95.3	80 - 119				
1,4-Dichlorobenzene	21.19	1.0	20	0	106	79 - 118				
2,2-Dichloropropane	18.11	1.0	20	0	90.6	60 - 139				
2-Butanone	25.18	2.0	40	0	63.0	56 - 143				
2-Chlorotoluene	21.04	1.0	20	0	105	79 - 122				
2-Hexanone	32.79	2.0	40	0	82.0	57 - 139				
4-Chlorotoluene	21.22	1.0	20	0	106	78 - 122				
4-Isopropyltoluene	21.9	1.0	20	0	110	77 - 127				
4-Methyl-2-pentanone	35.96	2.0	40	0	89.9	67 - 130				
Acetone	4.724	2.0	40	0	11.8	39 - 160				S
Benzene	19.73	1.0	20	0	98.6	79 - 120				
Bromobenzene	21.18	1.0	20	0	106	80 - 120				
Bromochloromethane	17.28	1.0	20	0	86.4	78 - 123				
Bromodichloromethane	19.33	1.0	20	0	96.7	79 - 125				
Bromoform	18.25	1.0	20	0	91.2	66 - 130				
Bromomethane	19.87	1.0	20	0	99.4	53 - 141				

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061218

QC BATCH REPORT

Batch ID: R364717 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS20061218-01MS** Units: **UG/L** Analysis Date: **07-Jul-2020 22:19**
Client ID: **35AWW19_062420** Run ID: **VOA6_364717** SeqNo: **5654694** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	37.91	2.0	40	0	94.8	64 - 133				
Carbon tetrachloride	20.34	1.0	20	0	102	72 - 136				
Chlorobenzene	20.12	1.0	20	0	101	82 - 118				
Chloroethane	18.33	1.0	20	0	91.6	60 - 138				
Chloroform	18.63	1.0	20	0	93.2	79 - 124				
Chloromethane	19.59	1.0	20	0	98.0	50 - 139				
cis-1,2-Dichloroethene	18.4	1.0	20	0	92.0	78 - 123				
cis-1,3-Dichloropropene	18.6	1.0	20	0	93.0	75 - 124				
Dibromochloromethane	18.92	1.0	20	0	94.6	74 - 126				
Dibromomethane	18.45	1.0	20	0	92.2	79 - 123				
Dichlorodifluoromethane	16.58	1.0	20	0	82.9	32 - 152				
Ethylbenzene	20.88	1.0	20	0	104	79 - 121				
Hexachlorobutadiene	21.93	1.0	20	0	110	66 - 134				
Isopropylbenzene	20.56	1.0	20	0	103	72 - 131				
m,p-Xylene	40.6	2.0	40	0	101	80 - 121				
Methylene chloride	18.18	2.0	20	0	90.9	74 - 124				
Naphthalene	13.74	1.0	20	0	68.7	61 - 128				
n-Butylbenzene	21.53	1.0	20	0	108	75 - 128				
n-Propylbenzene	22.04	1.0	20	0	110	76 - 126				
o-Xylene	20.12	1.0	20	0	101	78 - 122				
sec-Butylbenzene	21.75	1.0	20	0	109	77 - 126				
Styrene	20.26	1.0	20	0	101	78 - 123				
tert-Butylbenzene	22.26	1.0	20	0	111	78 - 124				
Tetrachloroethene	21.31	1.0	20	0	107	74 - 129				
Toluene	20.62	1.0	20	0	103	80 - 121				
trans-1,2-Dichloroethene	19.34	1.0	20	0	96.7	75 - 124				
trans-1,3-Dichloropropene	18.68	1.0	20	0	93.4	73 - 127				
Trichloroethene	19.87	1.0	20	0	99.4	79 - 123				
Trichlorofluoromethane	20.56	1.0	20	0	103	65 - 141				
Vinyl chloride	19.44	1.0	20	0	97.2	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.28*	*1.0*	*50*	*0*	*88.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.92*	*1.0*	*50*	*0*	*99.8*	*85 - 114*				
Surr: Dibromofluoromethane	*46.44*	*1.0*	*50*	*0*	*92.9*	*80 - 119*				
Surr: Toluene-d8	*50.61*	*1.0*	*50*	*0*	*101*	*89 - 112*				

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061218

QC BATCH REPORT

Batch ID: R364717 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS20061218-01MSD** Units: **UG/L** Analysis Date: **07-Jul-2020 22:43**
Client ID: **35AWW19_062420** Run ID: **VOA6_364717** SeqNo: **5654695** 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	19.81	1.0	20	0	99.0	78 - 124	19.74	0.33	20	
1,1,1-Trichloroethane	19.13	1.0	20	0	95.7	74 - 131	19.26	0.678	20	
1,1,2,2-Tetrachloroethane	19.21	1.0	20	0	96.0	71 - 121	19	1.08	20	
1,1,2-Trichloroethane	19.26	1.0	20	0	96.3	80 - 119	19.78	2.66	20	
1,1-Dichloroethane	19	1.0	20	0.8538	90.7	77 - 125	19.12	0.632	20	
1,1-Dichloroethene	23.33	1.0	20	4.618	93.6	71 - 131	23.4	0.284	20	
1,1-Dichloropropene	19.18	1.0	20	0	95.9	78 - 125	19.53	1.79	20	
1,2,3-Trichlorobenzene	16.66	1.0	20	0	83.3	69 - 129	14.27	15.5	20	
1,2,3-Trichloropropane	18.75	1.0	20	0	93.7	73 - 122	18.12	3.42	20	
1,2,4-Trichlorobenzene	17.41	1.0	20	0	87.1	69 - 130	17.18	1.36	20	
1,2,4-Trimethylbenzene	21.14	1.0	20	0	106	76 - 124	20.96	0.864	20	
1,2-Dibromo-3-chloropropane	12.98	1.0	20	0	64.9	62 - 128	13.77	5.95	20	
1,2-Dibromoethane	18.53	1.0	20	0	92.6	77 - 121	18.98	2.41	20	
1,2-Dichlorobenzene	17.03	1.0	20	0	85.1	80 - 119	19.82	15.2	20	
1,2-Dichloroethane	19.29	1.0	20	0	96.5	73 - 128	19.74	2.3	20	
1,2-Dichloropropane	19.33	1.0	20	0	96.6	78 - 122	19.73	2.04	20	
1,3,5-Trimethylbenzene	20.19	1.0	20	0	101	75 - 124	21.64	6.96	20	
1,3-Dichlorobenzene	20.4	1.0	20	0	102	80 - 119	20.47	0.379	20	
1,3-Dichloropropane	19.05	1.0	20	0	95.3	80 - 119	19.06	0.0465	20	
1,4-Dichlorobenzene	21.15	1.0	20	0	106	79 - 118	21.19	0.222	20	
2,2-Dichloropropane	17.43	1.0	20	0	87.2	60 - 139	18.11	3.84	20	
2-Butanone	25.18	2.0	40	0	62.9	56 - 143	25.18	0.0162	20	
2-Chlorotoluene	21.54	1.0	20	0	108	79 - 122	21.04	2.35	20	
2-Hexanone	32.8	2.0	40	0	82.0	57 - 139	32.79	0.0413	20	
4-Chlorotoluene	19.82	1.0	20	0	99.1	78 - 122	21.22	6.8	20	
4-Isopropyltoluene	21.98	1.0	20	0	110	77 - 127	21.9	0.369	20	
4-Methyl-2-pentanone	35.68	2.0	40	0	89.2	67 - 130	35.96	0.792	20	
Acetone	4.338	2.0	40	0	10.8	39 - 160	4.724	8.52	20	S
Benzene	19.18	1.0	20	0	95.9	79 - 120	19.73	2.83	20	
Bromobenzene	21.41	1.0	20	0	107	80 - 120	21.18	1.06	20	
Bromochloromethane	16.95	1.0	20	0	84.8	78 - 123	17.28	1.93	20	
Bromodichloromethane	19.02	1.0	20	0	95.1	79 - 125	19.33	1.61	20	
Bromoform	18.09	1.0	20	0	90.5	66 - 130	18.25	0.867	20	
Bromomethane	20.33	1.0	20	0	102	53 - 141	19.87	2.28	20	

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061218

QC BATCH REPORT

Batch ID: R364717 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS20061218-01MSD** Units: **UG/L** Analysis Date: **07-Jul-2020 22:43**
Client ID: **35AWW19_062420** Run ID: **VOA6_364717** SeqNo: **5654695** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	38.28	2.0	40	0	95.7	64 - 133	37.91	0.97	20	
Carbon tetrachloride	20.03	1.0	20	0	100	72 - 136	20.34	1.54	20	
Chlorobenzene	20.1	1.0	20	0	100	82 - 118	20.12	0.128	20	
Chloroethane	17.97	1.0	20	0	89.9	60 - 138	18.33	1.96	20	
Chloroform	18.26	1.0	20	0	91.3	79 - 124	18.63	2.04	20	
Chloromethane	18.81	1.0	20	0	94.1	50 - 139	19.59	4.08	20	
cis-1,2-Dichloroethene	18.16	1.0	20	0	90.8	78 - 123	18.4	1.31	20	
cis-1,3-Dichloropropene	18.46	1.0	20	0	92.3	75 - 124	18.6	0.752	20	
Dibromochloromethane	19.04	1.0	20	0	95.2	74 - 126	18.92	0.645	20	
Dibromomethane	18.1	1.0	20	0	90.5	79 - 123	18.45	1.89	20	
Dichlorodifluoromethane	15.8	1.0	20	0	79.0	32 - 152	16.58	4.82	20	
Ethylbenzene	20.14	1.0	20	0	101	79 - 121	20.88	3.62	20	
Hexachlorobutadiene	19.58	1.0	20	0	97.9	66 - 134	21.93	11.3	20	
Isopropylbenzene	20.51	1.0	20	0	103	72 - 131	20.56	0.239	20	
m,p-Xylene	39.81	2.0	40	0	99.5	80 - 121	40.6	1.96	20	
Methylene chloride	17.98	2.0	20	0	89.9	74 - 124	18.18	1.1	20	
Naphthalene	14.78	1.0	20	0	73.9	61 - 128	13.74	7.29	20	
n-Butylbenzene	18.05	1.0	20	0	90.2	75 - 128	21.53	17.6	20	
n-Propylbenzene	22.38	1.0	20	0	112	76 - 126	22.04	1.51	20	
o-Xylene	20.34	1.0	20	0	102	78 - 122	20.12	1.1	20	
sec-Butylbenzene	21.2	1.0	20	0	106	77 - 126	21.75	2.58	20	
Styrene	19.92	1.0	20	0	99.6	78 - 123	20.26	1.71	20	
tert-Butylbenzene	22.88	1.0	20	0	114	78 - 124	22.26	2.74	20	
Tetrachloroethene	20.5	1.0	20	0	103	74 - 129	21.31	3.87	20	
Toluene	20.49	1.0	20	0	102	80 - 121	20.62	0.595	20	
trans-1,2-Dichloroethene	18.89	1.0	20	0	94.4	75 - 124	19.34	2.4	20	
trans-1,3-Dichloropropene	18.37	1.0	20	0	91.8	73 - 127	18.68	1.67	20	
Trichloroethene	19.07	1.0	20	0	95.4	79 - 123	19.87	4.11	20	
Trichlorofluoromethane	19.22	1.0	20	0	96.1	65 - 141	20.56	6.73	20	
Vinyl chloride	19.27	1.0	20	0	96.3	58 - 137	19.44	0.887	20	
Surr: 1,2-Dichloroethane-d4	*44.88*	*1.0*	*50*	*0*	*89.8*	*81 - 118*	*44.28*	*1.35*	*20*	
Surr: 4-Bromofluorobenzene	*48.86*	*1.0*	*50*	*0*	*97.7*	*85 - 114*	*49.92*	*2.15*	*20*	
Surr: Dibromofluoromethane	*46.47*	*1.0*	*50*	*0*	*92.9*	*80 - 119*	*46.44*	*0.0659*	*20*	
Surr: Toluene-d8	*50.21*	*1.0*	*50*	*0*	*100*	*89 - 112*	*50.61*	*0.785*	*20*	

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061218

QC BATCH REPORT

Batch ID: R364717 (0)	Instrument: VOA6	Method: VOLATILES ORGANICS BY METHOD 8260C

The following samples were analyzed in this batch:

HS20061218-01	HS20061218-02	HS20061218-03	HS20061218-04
HS20061218-05	HS20061218-06	HS20061218-07	

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061218

QC BATCH REPORT

Batch ID: R364863 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **WBLKW1-062520** Units: **mg/L** Analysis Date: **25-Jun-2020 11:13**
Client ID: Run ID: **ICS-Integrion_364863** SeqNo: **5658151** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.22	0.500								J
Nitrogen, Nitrate (As N)	0.100	0.100								U
Nitrogen, Nitrite (As N)	0.100	0.100								U
Sulfate	0.2131	0.500								J

LCS Sample ID: **WLCSW1-062520** Units: **mg/L** Analysis Date: **25-Jun-2020 10:55**
Client ID: Run ID: **ICS-Integrion_364863** SeqNo: **5658150** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.11	0.500	20	0	101	80 - 120				
Nitrogen, Nitrate (As N)	3.959	0.100	4	0	99.0	80 - 120				
Nitrogen, Nitrite (As N)	4.351	0.100	4	0	109	80 - 120				
Sulfate	19.54	0.500	20	0	97.7	80 - 120				

The following samples were analyzed in this batch: HS20061218-01 HS20061218-02 HS20061218-03 HS20061218-04 HS20061218-05

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: **HS20061218**

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

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2019-2020	31-Jul-2020
North Carolina	624-2020	31-Dec-2020
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

ALS Houston, US Date: 17-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS20061218

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS20061218-01	35AWW19_062420	Login	6/25/2020 11:55:20 AM	JRM	MET102
HS20061218-01	35AWW19_062420	Login	6/25/2020 11:55:20 AM	JRM	WET281
HS20061218-01	35AWW19_062420	Login	6/25/2020 11:55:20 AM	JRM	VOA044
HS20061218-01	35AWW19_062420	Login	6/25/2020 11:55:20 AM	JRM	Sub
HS20061218-01	35AWW19_062420	Login	6/25/2020 11:55:20 AM	JRM	Sub
HS20061218-02	35AWW20_062420	Login	6/25/2020 11:55:20 AM	JRM	MET102
HS20061218-02	35AWW20_062420	Login	6/25/2020 11:55:20 AM	JRM	Sub
HS20061218-02	35AWW20_062420	Login	6/25/2020 11:55:20 AM	JRM	WET281
HS20061218-02	35AWW20_062420	Login	6/25/2020 11:55:20 AM	JRM	VOA044
HS20061218-02	35AWW20_062420	Login	6/25/2020 11:55:20 AM	JRM	Sub
HS20061218-02	35AWW20_062420	Login	6/25/2020 11:55:20 AM	JRM	Sub
HS20061218-03	LHSMW07_062420	Login	6/25/2020 11:55:20 AM	JRM	MET102
HS20061218-03	LHSMW07_062420	Login	6/25/2020 11:55:20 AM	JRM	Sub
HS20061218-03	LHSMW07_062420	Login	6/25/2020 11:55:20 AM	JRM	WET281
HS20061218-03	LHSMW07_062420	Login	6/25/2020 11:55:20 AM	JRM	VOA044
HS20061218-03	LHSMW07_062420	Login	6/25/2020 11:55:20 AM	JRM	Sub
HS20061218-03	LHSMW07_062420	Login	6/25/2020 11:55:20 AM	JRM	Sub
HS20061218-04	35AWW06_062420	Login	6/25/2020 11:55:20 AM	JRM	Sub
HS20061218-04	35AWW06_062420	Login	6/25/2020 11:55:20 AM	JRM	WET281
HS20061218-04	35AWW06_062420	Login	6/25/2020 11:55:20 AM	JRM	VOA044
HS20061218-04	35AWW06_062420	Login	6/25/2020 11:55:20 AM	JRM	Sub
HS20061218-04	35AWW06_062420	Login	6/25/2020 11:55:20 AM	JRM	Sub
HS20061218-06	35AWW22_062420	Login	6/25/2020 11:55:20 AM	JRM	VOA044
HS20061218-05	35AWW23_062420	Login	6/25/2020 11:56:27 AM	JML	Sub
HS20061218-05	35AWW23_062420	Login	6/25/2020 11:56:27 AM	JML	Sub
HS20061218-05	35AWW23_062420	Login	6/25/2020 11:56:27 AM	JML	WET301
HS20061218-05	35AWW23_062420	Login	6/25/2020 11:56:27 AM	JML	VOA224
HS20061218-05	35AWW23_062420	Login	6/25/2020 11:56:27 AM	JML	Sub
HS20061218-05	35AWW23_062420	Login	6/25/2020 11:56:27 AM	JML	Sub
HS20061218-07	Trip Blank	Login	6/25/2020 11:56:40 AM	JML	VOA224

ALS Houston, US Date: 17-Jul-20

Sample Receipt Checklist

Work Order ID: HS20061218 **Date/Time Received:** **25-Jun-2020 09:00**

Client Name: Bhate Environmental **Received by:** **Jared R. Makan**

Completed By:	/S/ Paresh M. Giga	25-Jun-2020 12:05	**Reviewed by:**	/S/ RJ Modashia	25-Jun-2020 14:56
	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 ☐	1 Page(s)
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
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):	1.8°C/1.8°C UC/C	IR25
Cooler(s)/Kit(s):	43244	
Date/Time sample(s) sent to storage:	6/25/2020 12:05	

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:

bhate ENVIRONMENTAL ASSOCIATES LIMITED

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: _____ of _____

Project/Phase No: NWO1312.0150

COC Number(1): _____

LIMS Number: _____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	MEE	TOC	Carbon Dioxide	Anions	AQ549A/C					Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35AWW19_062420	24 Jun 2020	0830	-	N		WG	11	X	X	X	X	X									
35AWW20-062420	24 Jun 2020	0925	-	N		WG	12	X	X	X	X	X	X								
LHSMW07_062420	24 Jun 2020	1015	-	N		WG	11	X	X	X	X	X									
35AWW06_062420	24 Jun 2020	1105		N		WG	11	X	X	X	X	X									
35AWW23_062420	24 Jun 2020	1200		N		WG	11	X	X	X	X	X									
35AWW22_062420	24 Jun 2020	1305	-	N		WG	3	X													
TRIP BLANK	24 Jun 2020		-	TB		W	2	X													
			-																		
			-																		
			-																		
			-																		

Sample Analysis Requested (5) | Quality Assurance Samples (6)

HS20061218

Bhate Environmental Associates, Inc.
LHAAP-58

COMMENTS: _____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/24/20	1430	1. NK	6-25-20	09:20
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.:

_____ Method of Shipment: _____

_____ Fed Ex _____ Airbill Number:

_____ Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

Trip Blk

42 of 111

1.8

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

U3244

CUSTODY SEAL

Date: 6/24/20 Time: 1430
Name: Scott Beesinger
Company: Bhate

Seal Broken By: SM
Date: 06/25/20

43244

Must Deliver Next Business Day
Time and Tempature Sensitive!

U3244

ORIGIN ID:SGRA (903) 930-8183
SCOTT BEESINER
BHATE ENVIRONMENTAL ASSOCIATES
1203-B EAST GRAND AVE. PMB202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 27NOV19
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3211
DIMS: 26x14x14 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5868
REF: LHAAP-58 - BD 68898 - RU
RMA:

FedEx Express

TRK# 0221 1251 0292 3762

THU - 25 JUN 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

ALS Environmental
ALS Group USA, Corp
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Kelso, WA 98626
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www.alsglobal.com

July 14, 2020

Analytical Report for Service Request No: K2005353

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

RE: HS20061218

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory June 26, 2020
For your reference, these analyses have been assigned our service request number **K2005353.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

for Kelley Lovejoy
Project Manager

RIGHT SOLUTIONS | RIGHT PARTNER

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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Phone (360)577- 7222 Fax (360)636-1 068
www.alsglobal.com

1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

Client: ALS Environmental - US
Project: HS20061218
Sample Matrix: Ground Water

Service Request: K2005353
Date Received: 06/26/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Five ground water samples were received for analysis at ALS Environmental on 06/26/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by Noe D. Dan Date 07/14/2020

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636-1 068
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K2005353

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Houston, TX 77099
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F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **14190**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

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:	HS20061218
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20061218-01**	**35AWW19_062420**	**Groundwater**	**24 Jun 2020 08:30**
	TOC Analysis for DOD Level IV/Excel EDD			06 Jul 2020
2.	**HS20061218-02**	**35AWW20_062420**	**Groundwater**	**24 Jun 2020 09:25**
	TOC Analysis for DOD Level IV/Excel EDD			06 Jul 2020
3.	**HS20061218-03**	**LHSMW07_062420**	**Groundwater**	**24 Jun 2020 10:15**
	TOC Analysis for DOD Level IV/Excel EDD			06 Jul 2020
4.	**HS20061218-04**	**35AWW06_062420**	**Groundwater**	**24 Jun 2020 11:05**
	TOC Analysis for DOD Level IV/Excel EDD			06 Jul 2020
5.	**HS20061218-05**	**35AWW23_062420**	**Groundwater**	**24 Jun 2020 12:00**
	TOC Analysis for DOD Level IV/Excel EDD			06 Jul 2020

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

QC Level: DOD IV (DoD Data Package)

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **14190**

Relinquished By: _____ Date/Time: 6/25/2020 1800

Received By: _____ Date/Time: 6/26/20 0930

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

PC KL

Cooler Receipt and Preservation Form

Client AIY Houston Service Request *K20* 05353

Received: 6/12/20 Opened: 6/12/20 By: BR Unloaded: 6/12/20 By: BR

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID (NA)	Tracking Number NA	Filed
2.1	—	—	—	—	IR02		1891 8877 9056	

4. Packing material: *Inserts* (*Baggies*) *Bubble Wrap* *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636-1 068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2005353
Project:	HS20061218	**Date Collected:**	06/24/20
Sample Matrix:	Ground Water	**Date Received:**	06/26/20
Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
35AWW19_062420	K2005353-001	**1.75**	0.50	0.20	0.07	1	07/02/20 10:33	
35AWW20_062420	K2005353-002	**13.9**	0.50	0.20	0.07	1	07/02/20 10:33	
LHSMW07_062420	K2005353-003	**3.00**	0.50	0.20	0.07	1	07/02/20 10:33	
35AWW06_062420	K2005353-004	**10.2**	0.50	0.20	0.07	1	07/02/20 10:33	
35AWW23_062420	K2005353-005	**849**	5.0	2.0	0.7	10	07/02/20 10:33	
Method Blank	K2005353-MB	ND U	0.50	0.20	0.07	1	07/02/20 10:33	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2005353
Project:	HS20061218	**Date Analyzed:**	07/02/20
Sample Matrix:	Ground Water	**Date Extracted:**	NA

Lab Control Sample Summary
Carbon, Total Organic

Analysis Method:	SM 5310 C	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA
		Analysis Lot:	685526

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2005353-LCS	82.8	87.5	95	83-117

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2005353
Project: HS20061218

Continuing Calibration Verification (CCV) Summary

Carbon, Total Organic

Analysis Method: SM 5310 C **Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	685526	KQ2009226-06	07/02/20 10:33	25.0	26.1	105	90-110
CCV2	685526	KQ2009226-07	07/02/20 10:33	25.0	25.1	101	90-110
CCV3	685526	KQ2009226-08	07/02/20 10:33	25.0	25.3	101	90-110
CCV4	685526	KQ2009226-09	07/02/20 10:33	25.0	24.9	100	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:**K2005353
Project: HS20061218

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analysis Method: SM 5310 C **Units:**mg/L

	Analysis Lot	Lab Code	Date Analyzed	LOQ	LOD	MDL	Result	Q
CCB1	685526	KQ2009226-10	07/02/20 10:33	0.50	0.20	0.07	0.45	J
CCB2	685526	KQ2009226-11	07/02/20 10:33	0.50	0.20	0.07	ND	U
CCB3	685526	KQ2009226-12	07/02/20 10:33	0.50	0.20	0.07	ND	U
CCB4	685526	KQ2009226-13	07/02/20 10:33	0.50	0.20	0.07	ND	U

Raw Data

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General Chemistry

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Work Request # Original (5353) 5357 5466 5295 5204 | 5480 5020 5459

Tier: IV II I IV I II II II

Date Analyzed: 7/2/20 5174 II 5453 II 5455 II

Analyst: MK Run # 685526 / 686666

Analysis: TOC / DOC

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?	yes/no/NA
2.	Holding times met for all analyses and for all samples?	yes/no/NA
3.	Are calculations correct?	yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)	yes/no/NA
5.	All quality control criteria met?	yes/no
6.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
7.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
8.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
9.	Are results for methods blanks all ND?	yes/no/NA
10.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
11.	Are all exceptions explained?	yes/no/NA
12.	Have all applicable service requests been reviewed?	yes/no/NA
13.	Are all samples labeled correctly?	yes/no/NA
14.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V)	yes/no/NA
15.	Are detection limits and units reported correctly?	yes/no/NA
16.	Is the unused space on the benchsheet crossed out?	yes/no/NA
17.	Was analysis turned in by the due date? (n-2) (If not record SR#)	yes/no/NA

COMMENTS:
686666 - LCS is low 82%
5480-1 Dup 11% < 5x MRL

Final Approved by: _____ Date: 7/10/20

DQREPORT

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** MKANALY **Analysis Lot:** 685526 **Method/Testcode:** SM 5310 C/TOC T

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2005204-002	Carbon, Total Organic	N/A		Water	2.01 mg/L	10 mL	2.01 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	I
K2005295-002	Carbon, Total Organic	N/A		Ground Water	69.82 mg/L	10 mL	69.8 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	IV
K2005295-003	Carbon, Total Organic	N/A		Ground Water	207.90 mg/L	10 mL	208 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	IV
K2005353-001	Carbon, Total Organic	N/A		Ground Water	1.75 mg/L	10 mL	1.75 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	IV
K2005353-002	Carbon, Total Organic	N/A		Ground Water	13.87 mg/L	10 mL	13.9 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	IV
K2005353-003	Carbon, Total Organic	N/A		Ground Water	3.00 mg/L	10 mL	3.00 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	IV
K2005353-004	Carbon, Total Organic	N/A		Ground Water	10.18 mg/L	10 mL	10.2 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	IV
K2005353-005	Carbon, Total Organic	N/A		Ground Water	84.93 mg/L	10 mL	849 mg/L	10	0.7	5.0			7/2/20 10:33:00	N	IV
K2005357-001	Carbon, Total Organic	N/A		Water	2.03 mg/L	10 mL	2.03 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	II
K2005466-001	Carbon, Total Organic	N/A		Water	3.82 mg/L	10 mL	3.82 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	I
K2005466-002	Carbon, Total Organic	N/A		Water	2.78 mg/L	10 mL	2.78 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	I
K2005466-003	Carbon, Total Organic	N/A		Water	2.75 mg/L	10 mL	2.75 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	I
K2005466-004	Carbon, Total Organic	N/A		Water	2.80 mg/L	10 mL	2.80 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	I
K2005466-005	Carbon, Total Organic	N/A		Water	2.62 mg/L	10 mL	2.62 mg/L	1	0.07	0.50			7/2/20 10:33:00	N	I
KQ2009226-02	Carbon, Total Organic	MS	K2005357-001	Water	29.02 mg/L	10 mL	29.0 mg/L	1	0.07	0.50	108		7/2/20 10:33:00	N	II
KQ2009226-03	Carbon, Total Organic	DUP	K2005357-001	Water	1.95 mg/L	10 mL	1.95 mg/L	1	0.07	0.50		4	7/2/20 10:33:00	N	II
KQ2009226-04	Carbon, Total Organic	MB		Ground Water	0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:33:00	N	IV
KQ2009226-05	Carbon, Total Organic	LCS		Ground Water	20.70 mg/L	10 mL	82.8 mg/L	4	0.3	2.0	95		7/2/20 10:33:00	N	IV
KQ2009226-06	Carbon, Total Organic	CCV		Water	26.14 mg/L	10 mL	26.1 mg/L	1					7/2/20 10:33:00	N	I
KQ2009226-07	Carbon, Total Organic	CCV		Water	25.14 mg/L	10 mL	25.1 mg/L	1					7/2/20 10:33:00	N	I
KQ2009226-08	Carbon, Total Organic	CCV		Water	25.28 mg/L	10 mL	25.3 mg/L	1					7/2/20 10:33:00	N	I
KQ2009226-09	Carbon, Total Organic	CCV		Water	24.90 mg/L	10 mL	24.9 mg/L	1					7/2/20 10:33:00	N	I
KQ2009226-10	Carbon, Total Organic	CCB		Water	0.45 mg/L	10 mL	0.45 mg/L J	1	0.07	0.50			7/2/20 10:33:00	N	I
KQ2009226-11	Carbon, Total Organic	CCB		Water	-0.02 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:33:00	N	I
KQ2009226-12	Carbon, Total Organic	CCB		Water	-0.13 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:33:00	N	I
KQ2009226-13	Carbon, Total Organic	CCB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:33:00	N	I

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** MKANALY **Analysis Lot:** 686666 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
K2005020-002	Carbon, Dissolved Organic (DOC)	N/A		Water	5.25 mg/L	10 mL	5.25 mg/L	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005020-004	Carbon, Dissolved Organic (DOC)	N/A		Water	2.56 mg/L	10 mL	2.56 mg/L	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005174-001	Carbon, Dissolved Organic (DOC)	N/A		Water	8.90 mg/L	10 mL	890 mg/L	100	7	50			7/2/20 10:30:00	N	II
K2005453-001	Carbon, Dissolved Organic (DOC)	N/A		Water	4901.30 mg/L	10 mL	490000 mg/L	100	7	50			7/2/20 10:30:00	N	II
K2005455-001	Carbon, Dissolved Organic (DOC)	N/A		Water	705.71 mg/L	10 mL	70600 mg/L	100	7	50			7/2/20 10:30:00	N	II
K2005459-001	Carbon, Dissolved Organic (DOC)	N/A		Effluent	0.98 mg/L	10 mL	0.98 mg/L	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005459-002	Carbon, Dissolved Organic (DOC)	N/A		Water	0.98 mg/L	10 mL	0.98 mg/L	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005480-001	Carbon, Total Organic	N/A		Water	0.48 mg/L	10 mL	0.48 mg/L J	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005480-002	Carbon, Total Organic	N/A		Water	0.03 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005480-003	Carbon, Total Organic	N/A		Water	0.08 mg/L	10 mL	0.08 mg/L J	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005480-004	Carbon, Total Organic	N/A		Water	0.04 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005480-005	Carbon, Total Organic	N/A		Water	-0.06 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005480-006	Carbon, Total Organic	N/A		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005480-007	Carbon, Total Organic	N/A		Water	0.37 mg/L	10 mL	0.37 mg/L J	1	0.07	0.50			7/2/20 10:30:00	N	II
K2005480-008	Carbon, Total Organic	N/A		Water	-0.28 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-01	Carbon, Dissolved Organic (DOC)	DUP	K2005020-002	Water	5.39 mg/L	10 mL	5.39 mg/L	1	0.07	0.50		3	7/2/20 10:30:00	N	II
KQ2009240-02	Carbon, Dissolved Organic (DOC)	MS	K2005020-002	Water	31.99 mg/L	10 mL	32.0 mg/L	1	0.07	0.50	107		7/2/20 10:30:00	N	II
KQ2009240-03	Carbon, Total Organic	DUP	K2005480-001	Water	0.54 mg/L	10 mL	0.54 mg/L	1	0.07	0.50		11*	7/2/20 10:30:00	N	II
KQ2009240-04	Carbon, Total Organic	MS	K2005480-001	Water	28.68 mg/L	10 mL	28.7 mg/L	1	0.07	0.50	113		7/2/20 10:30:00	N	II
KQ2009240-05	Carbon, Dissolved Organic (DOC)	CCV		Water	25.28 mg/L	10 mL	25.3 mg/L	1					7/2/20 10:30:00	N	II
KQ2009240-05	Carbon, Total Organic	CCV		Water	25.28 mg/L	10 mL	25.3 mg/L	1					7/2/20 10:30:00	N	II
KQ2009240-06	Carbon, Dissolved Organic (DOC)	CCV		Water	24.90 mg/L	10 mL	24.9 mg/L	1					7/2/20 10:30:00	N	II
KQ2009240-06	Carbon, Total Organic	CCV		Water	24.90 mg/L	10 mL	24.9 mg/L	1					7/2/20 10:30:00	N	II
KQ2009240-07	Carbon, Dissolved Organic (DOC)	CCV		Water	24.90 mg/L	10 mL	24.9 mg/L	1					7/2/20 10:30:00	N	II
KQ2009240-07	Carbon, Total Organic	CCV		Water	24.90 mg/L	10 mL	24.9 mg/L	1					7/2/20 10:30:00	N	II
KQ2009240-08	Carbon, Dissolved Organic (DOC)	CCV		Water	24.53 mg/L	10 mL	24.5 mg/L	1					7/2/20 10:30:00	N	II
KQ2009240-08	Carbon, Total Organic	CCV		Water	24.53 mg/L	10 mL	24.5 mg/L	1					7/2/20 10:30:00	N	II
KQ2009240-09	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.13 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-09	Carbon, Total Organic	CCB		Water	-0.13 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

Analytical Results Summary

Instrument Name: K-TOC-03 **Analyst:** MKANALY **Analysis Lot:** 686666 **Method/Testcode:** SM 5310 C/TOC D

Lab Code	Target Analytes	QC	Parent Sample	Matrix	Raw Result	Sample Amt.	Final Result	Dil	MDL	PQL	% Rec	% RSD	Date Analyzed	QC?	Tier
KQ2009240-10	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-10	Carbon, Total Organic	CCB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-11	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-11	Carbon, Total Organic	CCB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-12	Carbon, Dissolved Organic (DOC)	CCB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-12	Carbon, Total Organic	CCB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-13	Carbon, Dissolved Organic (DOC)	MB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-13	Carbon, Total Organic	MB		Water	-0.34 mg/L	10 mL	0.50 mg/L U	1	0.07	0.50			7/2/20 10:30:00	N	II
KQ2009240-14	Carbon, Dissolved Organic (DOC)	LCS		Water	17.97 mg/L	10 mL	18.0 mg/L	1	0.07	0.50	82*		7/2/20 10:30:00	N	II
KQ2009240-14	Carbon, Total Organic	LCS		Water	17.97 mg/L	10 mL	18.0 mg/L	1	0.07	0.50	82*		7/2/20 10:30:00	N	II

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
CBA	RB	1			0.0000	0	<0.5	
2	CCV	1	26.484	0.3393	26.1444	26.14435	26.1	7/2/2020
3	CCB	1	0.786	0.3393	0.4470	0.44695	<0.5	7/2/2020
4	MB1	1	0.354	0.3393	0.0150	0.01495	<0.5	7/2/2020
5	LCS	1	21.061	0.3393	20.7215	20.72145	20.7	7/2/2020
6	5353-1	1	2.091	0.3393	1.7522	1.75215	1.75	7/2/2020
7	5353-2	1	14.207	0.3393	13.8678	13.86775	13.9	7/2/2020
8	5353-3	1	3.339	0.3393	3.0001	3.00005	3	7/2/2020
9	5353-4	1	10.524	0.3393	10.1847	10.18465	10.18	7/2/2020
10	5353-5	10	8.832	0.3393	8.4932	84.9315	84.93	7/2/2020
11	5357-1	1	2.367	0.3393	2.0278	2.02775	2.0	7/2/2020
12	5357-1D	1	2.291	0.3393	1.9514	1.95135	1.95	7/2/2020
13	ccv	1	25.475	0.3393	25.1361	25.13605	25.14	7/2/2020
14	ccb	1	0.324	0.3393	-0.0150	-0.01495	<0.5	7/2/2020
15	5357-1MS	1	29.360	0.3393	29.0208	29.02075	29.0	7/2/2020
16	5466-1	1	4.155	0.3393	3.8160	3.81595	3.8	7/2/2020
17	5466-2	1	3.121	0.3393	2.7822	2.78215	2.78	7/2/2020
18	5466-3	1	3.092	0.3393	2.7527	2.75265	2.8	7/2/2020
19	5466-4	1	3.141	0.3393	2.8021	2.80205	2.8	7/2/2020
20	5466-5	1	2.963	0.3393	2.6233	2.62325	2.62	7/2/2020
21	5527-1	1	2.354	0.3393	2.0148	2.01475	2.01	7/2/2020
22	LCS2	1	18.306	0.3393	17.9672	17.96715	18.0	7/2/2020
23	RB	1	0.000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
24	IB	1	0.000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
25	CCV	1	25.621	0.3393	25.2818	25.28175	25.28	7/2/2020

ICAL Date 06/13/20 ICAL ID#:11-GEN-05-51A

LCS =21.9 ppm Lot (REF# 19-GEN-08-24F)

CCV = 25.0 ppm (Ref.#13-GEN-8-23F)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 13-GEN-08-15B)

date time

Analyzed By:	Date Analyzed
Reviewed By:	Date Reviewed 7/10/20

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
26	CCB	1	0.2114	0.3393	-0.1279	-0.12785	<0.5	7/2/2020
27	MB	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
28	LCS	1	17.4088	0.3393	17.0696	17.06955	17.1	7/2/2020
29	ib	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
30	ib	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
31	5295-2	10	7.3216	0.3393	6.9824	69.8235	69.8	7/2/2020
32	5295-3	20	10.7357	0.3393	10.3965	207.929	207.9	7/2/2020
33	5204-2	1	2.3509	0.3393	2.0117	2.01165	2.0	7/2/2020
34	5480-1	1	0.8224	0.3393	0.4832	0.48315	<0.5	7/2/2020
35	5480-1D	1	0.8790	0.3393	0.5398	0.53975	0.5	7/2/2020
36	5480-1MS	1	29.0198	0.3393	28.6806	28.68055	28.7	7/2/2020
37	CCV	1	25.2427	0.3393	24.9035	24.90345	24.9	7/2/2020
38	CCB	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
39	5480-2	1	0.3701	0.3393	0.0309	0.03085	<0.5	7/2/2020
40	5480-3	1	0.4217	0.3393	0.0825	0.08245	<0.5	7/2/2020
41	5480-4	1	0.3797	0.3393	0.0405	0.04045	<0.5	7/2/2020
42	5480-5	1	0.2763	0.3393	-0.0630	-0.063	<0.5	7/2/2020
43	5480-6	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
44	5480-7	1	0.7055	0.3393	0.3663	0.36625	<0.5	7/2/2020
45	5480-8	1	0.0620	0.3393	-0.2773	-0.27725	<0.5	7/2/2020
46	5020-2	1	5.5916	0.3393	5.2524	5.25235	5.3	7/2/2020
47	5020-2D	1	5.7299	0.3393	5.3907	5.39065	5.4	7/2/2020
48	5020-2MS	1	32.3279	0.3393	31.9887	31.98865	32.0	7/2/2020
49	CCV	1	25.2354	0.3393	24.8962	24.89615	24.9	7/2/2020
50	CCB	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020

Analyzed By:	Date Analyzed
Reviewed By:	Date Reviewed 7/10/20

ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

Printout	Sample #	Dil. Factor	Solution Conc.,mg/L	Blank Correction, mg/L	Net mg/L	TOC mg/L	Reported TOC mg/L	
51	MB	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
52	LCS	1	13.9973	0.3393	13.6581	13.65805	13.7	7/2/2020
53	5020-4	1	2.9015	0.3393	2.5623	2.56225	2.6	7/2/2020
54	5459-1	1	1.3180	0.3393	0.9788	0.97875	1.0	7/2/2020
55	5459-2	1	1.3232	0.3393	0.9840	0.98395	1.0	7/2/2020
56	5174-1	100	8.9021	0.3393	8.5629	856.285	856.3	7/2/2020
57	5453-1	100	49.3522	0.3393	49.0130	4901.295	4901.3	7/2/2020
58	5455-1	100	7.3963	0.3393	7.0571	705.705	705.7	7/2/2020
59	RB	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
60	RB	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
61	CCV	1	24.8697	0.3393	24.5305	24.53045	24.5	7/2/2020
62	CCB	1	0.0000	0.3393	-0.3393	-0.33925	<0.5	7/2/2020
63		1		0.3393	-0.3393	-0.33925	<0.5	7/2/2020
64		1		0.3393	-0.3393	-0.33925	<0.5	7/2/2020
65		1		0.0000	0.0000	0	<0.5	7/2/2020
66		1		0.0000	0.0000	0	<0.5	7/2/2020
67		1		0.0000	0.0000	0	<0.5	7/2/2020
68		1		0.0000	0.0000	0	<0.5	7/2/2020
69		1		0.0000	0.0000	0	<0.5	7/2/2020
70		1		0.0000	0.0000	0	<0.5	7/2/2020
71		1		0.0000	0.0000	0	<0.5	7/2/2020
72		1		0.0000	0.0000	0	<0.5	7/2/2020
73		1		0.0000	0.0000	0	<0.5	7/2/2020
74		1		0.0000	0.0000	0	<0.5	7/2/2020
75		1		0.0000	0.0000	0	<0.5	7/2/2020

Analyzed By:	Date Analyzed
Reviewed By:	Date Reviewed 7/10/20

ALS ENVIRONMENTAL

0 Carbon
0 Carbon

0.736	0.736			OBSERVATIONS	5	0.7356
0.786				STD Deviation	0.26042	ABOVE
0.354	0.354	0.354	0.354	AVERAGE	0.48234	0.3542
0.324	0.324	0.324	0.324	UCL	0.74276	0.3243
0.211				LCL	0.22192	BELOW
						BELOW
						BELOW
				OBSERVATIONS	3	BELOW
				STD Deviation	0.22932	BELOW
				AVERAGE	0.47137	BELOW
				UCL	0.70069	BELOW
				LCL	0.24205	BELOW
						BELOW
						BELOW
				OBSERVATIONS	2	BELOW
				STD Deviation	0.02114	BELOW
				AVERAGE	0.33925	BELOW
				UCL	0.36039	BELOW
				LCL	0.31811	BELOW
						BELOW
						BELOW
				OBSERVATIONS	2	BELOW
				STD Deviation	0.02990	BELOW
				AVERAGE	0.33925	BELOW
						BELOW
						BELOW
						BELOW
						BELOW
						BELOW
						BELOW

685526

Schedule: 070220

Version: 7
Instrument: Fusion1
Last Saved by: Fusion1 (Fusion1)
Last Saved on: 2020/07/02 17:58 - Thursday

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Clean)	Clean	Clean		1	True	Ready
(Blank)	Blank	Reagent/Acid Blank		1	True	Ready
D	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
1	Sample	MB1	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
2	Sample	ICS	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
3	Sample	K2005353-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
4	Sample	K2005353-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
5	Sample	K2005353-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
6	Sample	K2005353-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
7	Sample	K2005353-005 10X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
8	Sample	K2005357-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
9	Sample	K2005357-001D	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
10	Sample	K2005357-001MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
11	Sample	K2005466-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
12	Sample	K2005466-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
13	Sample	K2005466-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
14	Sample	K2005466-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
15	Sample	K2005466-005	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
16	Sample	K2005527-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
18	Sample	IB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
19	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
20	Sample	MB2	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [24.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
21	Sample	~~K2005375-009~~ IB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
22	Sample	~~K2005375-010~~ IB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
23	Sample	K2005295-002 10X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
24	Sample	K2005295-003 20X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
25	Sample	K2005204-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
26	Sample	K2005480-001	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
27	Sample	K2005480-001DUP	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
28	Sample	K2005480-001MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
29	Sample	K2005480-002	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
30	Sample	K2005480-003	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
31	Sample	K2005480-004	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
32	Sample	K2005480-005	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
33	Sample	K2005480-006	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
34	Sample	K2005480-007	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
35	Sample	K2005480-008	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
36	Sample	K2005020-002 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
37	Sample	K2005020-002 DUP	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
38	Sample	K2005020-002 MS	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready

Schedule: 070220

Position	Sample Type	Sample ID	Method ID (Calibration ID)	Reps	Use	State
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
39	Sample	MB3	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
40	Sample	K2005020-004 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
41	Sample	K2005459-001 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
42	Sample	K2005459-002 DOC	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
43	Sample	K2005174-001 100X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
44	Sample	K2005453-001 100X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
45	Sample	K2005453-001 100X	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
46	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
47	Sample	RB	CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
48	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
49	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
50	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
51	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
52	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
53	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
54	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
55	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
56	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
57	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
58	Sample	MB4	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
C	Check Standard	[TOC] LCS [25.0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
59	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
60	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
61	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
62	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
63	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
64	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
65	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
66	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
67	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
68	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
69	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
70	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
71	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
72	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
73	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
74	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
75	Sample		CAS_salt_010711 (CAS_salt_010711)	2	True	Ready
B	Check Standard	[TOC] CCV 25 ppm [25 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
D	Check Standard	[TOC] CCB [0 ppm]	CAS_salt_010711 (CAS_salt_010711)	1	True	Ready
					False	

Fusion Report - 070220
Thursday, July 02, 2020 10:33 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2020/07/06 08:18 - Monday

Report Summary Information

Company Location:	Gen Chem Lab		
Schedule Name:	070220	Engine Version:	1.1.5.1
Instrument Name:	Fusion1	Firmware Version:	1.2.0696
Report Version:	1 of 1	Connection:	RS232 COM1
Report Creation by Operators (schedule version):	Fusion1 (Fusion1) (v4) Fusion1 (Fusion1) (v5) Fusion1 (Fusion1) (v6) Fusion1 (Fusion1) (v7)		
Comment:			

Report Results

Sample Type: Clean — From Schedule Version 4

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2020/07/02 10:33

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	16.57	20.54	3.97	49.66	05:25
2	TC Clean	16.80	20.49	3.70	49.79	07:19
3	TC Clean	2.80	6.54	3.74	49.81	07:01
4	TC Clean	1.41	5.23	3.81	49.80	07:01

Sample Type: Clean — From Schedule Version 5

	Pos	Analysis Type	Sample ID	Start Time
◈	(clean)		Clean	2020/07/02 11:05

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	4.14	7.83	3.69	49.68	05:24
2	TC Clean	9.03	12.60	3.57	49.79	07:18
3	TC Clean	2.16	5.86	3.70	49.77	07:00

4	TC Clean	1.88	5.63	3.75	49.78	07:02

Sample Type: Clean — From Schedule Version 5

	Pos	Analysis Type	Sample ID	Start Time
◆	(clean)		Clean	2020/07/02 11:36

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	2.49	6.22	3.73	49.65	05:25
2	TC Clean	7.09	10.67	3.58	49.76	07:16
3	TC Clean	2.36	5.90	3.55	49.74	07:04
4	TC Clean	2.07	5.65	3.58	49.75	07:03

Sample Type: Blank (Creating v1404) — From Schedule Version 5

	Pos	Analysis Type	Sample ID	Start Time
◆	(blank)		Reagent/Acid Blank	2020/07/02 12:08

Rep #	Base Analysis Type	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	IC Clean	1.90	5.50	3.59	49.76	05:19
2	TC Clean	7.90	11.59	3.69	49.75	07:16
3	TC Clean	2.67	6.30	3.62	49.73	07:00
4	TC Clean	2.59	6.12	3.53	49.74	07:01
5	Reagent Blank	18.31	22.13	3.82	49.72	08:11
6	Acid Blank	2.84	6.38	3.54	49.87	08:03

Sample Type: Sample — From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	D	TOC	RB	0.7356 ppm	0.0000 ppm	0.0000%	2020/07/02 12:57

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7356	7.3563	17.37	20.98	3.61	49.82	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm

From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	26.4836 ppm (PASS)	0.0000 ppm	0%	2020/07/02 13:12

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	26.4836	264.8361	195.67	199.41	3.74	49.80	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB

From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.7862 ppm (PASS)	0.0000 ppm	0%	2020/07/02 13:26

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.7862	7.8618	15.41	19.00	3.60	49.86	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample

From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	1	TOC	MB1	0.3542 ppm	0.0000 ppm	0.0000%	2020/07/02 13:41

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3542	3.5415	14.69	18.43	3.74	49.84	10:29

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS

From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	21.0607 ppm (PASS)	0.0000 ppm	0%	2020/07/02 13:56

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	21.0607	210.6067	157.63	161.14	3.51	49.82	10:33

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 5

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	2	TOC	ICS	0.7298 ppm	0.0000 ppm	0.0000%	2020/07/02 14:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7298	7.2979	17.33	21.04	3.71	49.81	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	3	TOC	K2005353-001	2.0914 ppm	0.1019 ppm	4.8700%	2020/07/02 14:25

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.1635	21.6347	27.38	30.98	3.60	49.81	10:25
2	TOC	2.0193	20.1934	26.37	30.19	3.81	49.79	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	4	TOC	K2005353-002	14.2070 ppm	0.0275 ppm	0.1900%	2020/07/02 14:53

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	14.2265	142.2649	112.00	115.76	3.76	49.89	10:27
2	TOC	14.1876	141.8757	111.73	115.39	3.66	50.03	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	5	TOC	K2005353-003	3.3393 ppm	0.2545 ppm	7.6200%	2020/07/02 15:21

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.5193	35.1931	36.89	40.69	3.80	50.06	10:28
2	TOC	3.1594	31.5936	34.37	38.20	3.83	50.22	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	6	TOC	K2005353-004	10.5239 ppm	0.0292 ppm	0.2800%	2020/07/02 15:49

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.5032	105.0323	85.88	89.65	3.76	50.32	10:29
2	TOC	10.5446	105.4457	86.18	89.88	3.71	50.42	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	7	TOC	K2005353-005 10X	8.8324 ppm	0.3003 ppm	3.4000%	2020/07/02 16:18

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	9.0447	90.4475	75.65	79.17	3.51	50.50	10:30
2	TOC	8.6201	86.2008	72.68	76.38	3.70	50.57	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	8	TOC	K2005357-001	2.3670 ppm	0.0746 ppm	3.1500%	2020/07/02 16:46

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.4198	24.1978	29.18	32.71	3.53	50.63	10:29
2	TOC	2.3143	23.1429	28.44	32.20	3.76	50.65	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	9	TOC	K2005357-001D	2.2906 ppm	0.0053 ppm	0.2300%	2020/07/02 17:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.2943	22.9433	28.30	31.95	3.65	50.69	10:29
2	TOC	2.2868	22.8678	28.25	32.05	3.80	50.61	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 5

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.4753 ppm (PASS)	0.0000 ppm	0%	2020/07/02 17:42

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.4753	254.7532	188.60	192.34	3.74	50.59	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 6

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.3243 ppm (PASS)	0.0000 ppm	0%	2020/07/02 17:57

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.3243	3.2431	12.17	16.00	3.83	50.52	10:29

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	10	TOC	K2005357-001MS	29.3600 ppm	0.3828 ppm	1.3000%	2020/07/02 18:11

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.0893	290.8929	216.26	219.80	3.54	50.44	10:32
2	TOC	29.6307	296.3072	220.06	223.87	3.81	50.35	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	11	TOC	K2005466-001	4.1552 ppm	0.0957 ppm	2.3000%	2020/07/02 18:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	4.2228	42.2282	41.83	45.64	3.81	50.25	10:29
2	TOC	4.0875	40.8753	40.88	44.62	3.74	50.19	10:28

Dilution	Blank Contribution	Method	Calibration

1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	12	TOC	K2005466-002	3.1214 ppm	0.0203 ppm	0.6500%	2020/07/02 19:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.1357	31.3569	34.20	37.88	3.68	50.08	10:26
2	TOC	3.1070	31.0704	34.00	37.63	3.63	50.02	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	13	TOC	K2005466-003	3.0919 ppm	0.0094 ppm	0.3000%	2020/07/02 19:36

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0852	30.8523	33.85	37.57	3.72	49.98	10:26
2	TOC	3.0985	30.9848	33.94	37.65	3.71	49.94	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	14	TOC	K2005466-004	3.1413 ppm	0.0101 ppm	0.3200%	2020/07/02 20:04

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.1484	31.4838	34.29	38.04	3.75	49.92	10:29
2	TOC	3.1341	31.3412	34.19	37.95	3.76	49.92	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	15	TOC	K2005466-005	2.9625 ppm	0.0554 ppm	1.8700%	2020/07/02 20:32

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	3.0017	30.0169	33.26	37.04	3.78	49.96	10:28
2	TOC	2.9233	29.2328	32.71	36.58	3.86	49.96	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	16	TOC	K2005527-001	2.3540 ppm	0.0146 ppm	0.6200%	2020/07/02 21:00

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3643	23.6433	28.79	32.53	3.74	49.97	10:30
2	TOC	2.3437	23.4366	28.65	32.46	3.81	49.99	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	18.3064 ppm (PASS)	0.0000 ppm	0%	2020/07/02 21:28

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	18.3064	183.0636	138.31	142.18	3.88	49.99	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	18	TOC	IB	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/02 21:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	11.68	15.63	3.95	50.01	10:29
2	TOC	0.0000	0.0000	11.56	15.56	4.00	50.02	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	19	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/02 22:10

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	11.36	15.34	3.98	50.04	10:27
2	TOC	0.0000	0.0000	11.30	15.20	3.89	50.07	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.6210 ppm (PASS)	0.0000 ppm	0%	2020/07/02 22:39

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.6210	256.2101	189.62	193.44	3.82	50.08	10:31

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.2114 ppm (PASS)	0.0000 ppm	0%	2020/07/02 22:53

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.2114	2.1140	11.38	15.30	3.92	50.09	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	20	TOC	MB2	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/02 23:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	10.75	14.56	3.81	50.10	10:30

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [24.0 ppm]	0 / infinity (NA / NA)	17.4088 ppm (PASS)	0.0000 ppm	0%	2020/07/02 23:23

Pos	Base Analysis	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time

	Type									
C	TOC	25.0 ppm	1	17.4088	174.0883	132.01	135.94	3.92	50.11	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	21	TOC	K2005375-009	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/02 23:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	10.77	14.54	3.78	50.15	10:29
2	TOC	0.0000	0.0000	10.03	13.80	3.77	50.15	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	22	TOC	K2005375-010	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/03 00:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	10.17	13.91	3.74	50.17	10:27
2	TOC	0.0000	0.0000	9.80	13.74	3.95	50.18	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	23	TOC	K2005295-002 10X	7.3216 ppm	0.0162 ppm	0.2200%	2020/07/03 00:33

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.3331	73.3309	63.65	67.59	3.94	50.18	10:31
2	TOC	7.3101	73.1014	63.49	67.64	4.16	50.21	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	24	TOC	K2005295-003 20X	10.7357 ppm	0.1529 ppm	1.4200%	2020/07/03 01:01

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	10.6275	106.2754	86.76	90.72	3.96	50.20	10:30
2	TOC	10.8438	108.4379	88.27	92.20	3.92	50.22	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	25	TOC	K2005204-002	2.3509 ppm	0.0088 ppm	0.3700%	2020/07/03 01:30

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.3571	23.5706	28.74	32.75	4.01	50.21	10:30
2	TOC	2.3447	23.4465	28.65	32.47	3.82	50.22	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	26	TOC	K2005480-001	0.8224 ppm	0.0062 ppm	0.7600%	2020/07/03 01:58

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8269	8.2687	18.01	22.03	4.02	50.23	10:27
2	TOC	0.8180	8.1803	17.94	21.78	3.83	50.22	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	27	TOC	K2005480-001DUP	0.8790 ppm	0.0249 ppm	2.8300%	2020/07/03 02:26

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.8614	8.6137	18.25	22.22	3.97	50.22	10:26
2	TOC	0.8966	8.9658	18.50	22.45	3.96	50.25	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	28	TOC	K2005480-001MS	29.0198 ppm	0.0027 ppm	0.0100%	2020/07/03 02:54

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	29.0179	290.1787	215.76	219.59	3.83	50.24	10:25
2	TOC	29.0217	290.2172	215.79	219.74	3.95	50.23	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.2427 ppm (PASS)	0.0000 ppm	0%	2020/07/03 03:22

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	25.2427	252.4267	186.96	190.97	4.00	50.23	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/07/03 03:37

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	9.86	13.92	4.06	50.23	10:30

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	29	TOC	K2005480-002	0.3701 ppm	0.0192 ppm	5.1700%	2020/07/03 03:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3837	3.8366	14.90	18.90	4.00	50.25	10:28
2	TOC	0.3566	3.5658	14.71	18.62	3.92	50.24	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	30	TOC	K2005480-003	0.4217 ppm	0.0010 ppm	0.2400%	2020/07/03 04:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.4224	4.2244	15.17	19.10	3.93	50.23	10:29
2	TOC	0.4210	4.2101	15.16	19.28	4.12	50.23	10:32

Dilution	Blank Contribution	Method	Calibration

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	31	TOC	K2005480-004	0.3797 ppm	0.0185 ppm	4.8900%	2020/07/03 04:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.3928	3.9279	14.96	18.88	3.92	50.25	10:27
2	TOC	0.3666	3.6656	14.78	18.73	3.95	50.24	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	32	TOC	K2005480-005	0.2762 ppm	0.0380 ppm	13.7600%	2020/07/03 05:16

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.2494	2.4938	13.96	17.95	4.00	50.24	10:27
2	TOC	0.3031	3.0312	14.33	17.93	3.60	50.24	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	33	TOC	K2005480-006	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/03 05:44

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	12.17	15.98	3.82	50.24	10:32
2	TOC	0.0000	0.0000	11.90	15.65	3.75	50.25	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	34	TOC	K2005480-007	0.7055 ppm	0.0326 ppm	4.6200%	2020/07/03 06:12

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.7285	7.2850	17.32	21.01	3.69	50.24	10:29
2	TOC	0.6825	6.8246	16.99	20.90	3.90	50.23	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	35	TOC	K2005480-008	0.0620 ppm	0.0489 ppm	78.8700%	2020/07/03 06:40

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0966	0.9656	12.88	16.61	3.72	50.24	10:30
2	TOC	0.0274	0.2742	12.40	16.02	3.62	50.23	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	36	TOC	K2005020-002 DOC	5.5916 ppm	0.0571 ppm	1.0200%	2020/07/03 07:08

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.5513	55.5129	51.15	54.95	3.80	50.22	10:30
2	TOC	5.6320	56.3198	51.71	55.35	3.64	50.22	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	37	TOC	K2005020-002 DUP	5.7299 ppm	0.0306 ppm	0.5300%	2020/07/03 07:37

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	5.7516	57.5158	52.55	56.13	3.58	50.19	10:30
2	TOC	5.7082	57.0824	52.25	55.99	3.74	50.19	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	38	TOC	K2005020-002 MS	32.3279 ppm	0.2808 ppm	0.8700%	2020/07/03 08:05

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	32.5264	325.2644	240.37	244.27	3.90	50.18	10:26
2	TOC	32.1293	321.2928	237.59	241.48	3.90	50.17	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◈	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	25.2354 ppm (PASS)	0.0000 ppm	0%	2020/07/03 08:33

Pos	Base Analysis	ID	Rep	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run

	Type		#							Time
B	TOC	25 ppm	1	25.2354	252.3540	186.91	190.63	3.72	50.14	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/07/03 08:47

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	9.64	13.17	3.54	50.12	10:34

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	39	TOC	MB3	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/03 09:02

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.19	12.81	3.62	50.12	10:32

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> LCS From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	C	TOC	25.0000	1:1	[TOC] LCS [25.0 ppm]	0 / infinity (NA / NA)	13.9973 ppm (PASS)	0.0000 ppm	0%	2020/07/03 09:17

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
C	TOC	25.0 ppm	1	13.9973	139.9734	108.08	111.62	3.54	50.12	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos C
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	25 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	40	TOC	K2005020-004 DOC	2.9015 ppm	0.0669 ppm	2.3100%	2020/07/03 09:31

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	2.9488	29.4880	32.89	36.47	3.58	50.09	10:34
2	TOC	2.8541	28.5415	32.23	35.81	3.58	50.09	10:24

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	41	TOC	K2005459-001 DOC	1.3180 ppm	0.0121 ppm	0.9200%	2020/07/03 09:59

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3094	13.0942	21.39	24.97	3.58	50.08	10:30
2	TOC	1.3265	13.2652	21.51	25.23	3.72	50.07	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	42	TOC	K2005459-002 DOC	1.3232 ppm	0.0044 ppm	0.3400%	2020/07/03 10:28

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	1.3264	13.2638	21.51	25.23	3.72	50.05	10:28
2	TOC	1.3201	13.2011	21.47	25.18	3.71	50.04	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	43	TOC	K2005174-001 100X	8.9021 ppm	0.0563 ppm	0.6300%	2020/07/03 10:56

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	8.9420	89.4197	74.93	78.66	3.73	50.03	10:26
2	TOC	8.8623	88.6228	74.37	77.98	3.60	50.03	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◈	44	TOC	K2005453-001 100X	49.3522 ppm	0.1170 ppm	0.2400%	2020/07/03 11:24

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time

1	TOC	49.4349	494.3491	358.98	362.57	3.58	50.02	10:27
2	TOC	49.2694	492.6941	357.82	361.69	3.86	50.01	10:26

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	45	TOC	K2005453-001 100X	7.3963 ppm	0.1878 ppm	2.5400%	2020/07/03 11:52

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	7.5291	75.2910	65.02	68.53	3.51	50.01	10:28
2	TOC	7.2635	72.6352	63.16	66.81	3.66	50.00	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	46	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/03 12:20

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	9.01	12.53	3.52	49.99	10:28
2	TOC	0.0000	0.0000	9.06	12.47	3.41	49.99	10:28

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	47	TOC	RB	0.0000 ppm	0.0000 ppm	0.0000%	2020/07/03 12:48

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.51	11.96	3.45	49.98	10:27
2	TOC	0.0000	0.0000	8.30	11.88	3.58	49.97	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

Sample Type: Check Standard --> CCV 25 ppm — From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	B	TOC	25.0000	1:2	[TOC] CCV 25 ppm [25 ppm]	0 / infinity (NA / NA)	24.8697 ppm (PASS)	0.0000 ppm	0%	2020/07/03 13:16

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
B	TOC	25 ppm	1	24.8697	248.6975	184.35	187.98	3.63	49.96	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos B
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	50 ppmC

Sample Type: Check Standard --> CCB From Schedule Version 7

	Pos	BAT	Concentration (ppm)	Dil	Sample ID	Min / Max (% dev)	Result	Std. Dev.	RSD	Start Time
◆	D	TOC	0.0000	1:1	[TOC] CCB [0 ppm]	0 / infinity (NA / NA)	0.0000 ppm (PASS)	0.0000 ppm	0%	2020/07/03 13:31

Pos	Base Analysis Type	ID	Rep #	ppm	µg	Adjusted	NDIR	Baseline	Pressure	Run Time
D	TOC	0 ppm	1	0.0000	0.0000	8.84	12.35	3.51	49.96	10:32

Completion State	Success Action	Method	Calibration	STD Conc - Pos D
Success - Criteria met.	Do Nothing	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)	0 ppmC

Sample Type: Sample From Schedule Version 7

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	48	TOC		0.0000 ppm	0.0000 ppm	0.0000%	2020/07/03 13:45

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.36	11.89	3.53	49.93	10:26
2	TOC	0.0000	0.0000	8.20	11.72	3.52	49.92	10:25

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	49	TOC		0.0000 ppm	0.0000 ppm	0.0000%	2020/07/03 14:14

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.06	11.60	3.53	49.92	10:30
2	TOC	0.0000	0.0000	8.01	11.61	3.60	49.92	10:27

Dilution	Blank Contribution	Method	Calibration
1:10	(TC) 12.2067 (IC) (v1404)	CAS_salt_010711 (v4)	CAS_salt_010711 (v38)

	Pos	Analysis Type	Sample ID	Result (ppmC)	Std. Dev. (ppmC)	RSD	Start Time
◆	50	TOC		0.0000 ppm	0.0000 ppm	0.0000%	2020/07/03 14:42

Rep #	Base Analysis Type	ppm	µg	Adjusted (Abs)	NDIR (Abs)	Baseline (Abs)	Pressure (psig)	Run Time
1	TOC	0.0000	0.0000	8.03	11.73	3.70	49.90	10:28

July 10, 2020 Service Request No:R2005464

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

Laboratory Results for: LHAAP / Site 58

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory June 25, 2020
For your reference, these analyses have been assigned our service request number **R2005464.**

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7471. You may also contact me via email at Brady.Kalkman@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Brady Kalkman
Project Manager

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ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

1565 Jefferson Rd, Building 300, Rochester, NY 14623 | 585-288-5380 | www.alsglobal.com

Client: ALS Environmental - US
Project: LHAAP / Site 58
Sample Matrix: Water

Service Request: R2005464
Date Received: 06/25/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Five water samples were received for analysis at ALS Environmental on 06/25/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Semivoa GC:

Method Organic Acids, 07/02/2020: The control limits for matrix spike recovery of pyruvic acid exceeds the lower limit. Other run QC was within acceptable limits and Matrix spike was not required for the sample. No other action was taken. Sample R2005464-001.

Approved by _____ Date 07/10/2020

SAMPLE DETECTION SUMMARY

CLIENT ID: 35AWW23_062420			Lab ID: R2005464-005			
Analyte	**Results**	**Flag**	**MDL**	**MRL**	**Units**	**Method**
Acetic Acid	76		0.56	4.0	mg/L	Organic Acids
Propionic Acid	44		0.19	2.0	mg/L	Organic Acids

Sample Receipt Information

ALS Environmental—Rochester Laboratory
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

Client: ALS Environmental - US **Service Request:**R2005464
Project: LHAAP / Site 58/NW01312.0150

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
R2005464-001	35AWW19_062420	6/24/2020	0830
R2005464-002	35AWW20_062420	6/24/2020	0925
R2005464-003	LHSMW07_062420	6/24/2020	1015
R2005464-004	35AWW06_062420	6/24/2020	1105
R2005464-005	35AWW23_062420	6/24/2020	1200

bhate ENVIRONMENTAL CONSTRUCTION ENERGY

Page: ____ of ____

Project/Phase No: NWO1312.0150

COC Number(1): ____

LIMS Number: ____

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (2)	Sample Matrix (4)	Sample Analysis Requested (5): Number of containers	Volatile Fatty Acids	Quality Assurance Samples (6): Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35AWW19_062420	24-Jun-2020	0830	-	N		WG	1	X				
35AWW20_062420	24-Jun-2020	0925	-	N		WG	1	X				
LHSMW01_062420	24-Jun-2020	1015	-	N		WG	1	X				
35AWW06_062420	24-Jun-2020	1105		N		WG	1	X				
35AWW23_062420	24-Jun-2020	1200		N		WG	1	X				
			-									
			-									
			-									
			-									
			-									
			-									

COMMENTS: ____

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/24/20	1430	1. [signature]	6/25/2020	1015
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped

Method of Shipment: ____

Fed Ex ____ Airbill Number: ____

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e) Samples

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank

R2005464 5

ALS Laboratory Group
LHAAP / Site 58

Cooler Receipt and Preservation Check Form

R2005464 5
ALS Laboratory Group
LHAAP / Site 68

Project/Client Bhate Folder Number

Cooler received on 6/25/2020 by: @

COURIER: ALS UPS (FEDEX) VELOCITY CLIENT

1	Were **Custody seals** on outside of cooler?	(Y) N	5a	**Perchlorate** samples have required headspace?	Y N (NA)
2	**Custody papers** properly completed (ink, signed)?	(Y) N	5b	Did VOA vials, Alk,or Sulfide have sig* **bubbles**?	Y N (NA)
3	Did all bottles arrive in good **condition** (unbroken)?	(Y) N	6	Where did the bottles originate?	(ALS/ROC) CLIENT
4	Circle: (**Wet Ice**) **Dry Ice** **Gel packs** present?	(Y) N	7	Soil VOA received as: Bulk Encore 5035set	(NA)

3. Temperature Readings Date: 6/25/2020 Time: 1045 ID: IR#7 (IR#10) From: (Temp Blank) Sample Bottle

Observed Temp (°C)	1.5						
Within 0-6°C?	(Y) N	Y N	Y N	Y N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed (described below) Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R-002 by @ on 6/25/20 at 1050
5035 samples placed in storage location: _____ by _____ on _____ at _____ within 48 hours of sampling? Y N

Cooler Breakdown/Preservation Check**: Date: 6/25/2020 Time: 1530 by: AW

9. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? (YES) NO
10. Did all bottle labels and tags agree with custody papers? (YES) NO
11. Were correct containers used for the tests indicated? (YES) NO
12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO (N/A)
13. Air Samples: Cassettes / Tubes Intact with MS? Canisters Pressurized Tedlar® Bags Inflated (N/A)

pH	Lot of test paper	Reagent	Preserved? Yes	Preserved? No	Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
≥12		NaOH								
≤2		HNO_3								
≤2		H_2SO_4								
<4		$NaHSO_4$								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add $Na_2S_2O_3$ (625, 608, CN), ascorbic (phenol).					
		$Na_2S_2O_3$								
		ZnAcetate	-	--			**VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).			
		HCl	**	**						

Bottle lot numbers: 413720 - IBMC
Explain all Discrepancies/ Other Comments:

HPROD	BULK
HTR	FLDT
SUB	HGFB
ALS	LL3541

Labels secondary reviewed by: _____
PC Secondary Review: _____

*significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

ALS Group USA, Corp.
dba ALS Environmental

Internal Chain of Custody Report

Client: ALS Laboratory Group **Service Request:** R2005464
Project: LHAAP / Site 58/NW01312.0150

Bottle ID	Methods	Date	Time	Sample Location / User	Disposed On
R2005464-001.01					
	Organic Acids				
		6/25/2020	1534	SMO / GLAFORCE	
		6/25/2020	1542	R-002 / GLAFORCE	
		6/30/2020	1550	In Lab / AFELSER	
		6/30/2020	1648	R-002 / AFELSER	
R2005464-002.01					
	Organic Acids				
		6/25/2020	1534	SMO / GLAFORCE	
		6/25/2020	1542	R-002 / GLAFORCE	
		6/30/2020	1550	In Lab / AFELSER	
		6/30/2020	1648	R-002 / AFELSER	
R2005464-003.01					
	Organic Acids				
		6/25/2020	1534	SMO / GLAFORCE	
		6/25/2020	1542	R-002 / GLAFORCE	
		6/30/2020	1550	In Lab / AFELSER	
		6/30/2020	1648	R-002 / AFELSER	
R2005464-004.01					
	Organic Acids				
		6/25/2020	1534	SMO / GLAFORCE	
		6/25/2020	1542	R-002 / GLAFORCE	
		6/30/2020	1550	In Lab / AFELSER	
		6/30/2020	1648	R-002 / AFELSER	
R2005464-005.01					
	Organic Acids				
		6/25/2020	1534	SMO / GLAFORCE	
		6/25/2020	1542	R-002 / GLAFORCE	
		6/30/2020	1550	In Lab / AFELSER	
		6/30/2020	1648	R-002 / AFELSER	

Miscellaneous Forms

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REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the ñNotesò column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an ñimmediateò hold time criteria.

Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (Ó100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

Rochester Lab ID # for State Certifications[1]

Connecticut ID # PH0556	Maine ID #NY0032	Pennsylvania ID# 68-786
Delaware Approved	New Hampshire ID # 2941	Rhode Island ID # 158
DoD ELAP #65817	New York ID # 10145	Virginia #460167
Florida ID # E87674	North Carolina #676	

[1] Analyses were performed according to our laboratoryôs NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental

ALS Laboratory Group

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

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Analyst Summary report

Client: ALS Environmental - US
Project: LHAAP / Site 58/NW01312.0150
Service Request: R2005464

Sample Name: 35AWW19_062420
Lab Code: R2005464-001
Sample Matrix: Water
Date Collected: 06/24/20
Date Received: 06/25/20

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name: 35AWW20_062420
Lab Code: R2005464-002
Sample Matrix: Water
Date Collected: 06/24/20
Date Received: 06/25/20

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name: LHSMW07_062420
Lab Code: R2005464-003
Sample Matrix: Water
Date Collected: 06/24/20
Date Received: 06/25/20

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name: 35AWW06_062420
Lab Code: R2005464-004
Sample Matrix: Water
Date Collected: 06/24/20
Date Received: 06/25/20

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name: 35AWW23_062420
Lab Code: R2005464-005
Sample Matrix: Water
Date Collected: 06/24/20
Date Received: 06/25/20

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	

Sample Results

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005464
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	06/24/20 08:30
Sample Matrix:	Water	**Date Received:**	06/25/20 10:15
Sample Name:	35AWW19_062420	**Units:**	mg/L
Lab Code:	R2005464-001	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	07/02/20 06:44	
Acetic Acid	ND U	4.0	2.0	0.56	1	07/02/20 06:44	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	07/02/20 06:44	
Lactic Acid	ND U	2.0	1.0	0.14	1	07/02/20 06:44	
Propionic Acid	ND U	2.0	1.0	0.19	1	07/02/20 06:44	

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005464
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	06/24/20 09:25
Sample Matrix:	Water	**Date Received:**	06/25/20 10:15
Sample Name:	35AWW20_062420	**Units:**	mg/L
Lab Code:	R2005464-002	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.20	0.10	0.016	1	07/02/20 10:56	
Acetic Acid	ND	U	4.0	2.0	0.56	1	07/02/20 10:56	
Butanoic Acid (Butyric Acid)	ND	U	2.0	1.0	0.32	1	07/02/20 10:56	
Lactic Acid	ND	U	2.0	1.0	0.14	1	07/02/20 10:56	
Propionic Acid	ND	U	2.0	1.0	0.19	1	07/02/20 10:56	

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005464
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	06/24/20 10:15
Sample Matrix:	Water	**Date Received:**	06/25/20 10:15
Sample Name:	LHSMW07_062420	**Units:**	mg/L
Lab Code:	R2005464-003	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	07/02/20 11:56	
Acetic Acid	ND U	4.0	2.0	0.56	1	07/02/20 11:56	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	07/02/20 11:56	
Lactic Acid	ND U	2.0	1.0	0.14	1	07/02/20 11:56	
Propionic Acid	ND U	2.0	1.0	0.19	1	07/02/20 11:56	

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005464
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	06/24/20 11:05
Sample Matrix:	Water	**Date Received:**	06/25/20 10:15
Sample Name:	35AWW06_062420	**Units:**	mg/L
Lab Code:	R2005464-004	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	07/02/20 13:02	
Acetic Acid	ND U	4.0	2.0	0.56	1	07/02/20 13:02	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	07/02/20 13:02	
Lactic Acid	ND U	2.0	1.0	0.14	1	07/02/20 13:02	
Propionic Acid	ND U	2.0	1.0	0.19	1	07/02/20 13:02	

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005464
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	06/24/20 12:00
Sample Matrix:	Water	**Date Received:**	06/25/20 10:15
Sample Name:	35AWW23_062420	**Units:**	mg/L
Lab Code:	R2005464-005	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.20	0.10	0.016	1	07/02/20 14:02	
Acetic Acid	**76**		4.0	2.0	0.56	1	07/02/20 14:02	
Butanoic Acid (Butyric Acid)	ND	U	2.0	1.0	0.32	1	07/02/20 14:02	
Lactic Acid	ND	U	2.0	1.0	0.14	1	07/02/20 14:02	
Propionic Acid	**44**		2.0	1.0	0.19	1	07/02/20 14:02	

QC Summary Forms

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QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	R2005464
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	06/24/20
Sample Matrix:	Water	**Date Received:**	06/25/20
		Date Analyzed:	07/2/20

Duplicate Matrix Spike Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Sample Name:	35AWW19_062420	**Units:**	mg/L
Lab Code:	R2005464-001	**Basis:**	NA
Analysis Method:	Organic Acids		

		Matrix Spike RQ2007136-07			Duplicate Matrix Spike RQ2007136-08					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	ND U	1.52	2.00	76	1.43	2.00	72 *	73-122	6	30
Acetic Acid	ND U	19.8	20.1	99	18.4	20.1	92	80-130	8	30
Butanoic Acid (Butyric Acid)	ND U	20.1	20.1	100	17.8	20.1	89	86-128	12	30
Lactic Acid	ND U	19.0	20.0	95	17.7	20.0	89	81-114	7	30
Propionic Acid	ND U	20.5	20.0	102	18.6	20.0	93	63-153	10	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

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QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58/NW01312.0150
Sample Matrix: Water

Service Request: R2005464
Date Analyzed: 07/01/20 14:56

Method Blank Summary

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Sample Name: Method Blank
Lab Code: RQ2007136-02

Instrument ID:R-HPLC-05
File ID:I:\ACQUDATA\hplc05\data\070120\A0005449.D\

Analysis Method: Organic Acids
Analysis Lot:686010

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	RQ2007136-03	I:\ACQUDATA\hplc05\data\070120\A0005450.D\	07/01/20 16:02
Duplicate Lab Control Sample	RQ2007136-04	I:\ACQUDATA\hplc05\data\070120\A0005451.D\	07/01/20 17:05
35AWW19_062420	R2005464-001	I:\ACQUDATA\hplc05\data\070120\A0005464.D\	07/02/20 06:44
35AWW19_062420MS	RQ2007136-07	I:\ACQUDATA\hplc05\data\070120\A0005465.D\	07/02/20 07:44
35AWW19_062420DMS	RQ2007136-08	I:\ACQUDATA\hplc05\data\070120\A0005467.D\	07/02/20 09:50
35AWW20_062420	R2005464-002	I:\ACQUDATA\hplc05\data\070120\A0005468.D\	07/02/20 10:56
LHSMW07_062420	R2005464-003	I:\ACQUDATA\hplc05\data\070120\A0005469.D\	07/02/20 11:56
35AWW06_062420	R2005464-004	I:\ACQUDATA\hplc05\data\070120\A0005470.D\	07/02/20 13:02
35AWW23_062420	R2005464-005	I:\ACQUDATA\hplc05\data\070120\A0005471.D\	07/02/20 14:02

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005464
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	mg/L
Lab Code:	RQ2007136-02	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	07/01/20 14:56	
Acetic Acid	ND U	4.0	2.0	0.56	1	07/01/20 14:56	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	07/01/20 14:56	
Lactic Acid	ND U	2.0	1.0	0.14	1	07/01/20 14:56	
Propionic Acid	ND U	2.0	1.0	0.19	1	07/01/20 14:56	

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QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58/NW01312.0150
Sample Matrix: Water

Service Request: R2005464
Date Analyzed: 07/01/20 16:02

Lab Control Sample Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Sample Name: Lab Control Sample
Lab Code: RQ2007136-03

Instrument ID:R-HPLC-05
File ID:I:\ACQUDATA\hplc05\data\070120\A0005450.D\

Analysis Method: Organic Acids
Analysis Lot:686010

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	RQ2007136-02	I:\ACQUDATA\hplc05\data\070120\A0005449.D\	07/01/20 14:56
Duplicate Lab Control Sample	RQ2007136-04	I:\ACQUDATA\hplc05\data\070120\A0005451.D\	07/01/20 17:05
35AWW19_062420	R2005464-001	I:\ACQUDATA\hplc05\data\070120\A0005464.D\	07/02/20 06:44
35AWW19_062420MS	RQ2007136-07	I:\ACQUDATA\hplc05\data\070120\A0005465.D\	07/02/20 07:44
35AWW19_062420DMS	RQ2007136-08	I:\ACQUDATA\hplc05\data\070120\A0005467.D\	07/02/20 09:50
35AWW20_062420	R2005464-002	I:\ACQUDATA\hplc05\data\070120\A0005468.D\	07/02/20 10:56
LHSMW07_062420	R2005464-003	I:\ACQUDATA\hplc05\data\070120\A0005469.D\	07/02/20 11:56
35AWW06_062420	R2005464-004	I:\ACQUDATA\hplc05\data\070120\A0005470.D\	07/02/20 13:02
35AWW23_062420	R2005464-005	I:\ACQUDATA\hplc05\data\070120\A0005471.D\	07/02/20 14:02

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QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58/NW01312.0150
Sample Matrix: Water

Service Request: R2005464
Date Analyzed: 07/01/20

Duplicate Lab Control Sample Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Units:mg/L
Basis:NA

		Lab Control Sample			Duplicate Lab Control Sample					
		RQ2007136-03			RQ2007136-04					
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Pyruvic Acid	Organic Acids	1.95	2.00	98	1.74	2.00	87	73-122	11	30
Acetic Acid	Organic Acids	24.8	20.1	123	22.1	20.1	110	80-130	11	30
Butanoic Acid (Butyric Acid)	Organic Acids	23.5	20.1	117	21.2	20.1	106	86-128	10	30
Lactic Acid	Organic Acids	22.9	20.0	114	21.0	20.0	105	81-114	9	30
Propionic Acid	Organic Acids	25.3	20.0	126	22.7	20.0	113	63-153	11	30

Raw Data

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005464
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	06/24/20 08:30
Sample Matrix:	Water	**Date Received:**	06/25/20 10:15
Sample Name:	35AWW19_062420	**Units:**	mg/L
Lab Code:	R2005464-001	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	07/02/20 06:44	
Acetic Acid	ND U	4.0	2.0	0.56	1	07/02/20 06:44	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	07/02/20 06:44	
Lactic Acid	ND U	2.0	1.0	0.14	1	07/02/20 06:44	
Propionic Acid	ND U	2.0	1.0	0.19	1	07/02/20 06:44	

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005464
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	06/24/20 09:25
Sample Matrix:	Water	**Date Received:**	06/25/20 10:15
Sample Name:	35AWW20_062420	**Units:**	mg/L
Lab Code:	R2005464-002	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	07/02/20 10:56	
Acetic Acid	ND U	4.0	2.0	0.56	1	07/02/20 10:56	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	07/02/20 10:56	
Lactic Acid	ND U	2.0	1.0	0.14	1	07/02/20 10:56	
Propionic Acid	ND U	2.0	1.0	0.19	1	07/02/20 10:56	

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Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005464
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	06/24/20 10:15
Sample Matrix:	Water	**Date Received:**	06/25/20 10:15
Sample Name:	LHSMW07_062420	**Units:**	mg/L
Lab Code:	R2005464-003	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.20	0.10	0.016	1	07/02/20 11:56	
Acetic Acid	ND	U	4.0	2.0	0.56	1	07/02/20 11:56	
Butanoic Acid (Butyric Acid)	ND	U	2.0	1.0	0.32	1	07/02/20 11:56	
Lactic Acid	ND	U	2.0	1.0	0.14	1	07/02/20 11:56	
Propionic Acid	ND	U	2.0	1.0	0.19	1	07/02/20 11:56	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005464
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	06/24/20 11:05
Sample Matrix:	Water	**Date Received:**	06/25/20 10:15
Sample Name:	35AWW06_062420	**Units:**	mg/L
Lab Code:	R2005464-004	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND U	0.20	0.10	0.016	1	07/02/20 13:02	
Acetic Acid	ND U	4.0	2.0	0.56	1	07/02/20 13:02	
Butanoic Acid (Butyric Acid)	ND U	2.0	1.0	0.32	1	07/02/20 13:02	
Lactic Acid	ND U	2.0	1.0	0.14	1	07/02/20 13:02	
Propionic Acid	ND U	2.0	1.0	0.19	1	07/02/20 13:02	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2005464
Project:	LHAAP / Site 58/NW01312.0150	**Date Collected:**	06/24/20 12:00
Sample Matrix:	Water	**Date Received:**	06/25/20 10:15
Sample Name:	35AWW23_062420	**Units:**	mg/L
Lab Code:	R2005464-005	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result		LOQ	LOD	MDL	Dil.	Date Analyzed	Q
Pyruvic Acid	ND	U	0.20	0.10	0.016	1	07/02/20 14:02	
Acetic Acid	**76**		4.0	2.0	0.56	1	07/02/20 14:02	
Butanoic Acid (Butyric Acid)	ND	U	2.0	1.0	0.32	1	07/02/20 14:02	
Lactic Acid	ND	U	2.0	1.0	0.14	1	07/02/20 14:02	
Propionic Acid	**44**		2.0	1.0	0.19	1	07/02/20 14:02	

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005464.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 06:44:40
Operator : A.Felser
Sample : R2005464-001
Misc :
ALS Vial : 15 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) t	Formic acid	0.000	0	N.D.	ppm
2) T	Pyruvic acid	0.000	0	N.D.	ppm
3) T	Lactic Acid	0.000	0	N.D.	ppm
4) T	Acetic Acid	0.000	0	N.D.	ppm
5) T	Propionic Acid	0.000	0	N.D.	ppm
6) T	Butyric Acid	0.000	0	N.D.	ppm

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

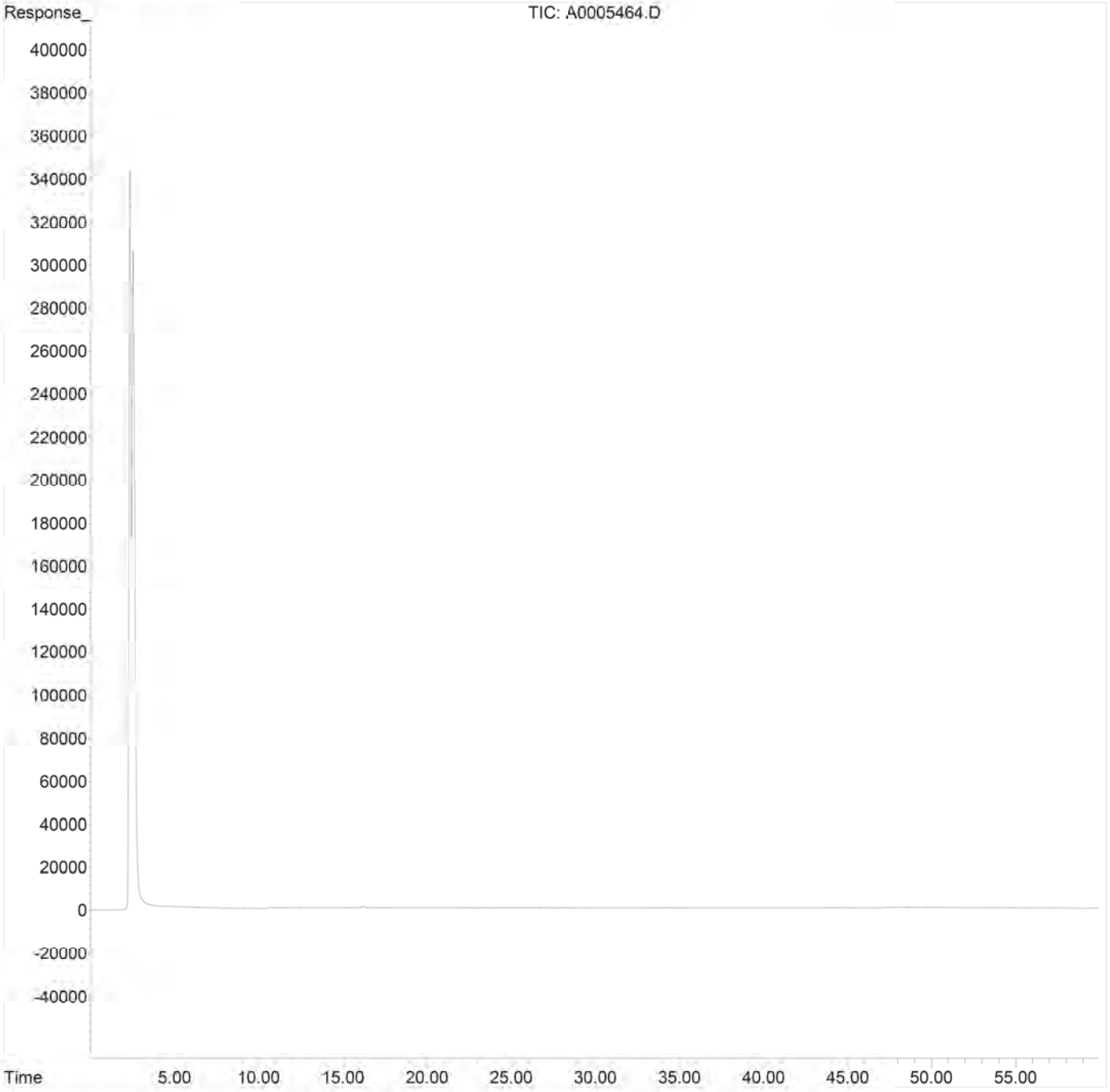
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005464.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 06:44:40
Operator : A.Felser
Sample : R2005464-001
Misc :
ALS Vial : 15 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005468.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 10:56:30
Operator : A.Felser
Sample : R2005464-002
Misc :
ALS Vial : 18 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:01 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	0.000	0	N.D.	ppm	
2) T	Pyruvic acid	0.000	0	N.D.	ppm	
3) T	Lactic Acid	0.000	0	N.D.	ppm	d
4) T	Acetic Acid	0.000	0	N.D.	ppm	
5) T	Propionic Acid	0.000	0	N.D.	ppm	
6) T	Butyric Acid	0.000	0	N.D.	ppm	

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

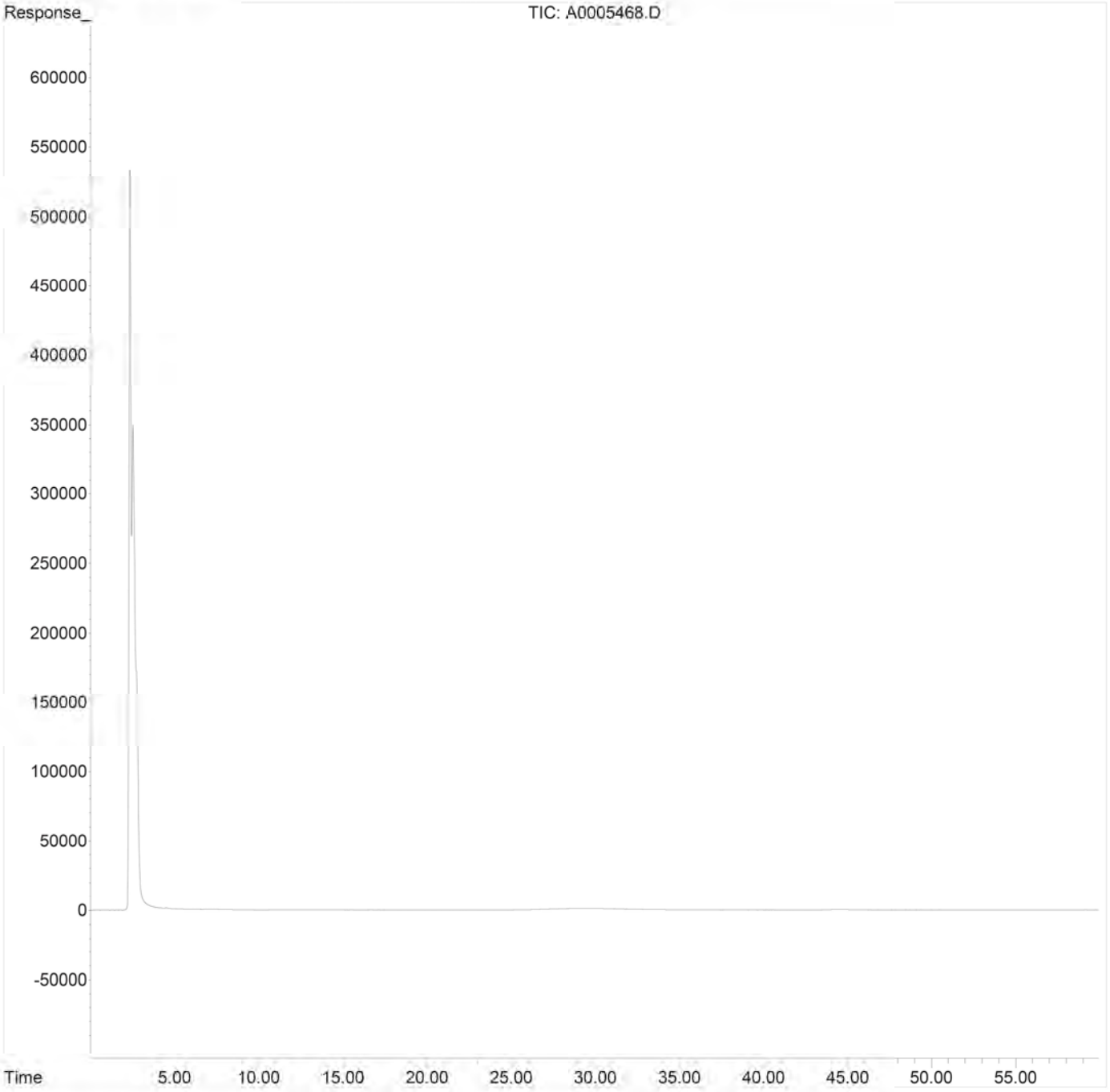
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005468.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 10:56:30
Operator : A.Felser
Sample : R2005464-002
Misc :
ALS Vial : 18 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:01 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005469.D
Signal(s) : dad1C.ch
Acq On : ~~31-Dec-2000, 02:48:33~~ 02-Jul-2020, 11:56
Operator : A.Felser
Sample : R2005464-003
Misc :
ALS Vial : 19 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:03 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) t	Formic acid	0.000	0	N.D.	ppm
2) T	Pyruvic acid	0.000	0	N.D.	ppm
3) T	Lactic Acid	0.000	0	N.D.	ppm
4) T	Acetic Acid	0.000	0	N.D.	ppm
5) T	Propionic Acid	0.000	0	N.D.	ppm
6) T	Butyric Acid	0.000	0	N.D.	ppm

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

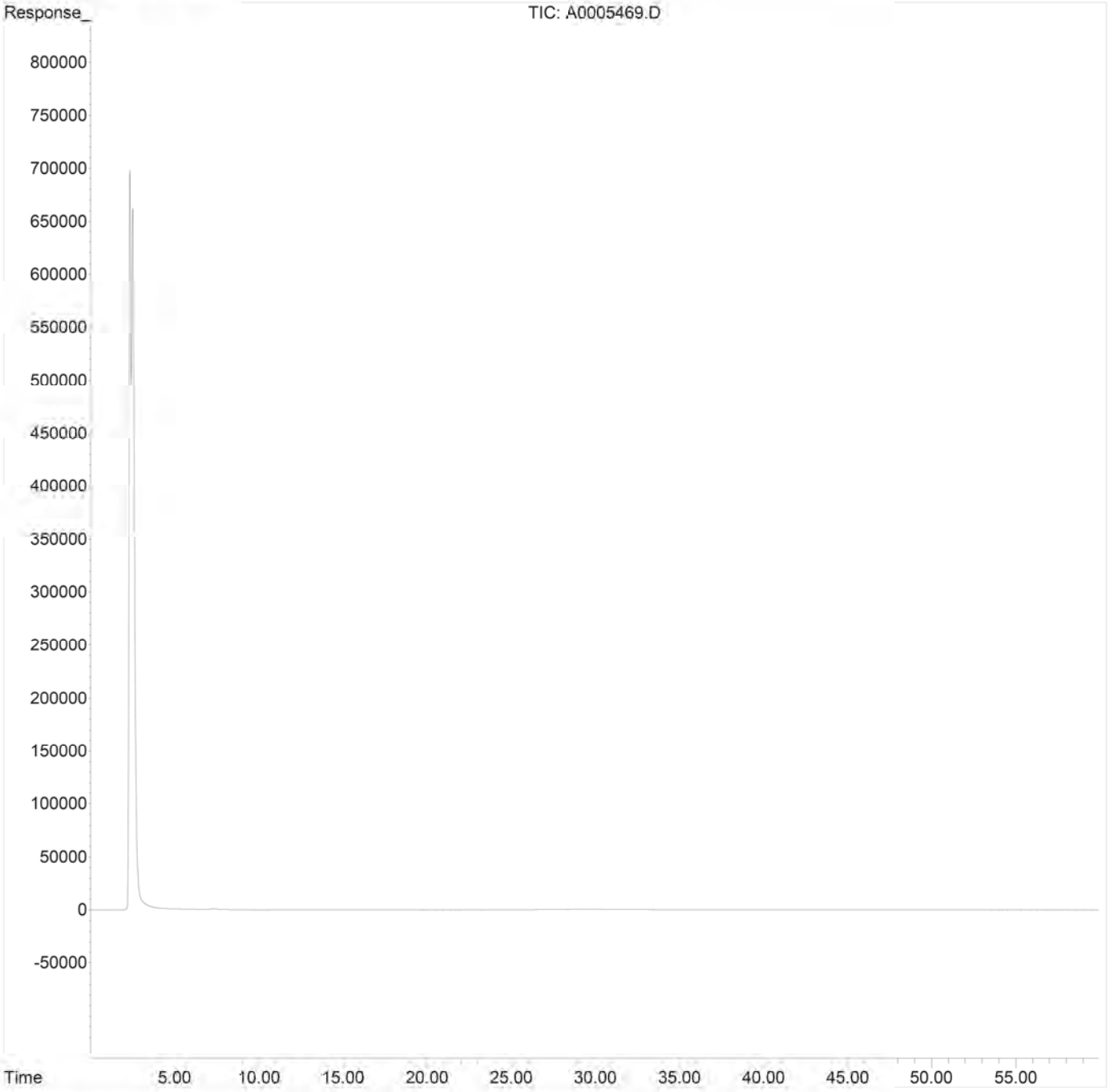
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005469.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:48:33
Operator : A.Felser
Sample : R2005464-003
Misc :
ALS Vial : 19 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:03 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005470.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 13:02:27
Operator : A.Felser
Sample : R2005464-004
Misc :
ALS Vial : 20 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:05 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) t	Formic acid	0.000	0	N.D.	ppm
2) T	Pyruvic acid	0.000	0	N.D.	ppm
3) T	Lactic Acid	0.000	0	N.D.	ppm
4) T	Acetic Acid	0.000	0	N.D.	ppm
5) T	Propionic Acid	0.000	0	N.D.	ppm
6) T	Butyric Acid	0.000	0	N.D.	ppm

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

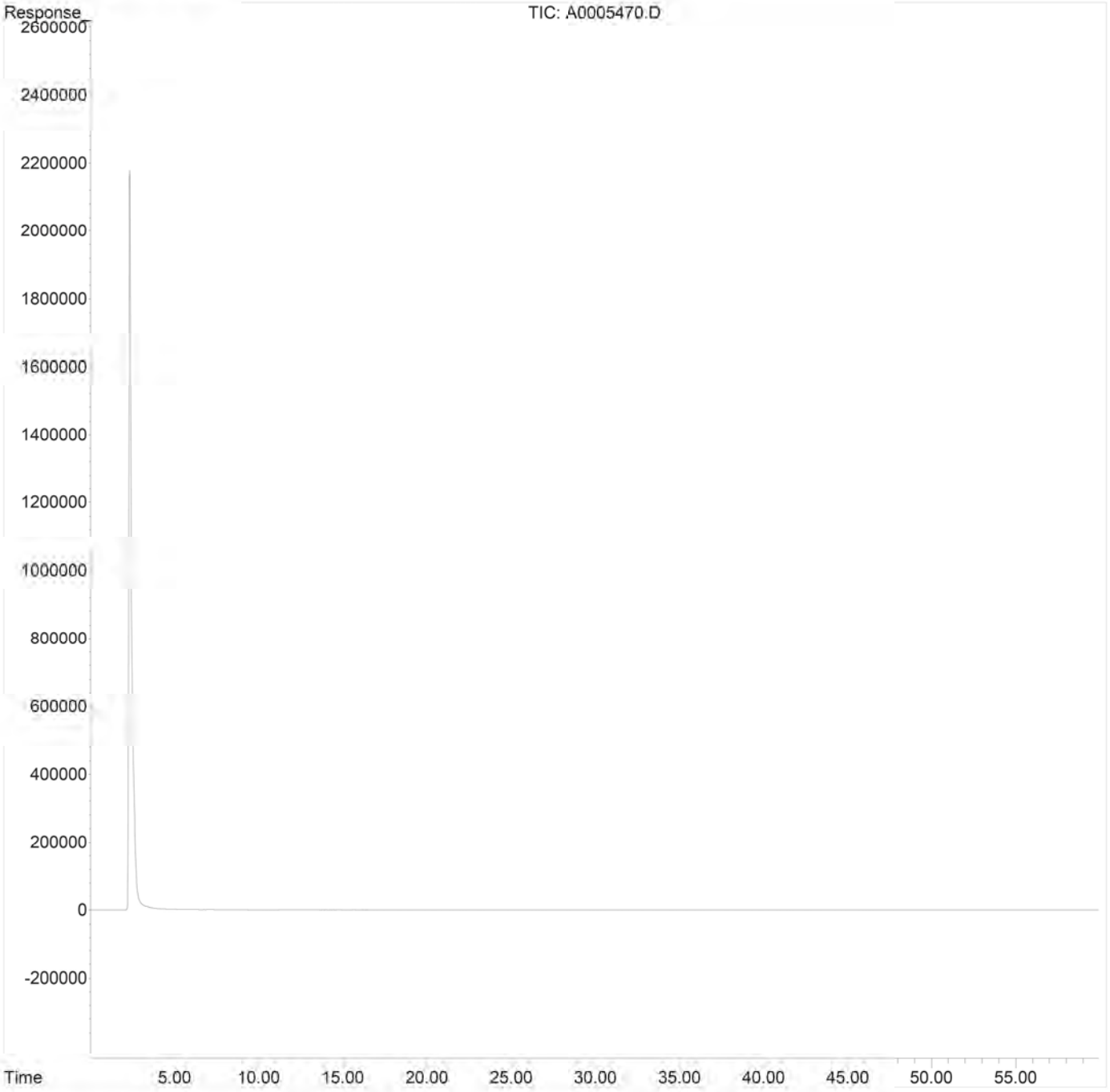
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005470.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 13:02:27
Operator : A.Felser
Sample : R2005464-004
Misc :
ALS Vial : 20 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:05 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



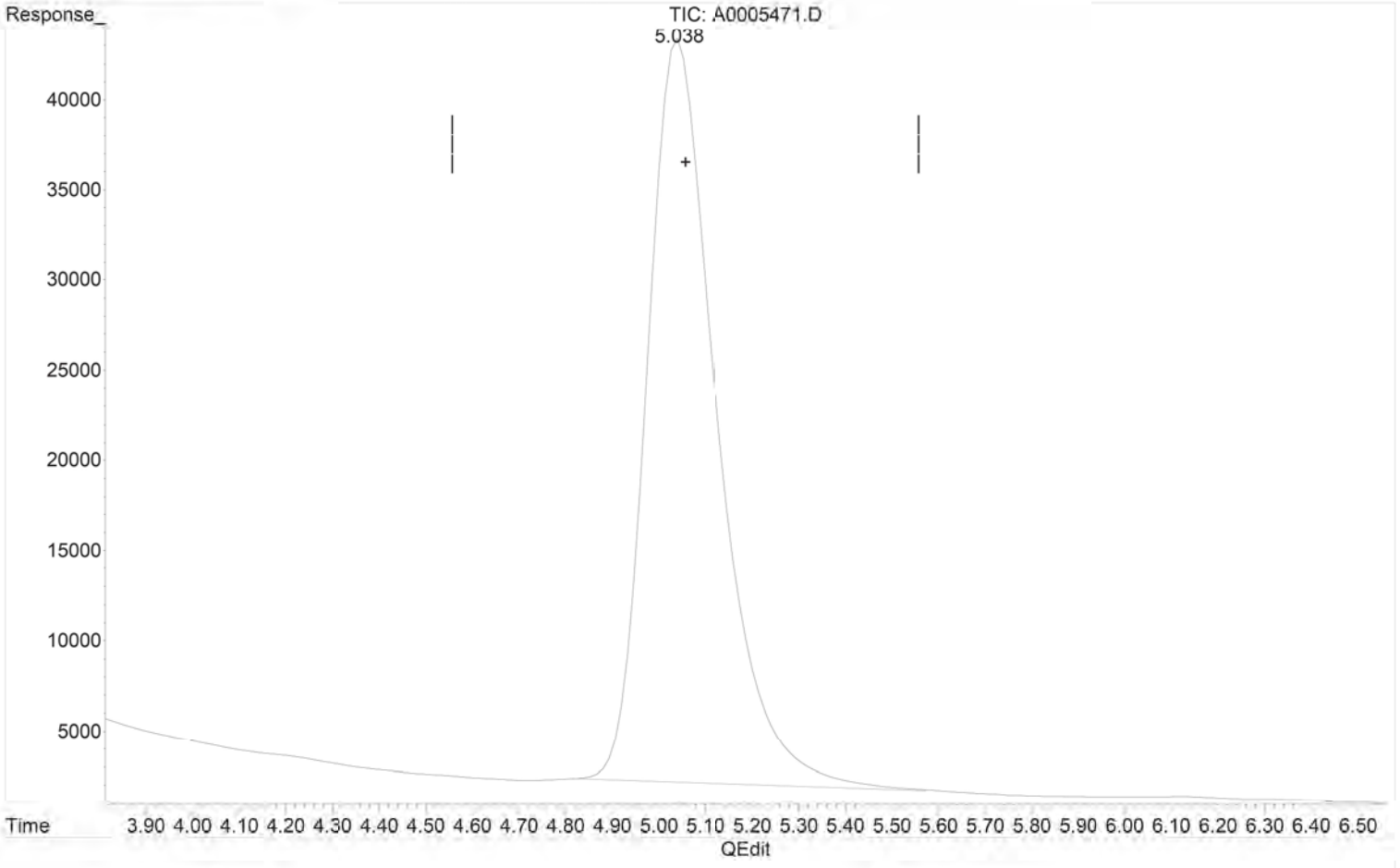
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005471.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:48:34
Operator : A.Felser
Sample : R2005464-005
Misc :
ALS Vial : 21 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:07 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

5.038min 76.311 ppm m

response 4277103

Manual Integration:

After

Poor integration.

07/02/20

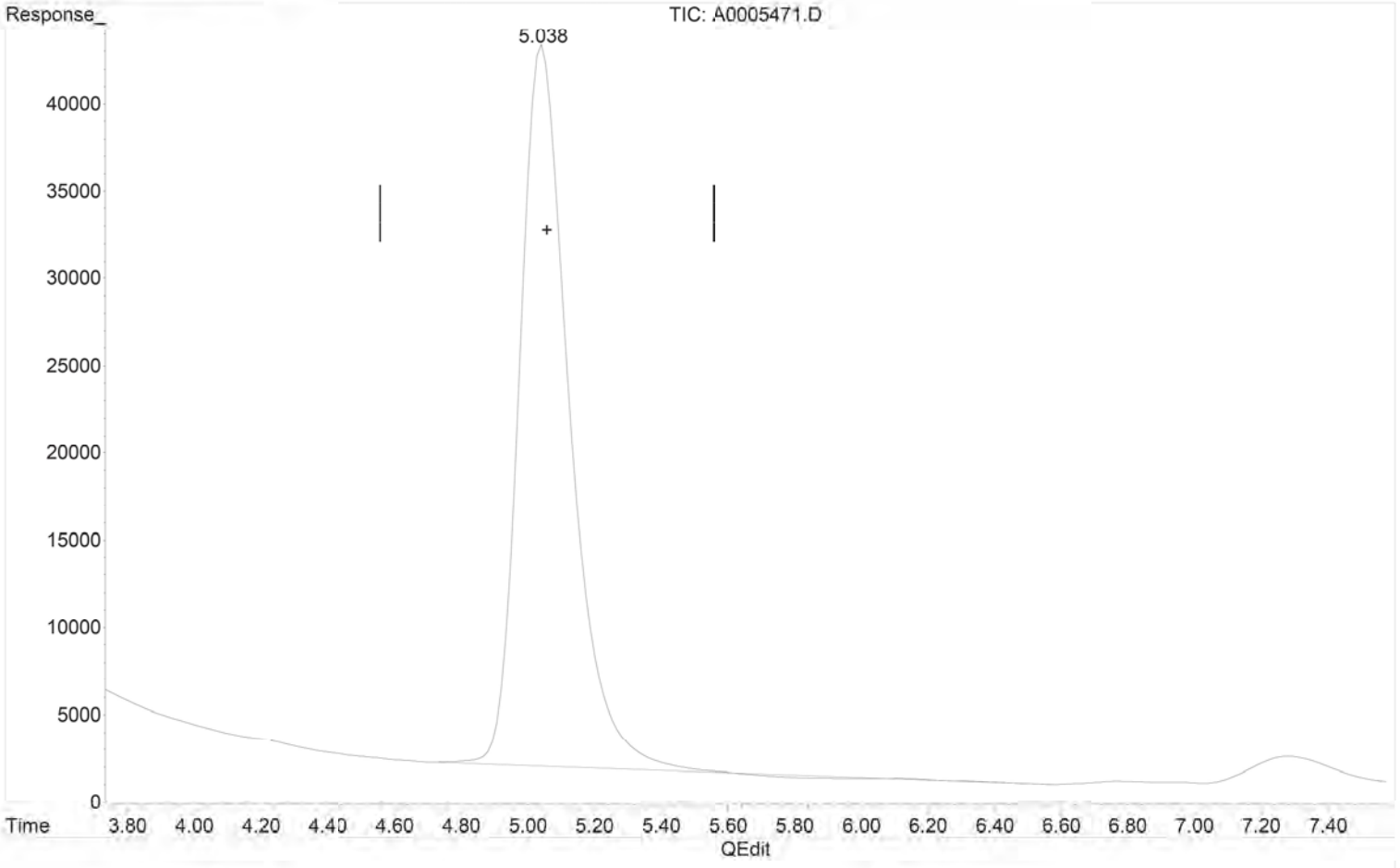
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005471.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:48:34
Operator : A.Felser
Sample : R2005464-005
Misc :
ALS Vial : 21 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:07 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

5.045min 76.748 ppm

response 4301608

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

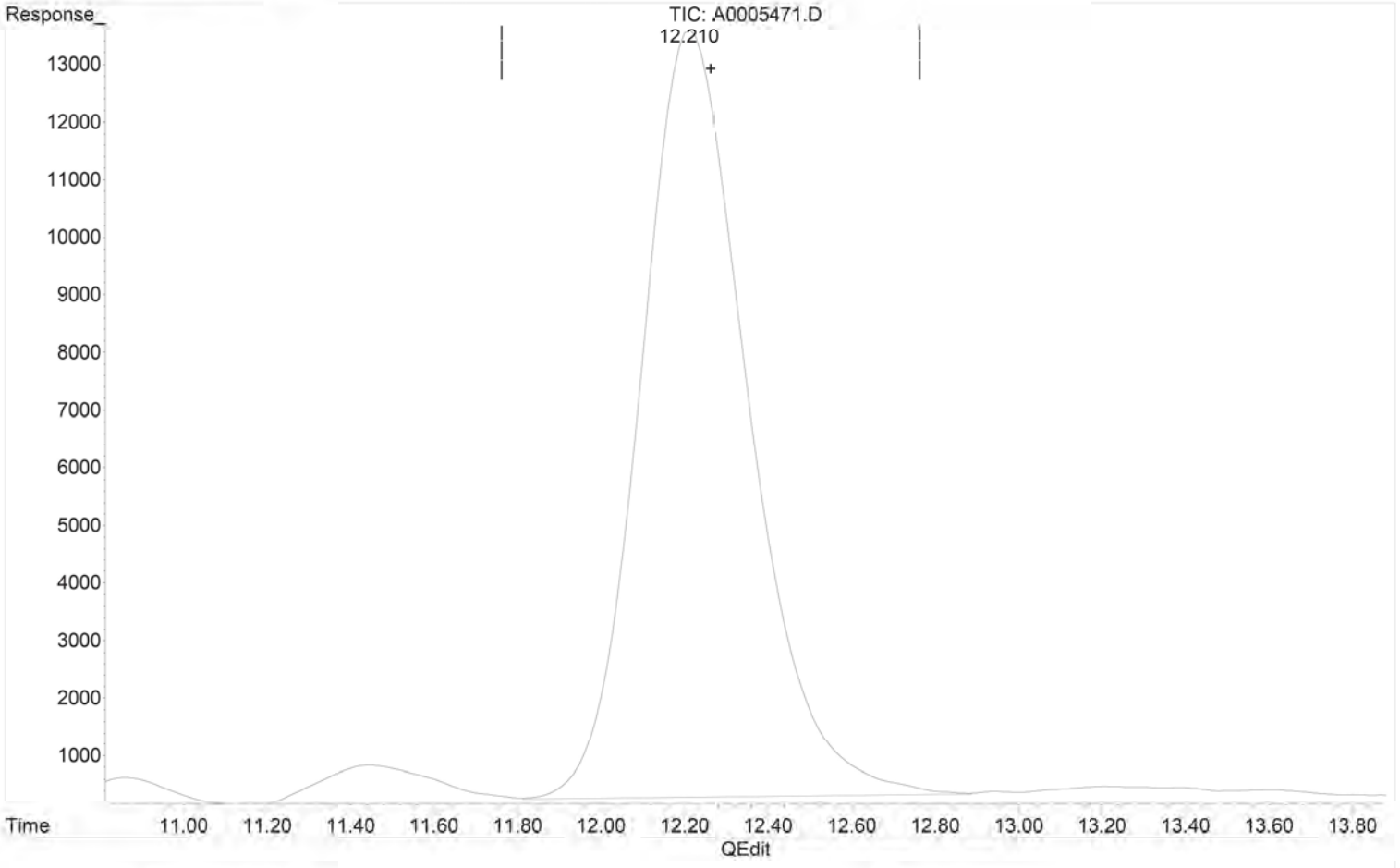
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005471.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:48:34
Operator : A.Felser
Sample : R2005464-005
Misc :
ALS Vial : 21 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:07 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

12.210min 43.781 ppm m

response 2379811

Manual Integration:

After

Poor integration.

07/02/20

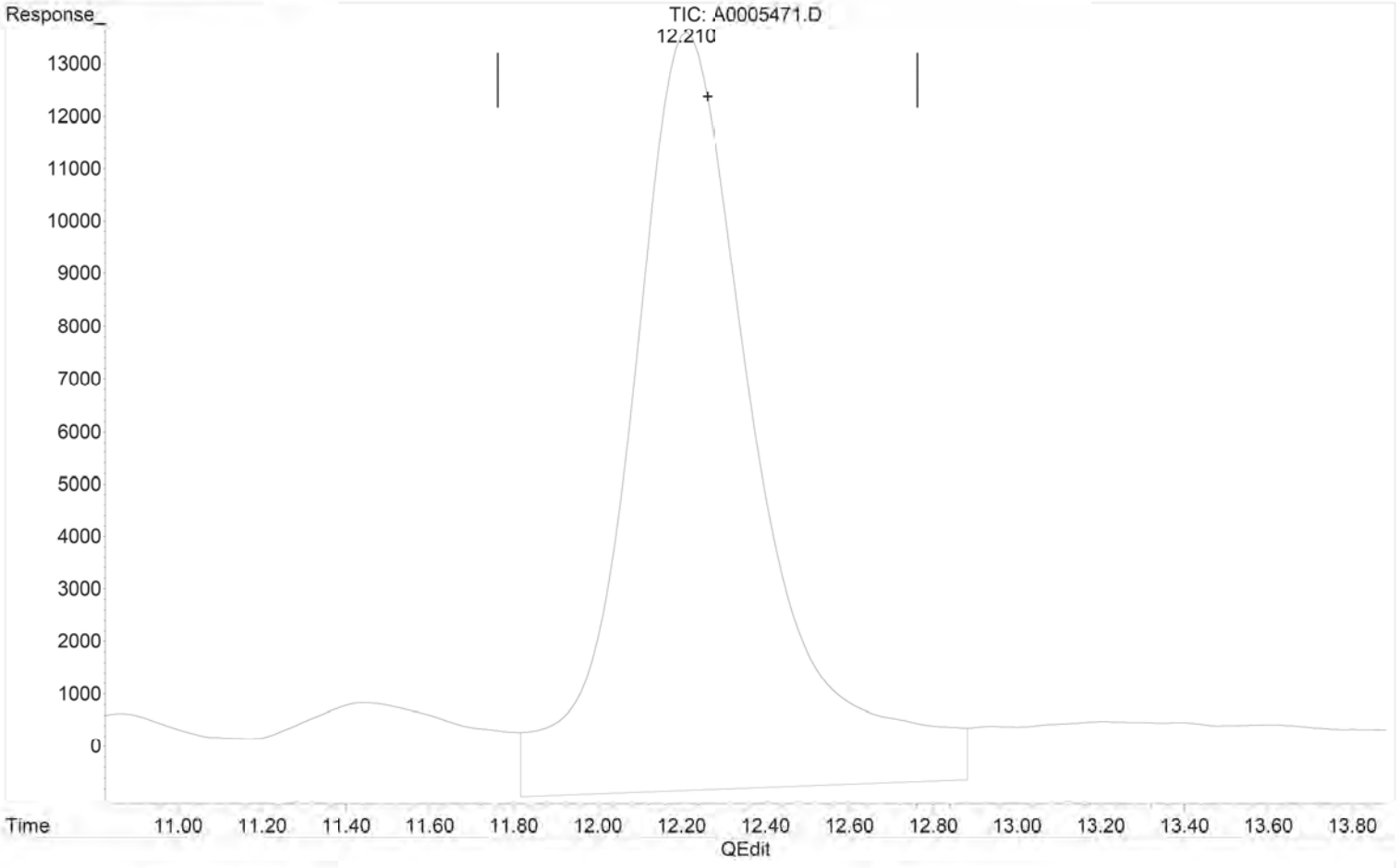
(+) = Expected Retention Time

Quantitation Report (Qedit) 1st

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005471.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:48:34
Operator : A.Felser
Sample : R2005464-005
Misc :
ALS Vial : 21 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:07 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
12.217min 56.603 ppm
response 3076793

Manual Integration:
Before

07/02/20

(+) = Expected Retention Time

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005471.D
Signal(s) : dad1C.ch
Acq On : ~~31-Dec-2000, 02:48:34~~ 02-Jul-2020, 14:02
Operator : A.Felser
Sample : R2005464-005
Misc :
ALS Vial : 21 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:07 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	0.000	0	N.D.	ppm	
2) T	Pyruvic acid	0.000	0	N.D.	ppm	
3) T	Lactic Acid	0.000	0	N.D.	ppm	
4) T	Acetic Acid	5.038	4277103	76.311	ppm	m
5) T	Propionic Acid	12.210	2379811	43.781	ppm	m
6) T	Butyric Acid	0.000	0	N.D.	ppm	d

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

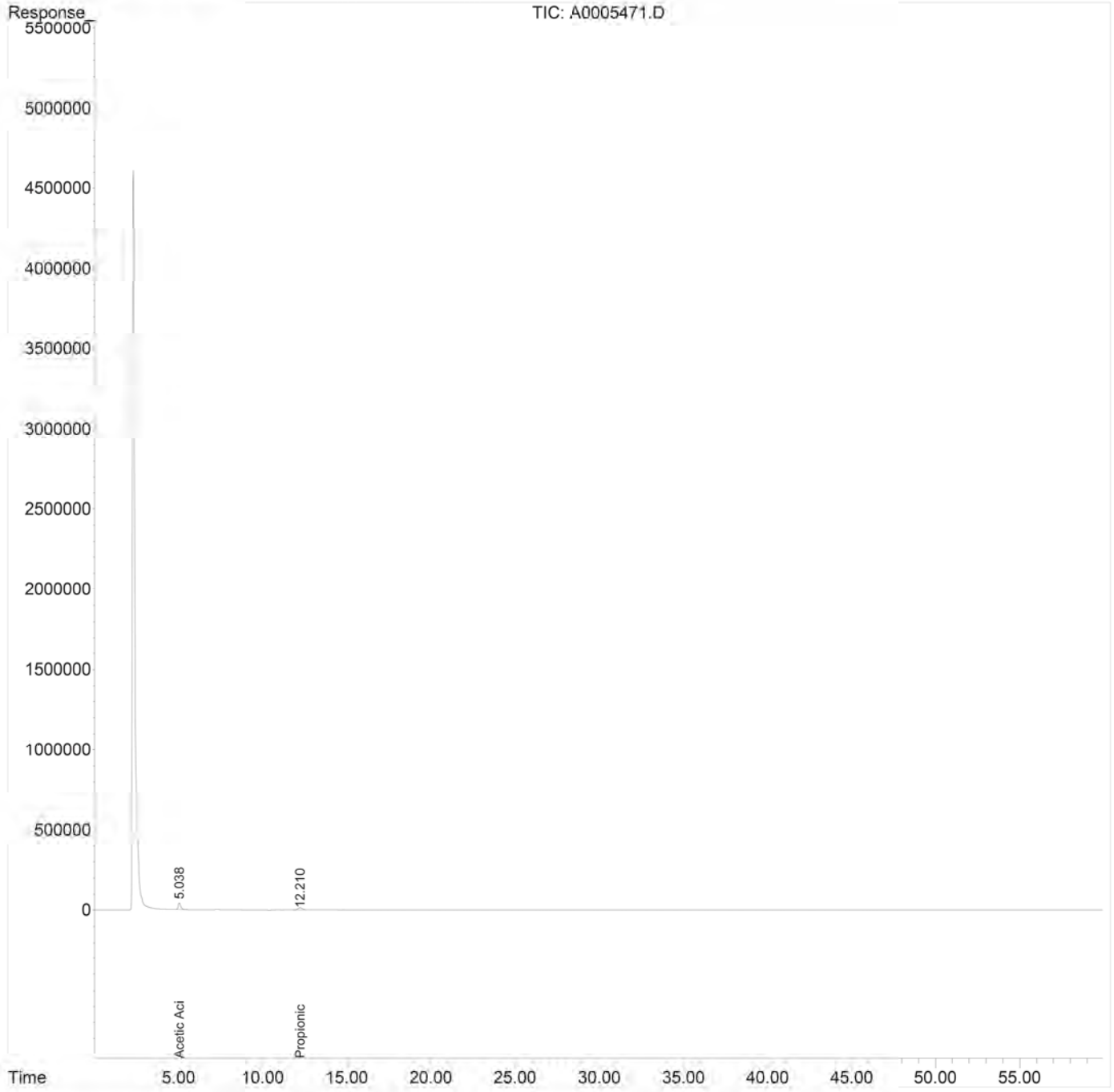
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005471.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:48:34
Operator : A.Felser
Sample : R2005464-005
Misc :
ALS Vial : 21 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:07 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005449.D
Signal(s) : dad1C.ch
Acq On : ~~31 Dec 2000, 02:48:24~~ 01-Jul-2020, 14:56
Operator : A.Felser
Sample : MB
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) t	Formic acid	0.000	0	N.D.	ppm
2) T	Pyruvic acid	0.000	0	N.D.	ppm
3) T	Lactic Acid	0.000	0	N.D.	ppm
4) T	Acetic Acid	0.000	0	N.D.	ppm
5) T	Propionic Acid	0.000	0	N.D.	ppm
6) T	Butyric Acid	0.000	0	N.D.	ppm

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

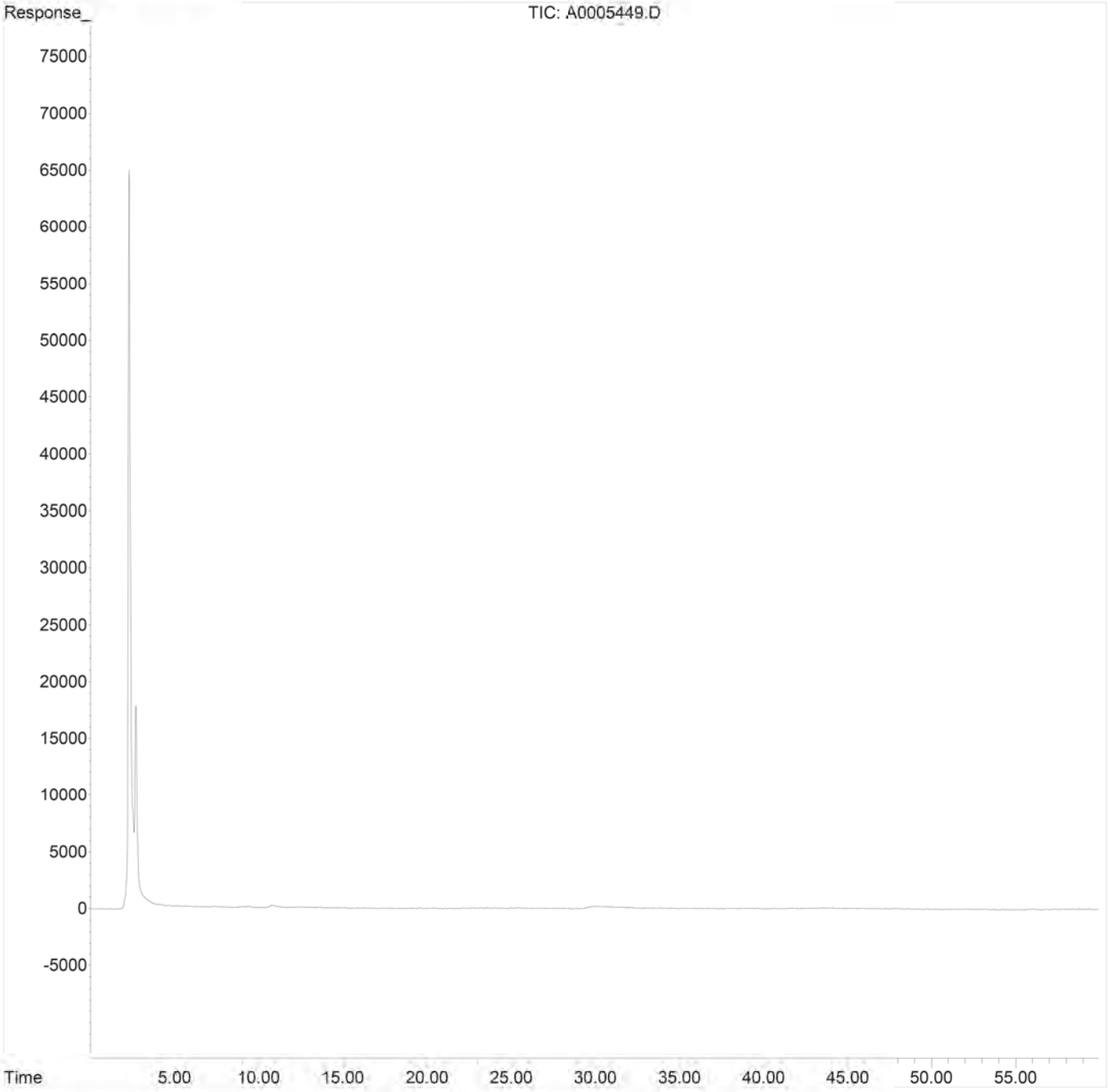
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005449.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:48:24
Operator : A.Felser
Sample : MB
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



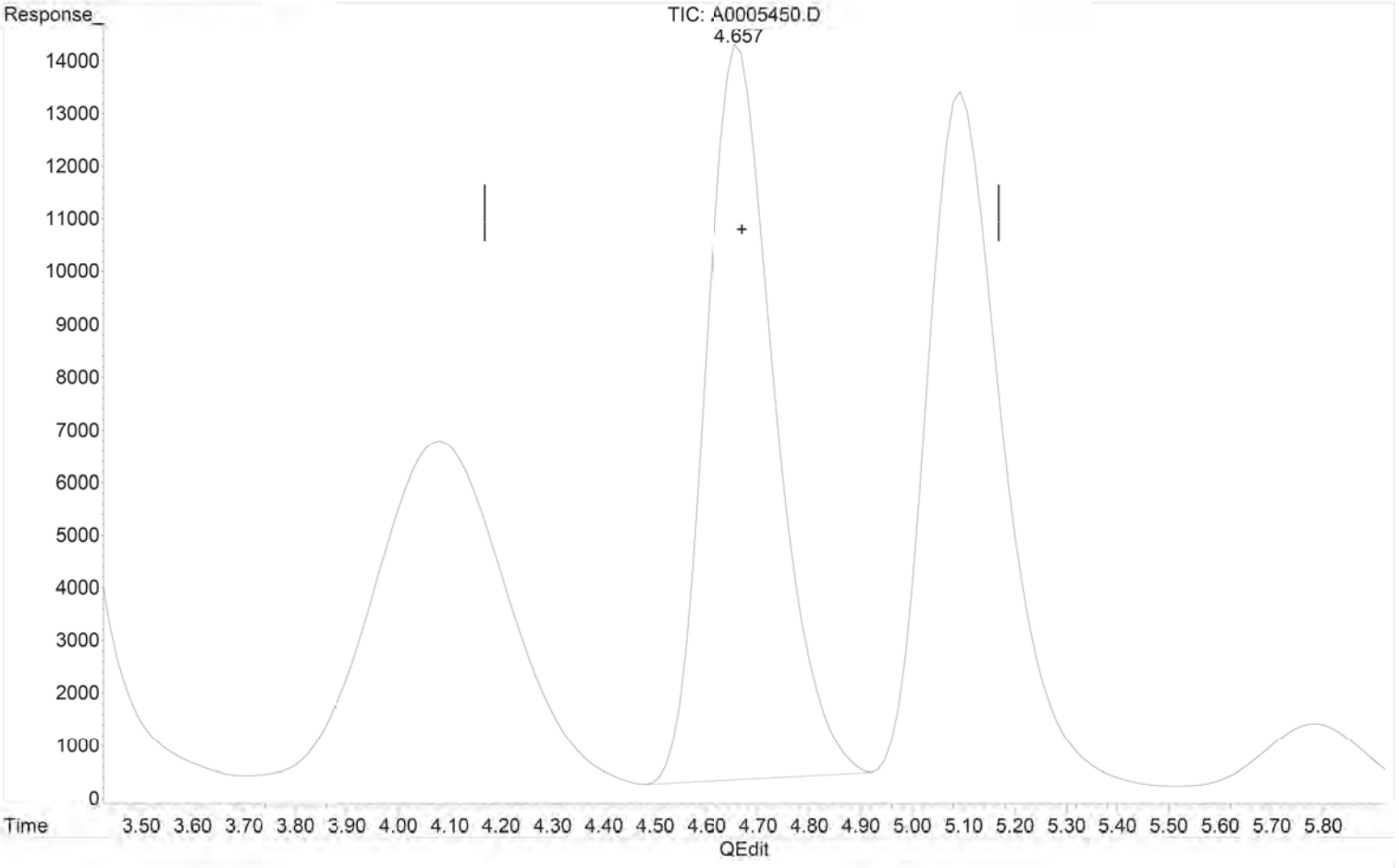
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005450.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 16:02:18
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:31 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.657min 22.937 ppm m

response 1294019

Manual Integration!

After

Poor integration.

07/06/20

(+) = Expected Retention Time

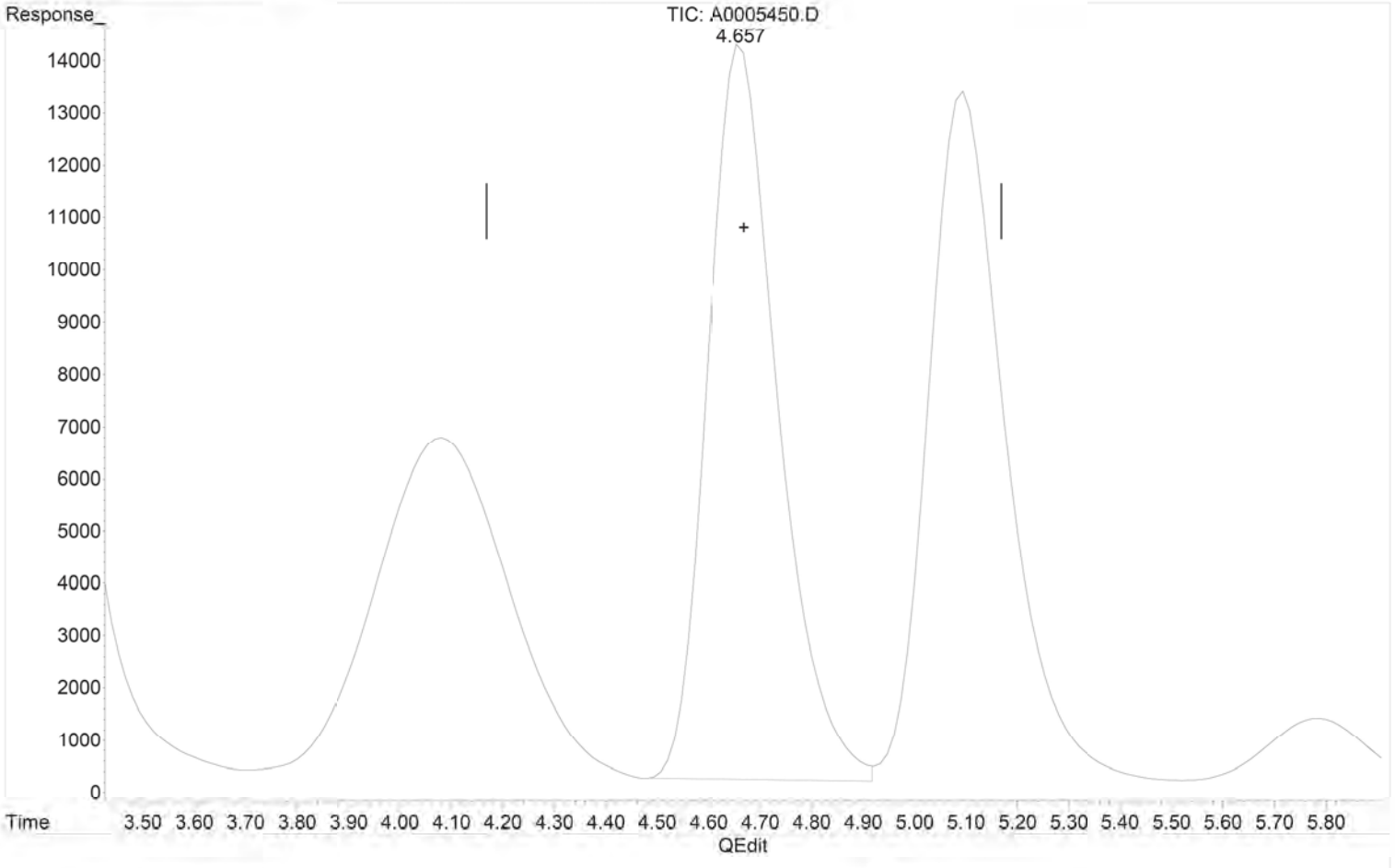
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005450.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 16:02:18
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:31 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.664min 23.528 ppm

response 1327346

Manual Integration:

Before

07/06/20

(+) = Expected Retention Time

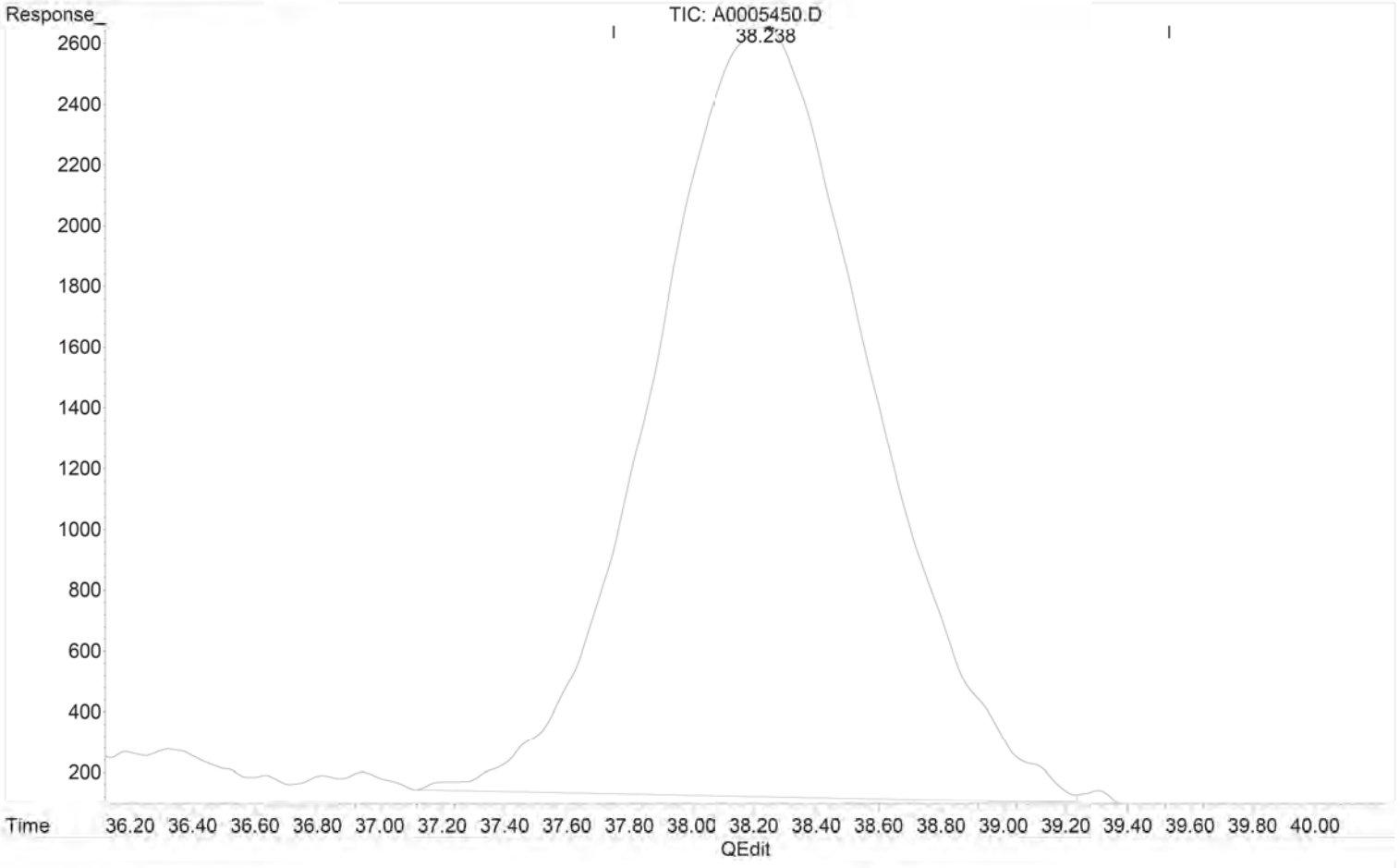
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005450.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 16:02:18
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:31 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

38.238min 23.480 ppm m

response 1234140

Manual Integration:

After

Poor integration.

07/02/20

(+) = Expected Retention Time

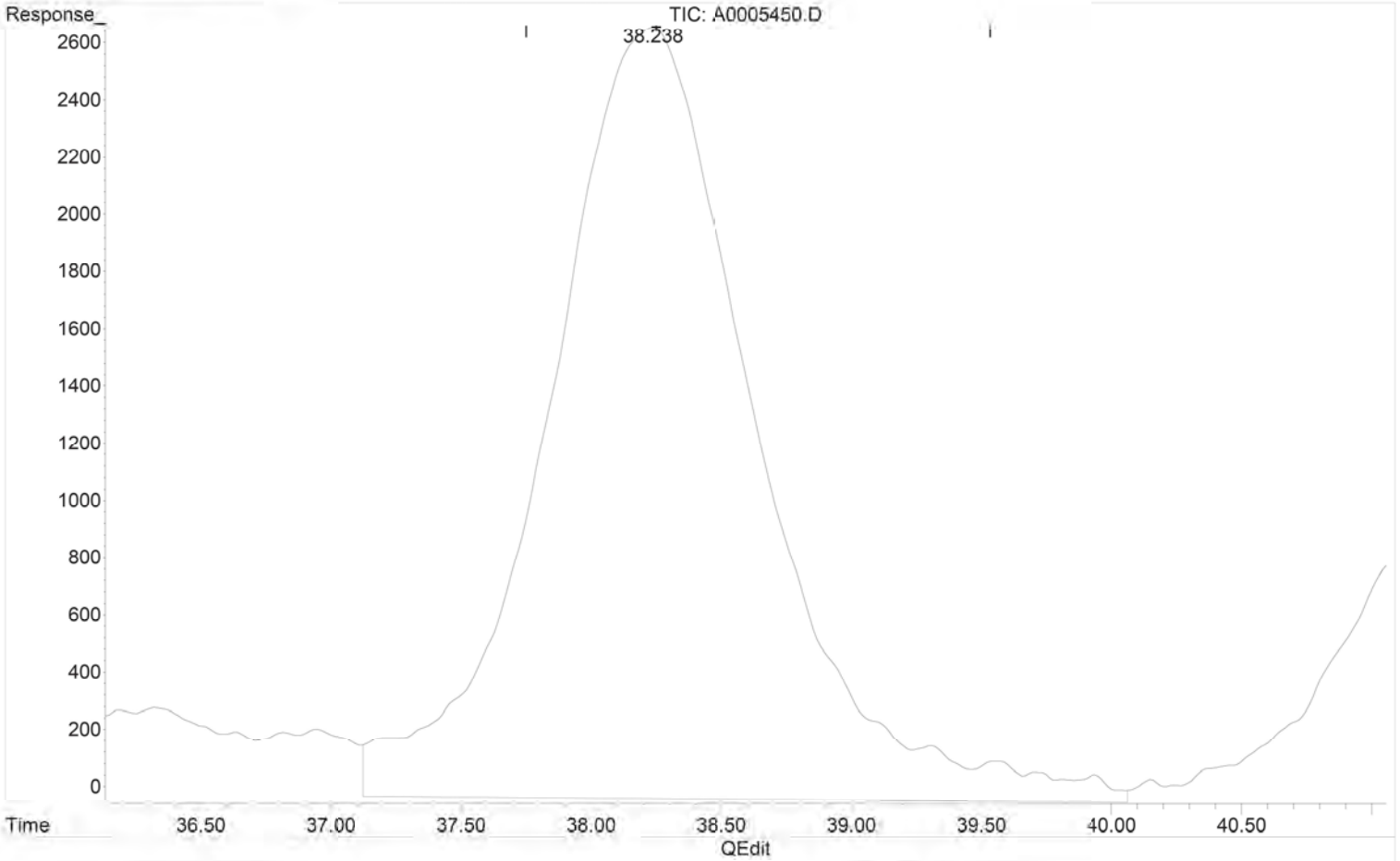
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005450.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 16:02:18
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:31 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

38.230min 28.477 ppm

response 1496779

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005450.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 16:02:18
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:31 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.289	2115098	22.686	ppm	
2) T	Pyruvic acid	4.084	1152581	1.948	ppm	
3) T	Lactic Acid	4.657	1294019	22.937	ppm	m
4) T	Acetic Acid	5.097	1387411	24.754	ppm	
5) T	Propionic Acid	12.474	1373396	25.266	ppm	
6) T	Butyric Acid	38.238	1234140	23.480	ppm	m

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

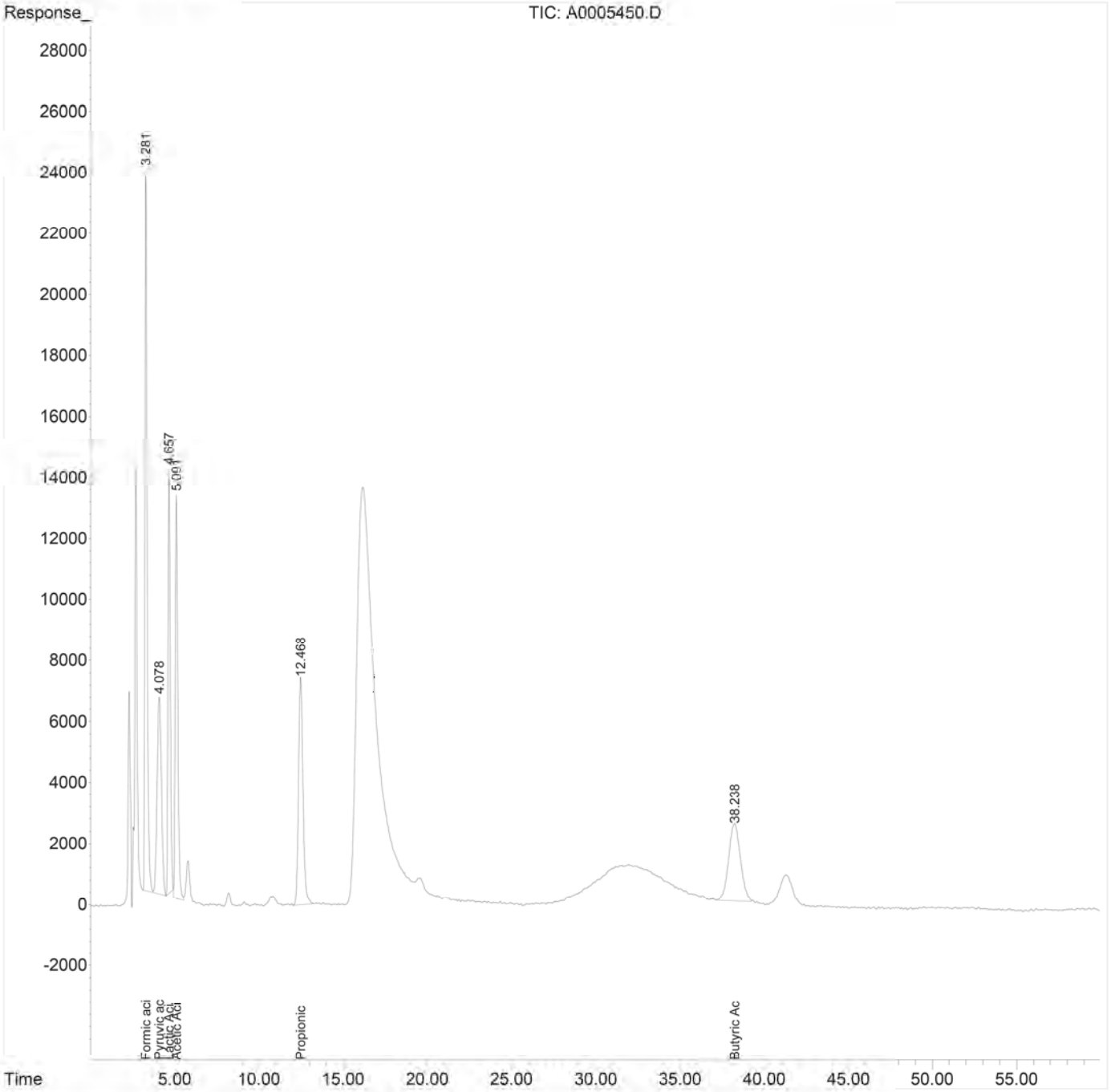
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005450.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 16:02:18
Operator : A.Felser
Sample : LCS
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:31 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



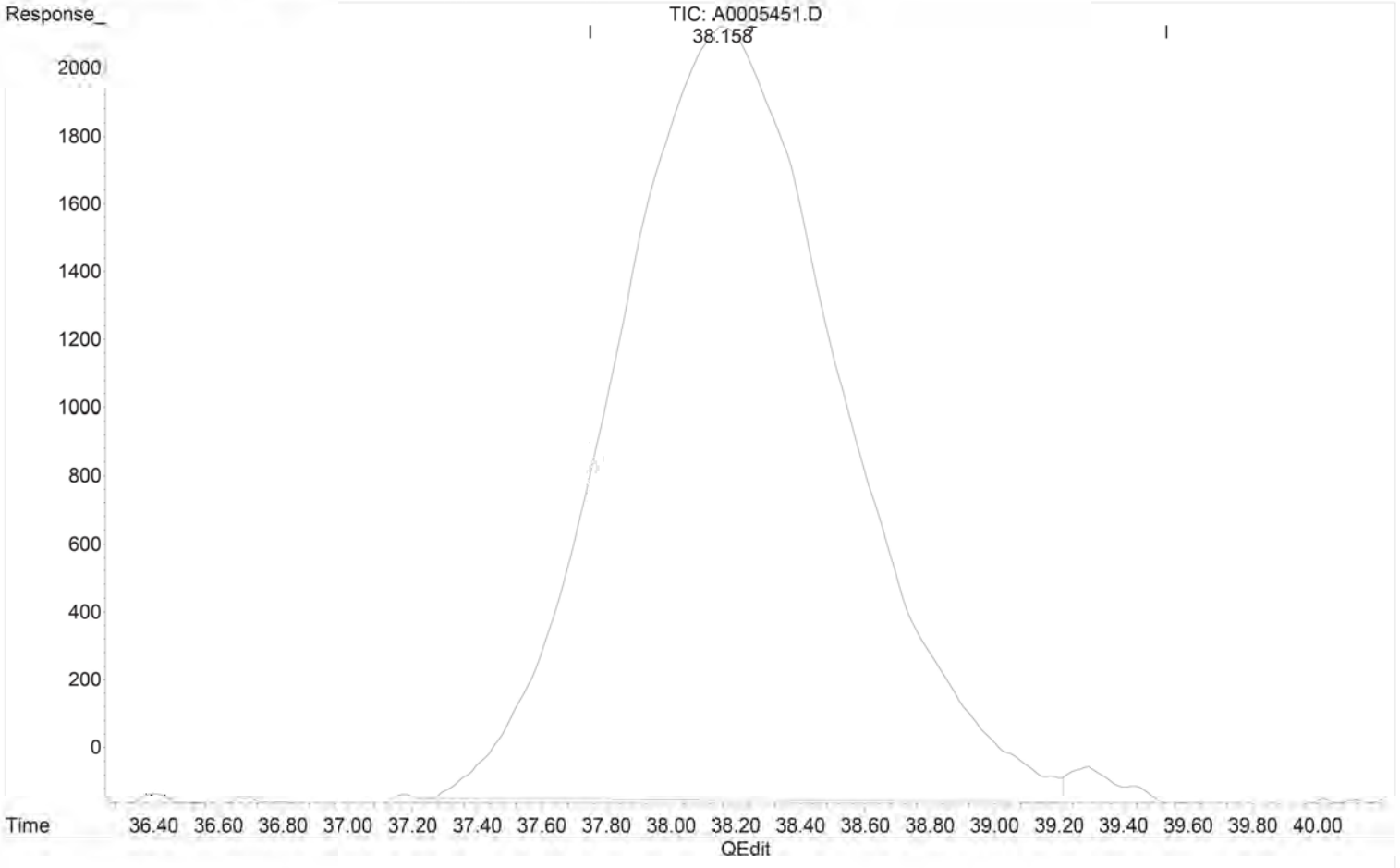
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005451.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 17:05:25
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:33 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

38.158min 21.205 ppm m

response 1114586

Manual Integration:

After

Poor integration.

07/02/20

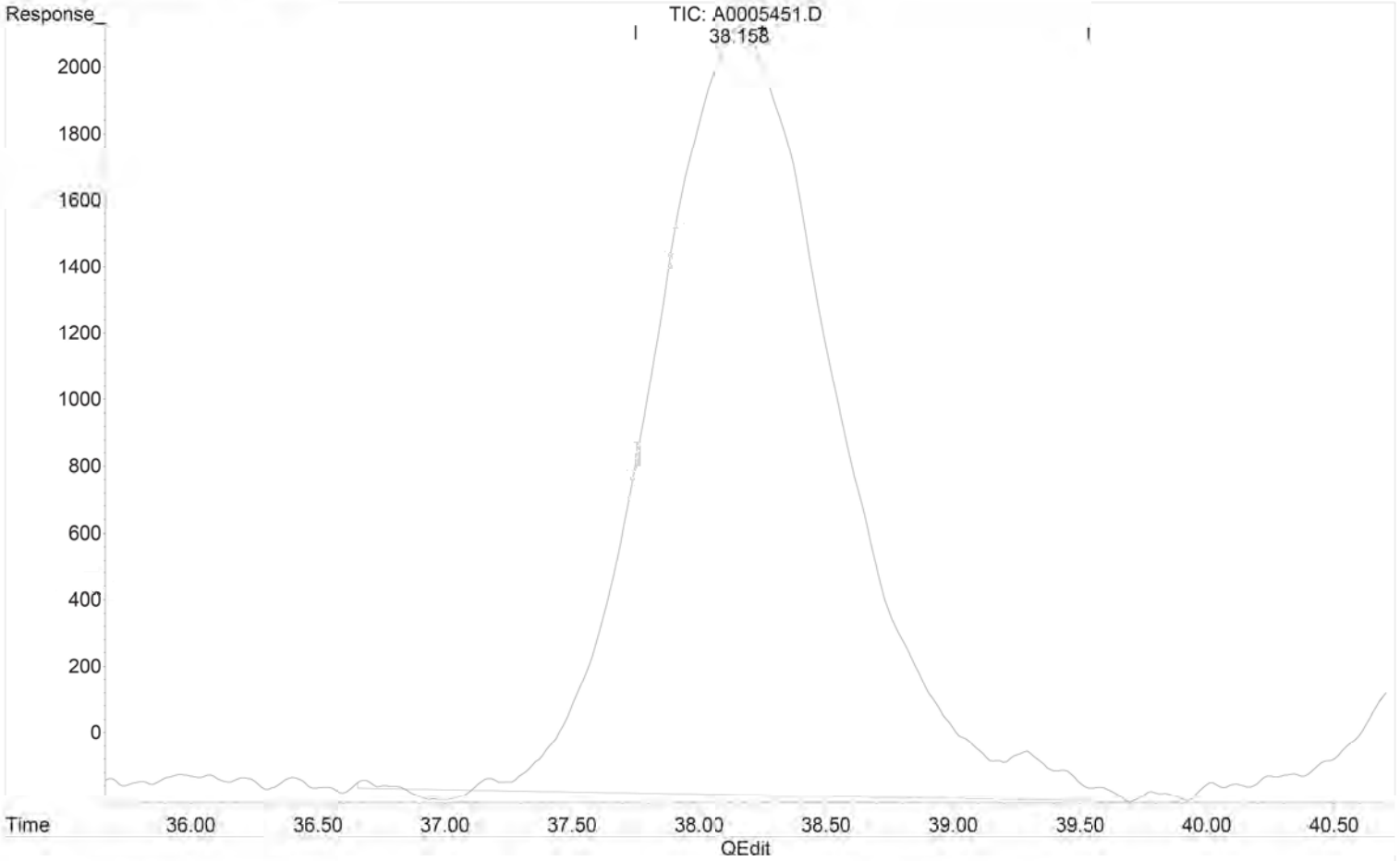
(+) = Expected Retention Time

Quantitation Report (Qedit) 1st

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005451.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 17:05:25
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:33 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

38.165min 22.339 ppm

response 1174190

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005451.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 17:05:25
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:33 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.289	1896917	20.346	ppm	
2) T	Pyruvic acid	4.085	1031900	1.744	ppm	
3) T	Lactic Acid	4.663	1185702	21.017	ppm	
4) T	Acetic Acid	5.097	1237397	22.077	ppm	
5) T	Propionic Acid	12.463	1235919	22.737	ppm	
6) T	Butyric Acid	38.158	1114586	21.205	ppm	m

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

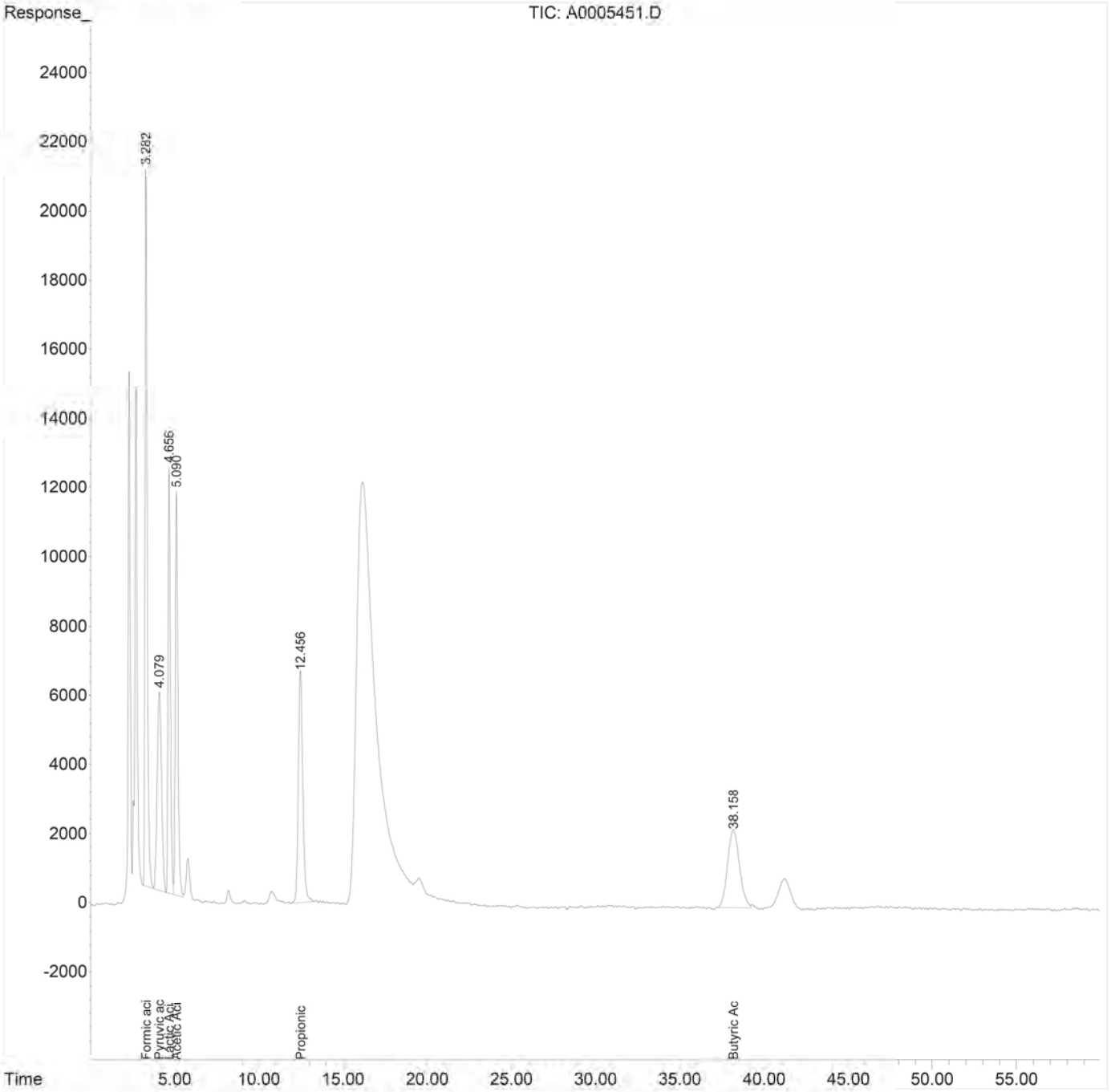
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005451.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 17:05:25
Operator : A.Felser
Sample : DLCS
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:33 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

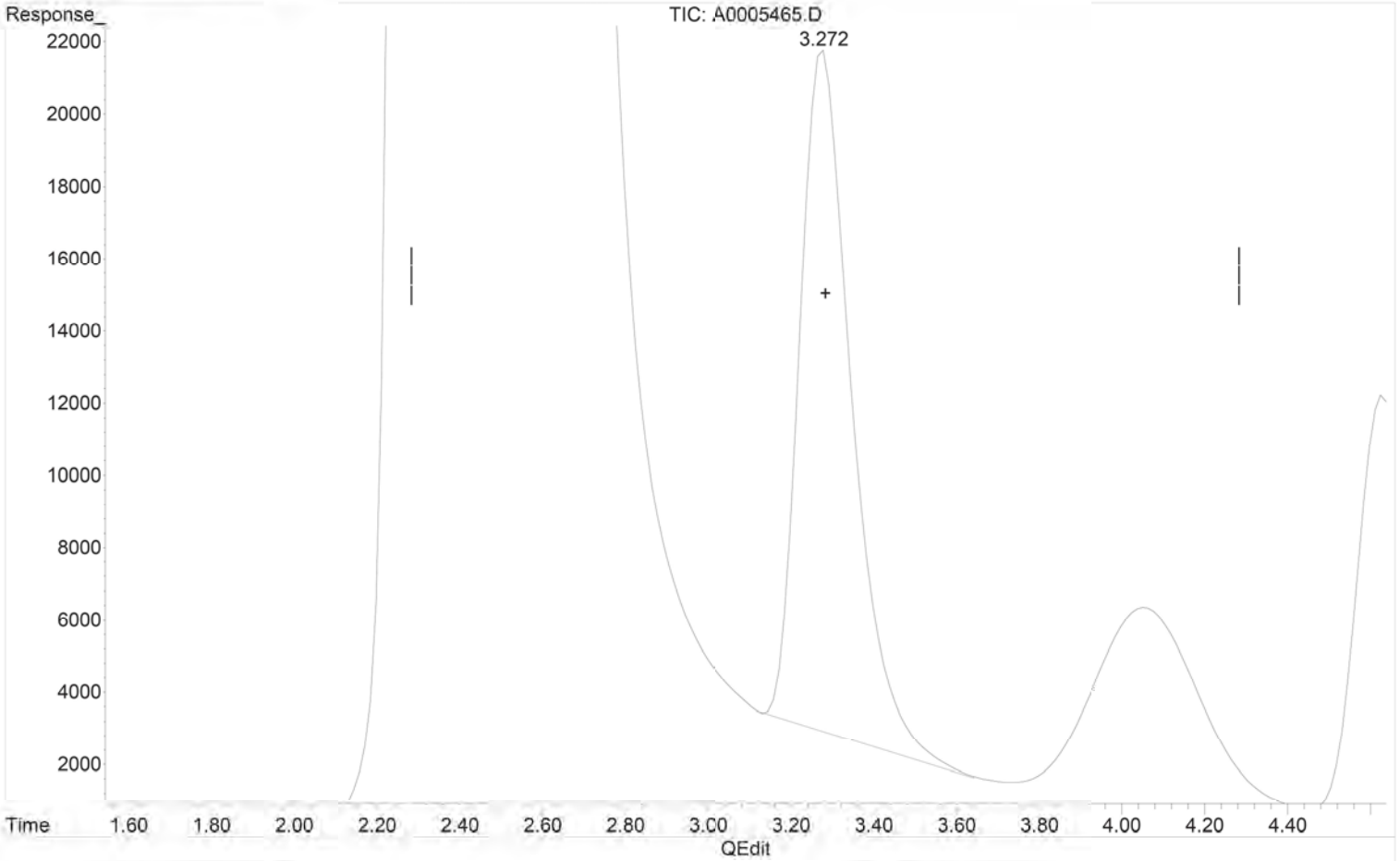


Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005465.D
Signal(s) : dad1C.ch
Acq On : 29-Dec-2000, 23:47:48
Operator : A.Felser
Sample : R2005464-001MS
Misc :
ALS Vial : 16 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

3.272min 17.714 ppm m

response 1651539

Manual Integration!

After

Poor integration.

07/02/20

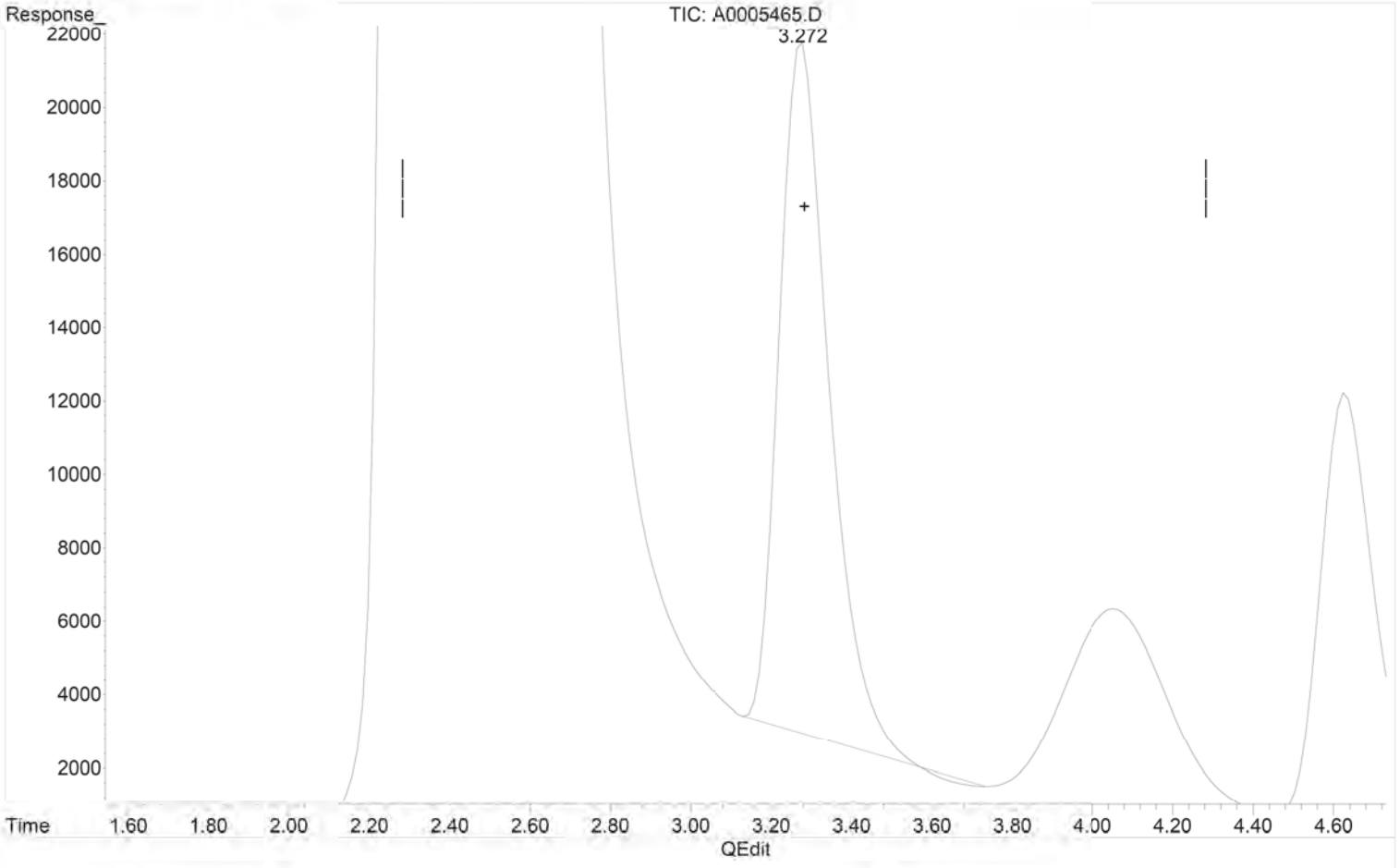
(+) = Expected Retention Time

Quantitation Report (Qedit) 1st

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005465.D
Signal(s) : dad1C.ch
Acq On : 29-Dec-2000, 23:47:48
Operator : A.Felser
Sample : R2005464-001MS
Misc :
ALS Vial : 16 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

3.280min 17.465 ppm

response 1628331

Manual Integration:

Before

07/02/20

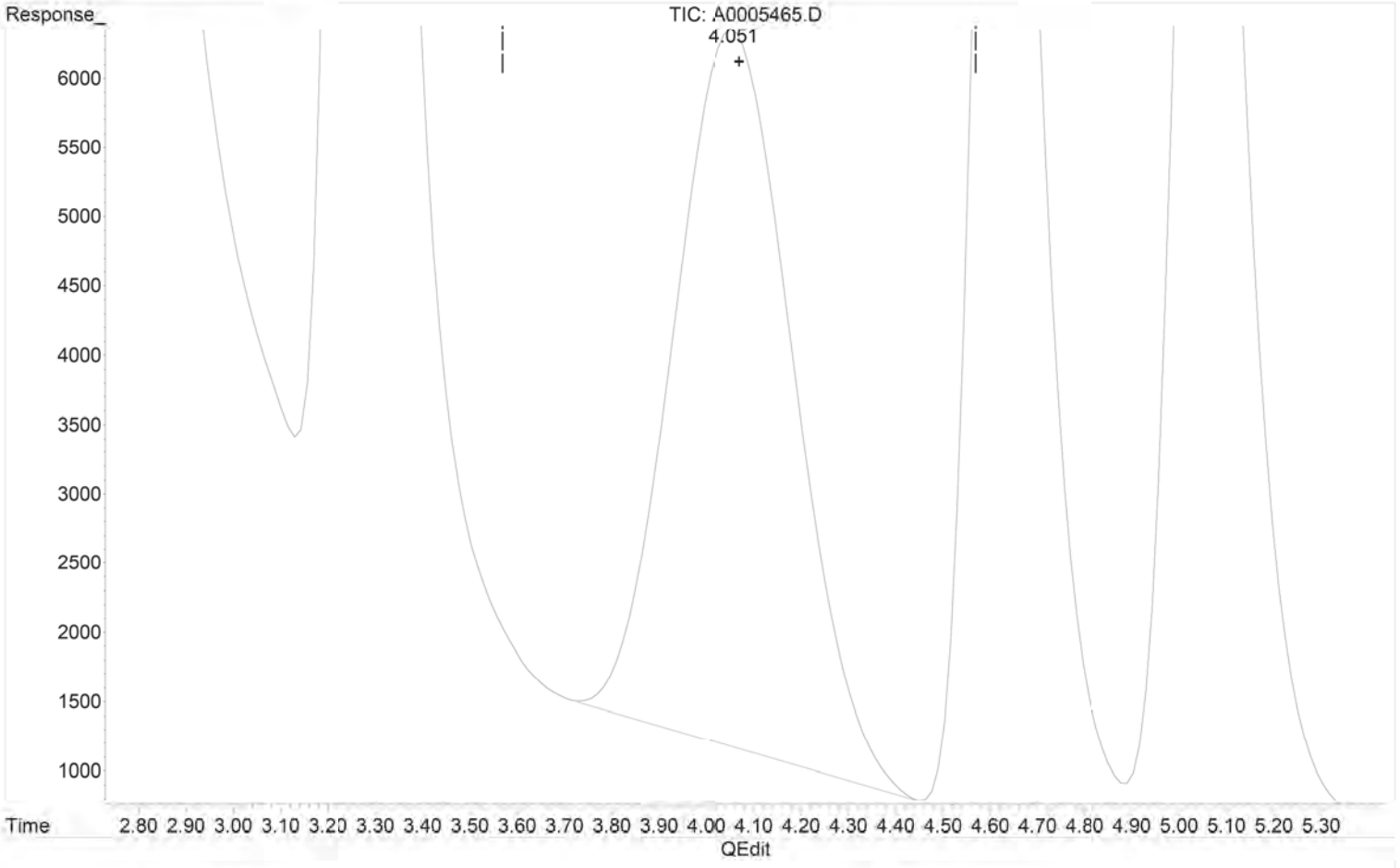
(+) = Expected Retention Time

Quantitation Report (Qedit) 1st

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005465.D
Signal(s) : dad1C.ch
Acq On : 29-Dec-2000, 23:47:48
Operator : A.Felser
Sample : R2005464-001MS
Misc :
ALS Vial : 16 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

4.051min 1.519 ppm m

response 898843

Manual Integration:

After

Poor integration.

07/02/20

(+) = Expected Retention Time

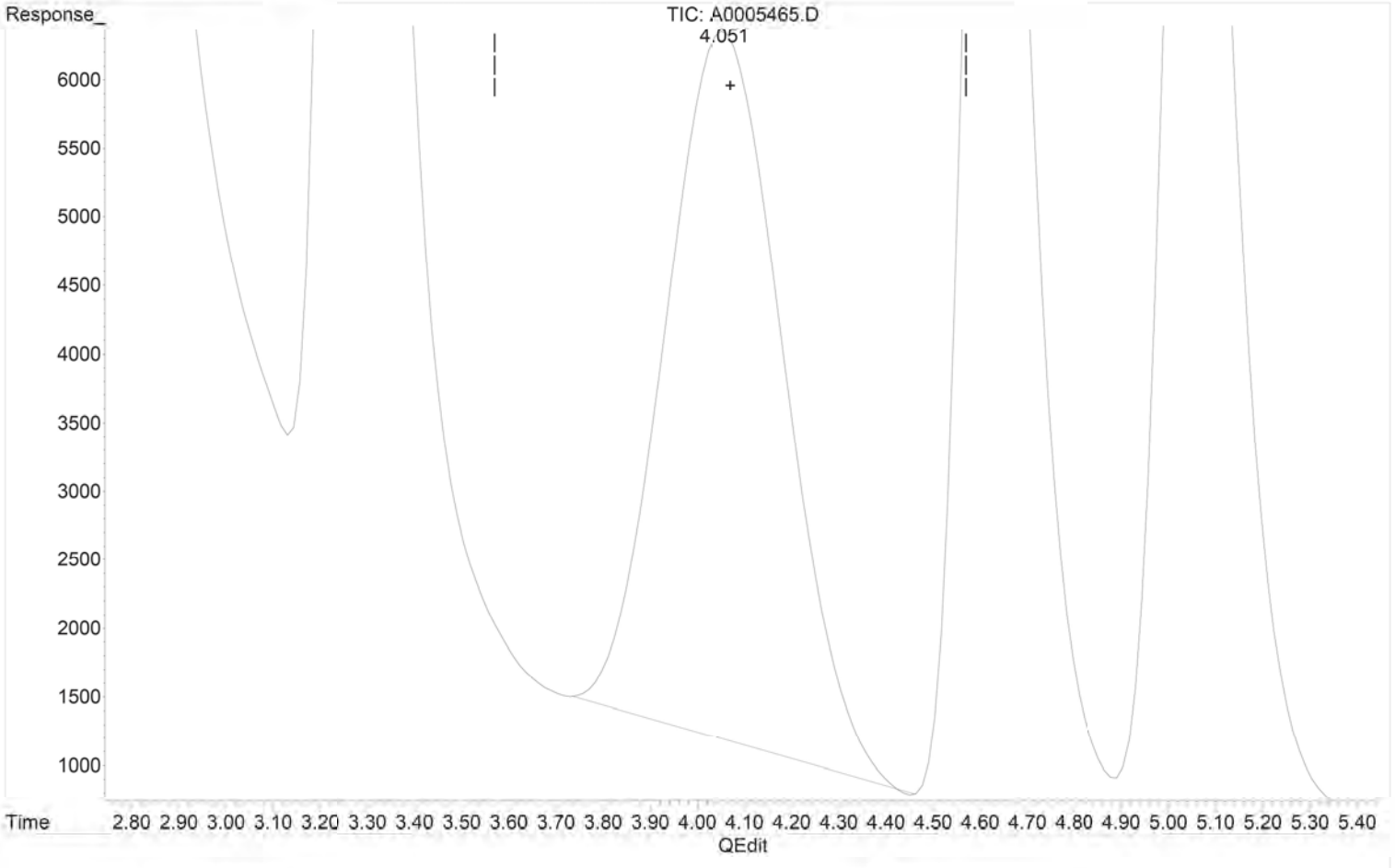
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005465.D
Signal(s) : dad1C.ch
Acq On : 29-Dec-2000, 23:47:48
Operator : A.Felser
Sample : R2005464-001MS
Misc :
ALS Vial : 16 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

4.057min 1.510 ppm

response 893225

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005465.D
Signal(s) : dad1C.ch
Acq On : ~~29-Dec-2000, 23:47:48~~ 02-Jul-2020, 07:44
Operator : A.Felser
Sample : R2005464-001MS
Misc :
ALS Vial : 16 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.272	1651539	17.714	ppm	m
2) T	Pyruvic acid	4.051	898843	1.519	ppm	m
3) T	Lactic Acid	4.633	1073735	19.032	ppm	
4) T	Acetic Acid	5.062	1111098	19.824	ppm	
5) T	Propionic Acid	12.298	1116418	20.538	ppm	
6) T	Butyric Acid	37.433	1058060	20.130	ppm	

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

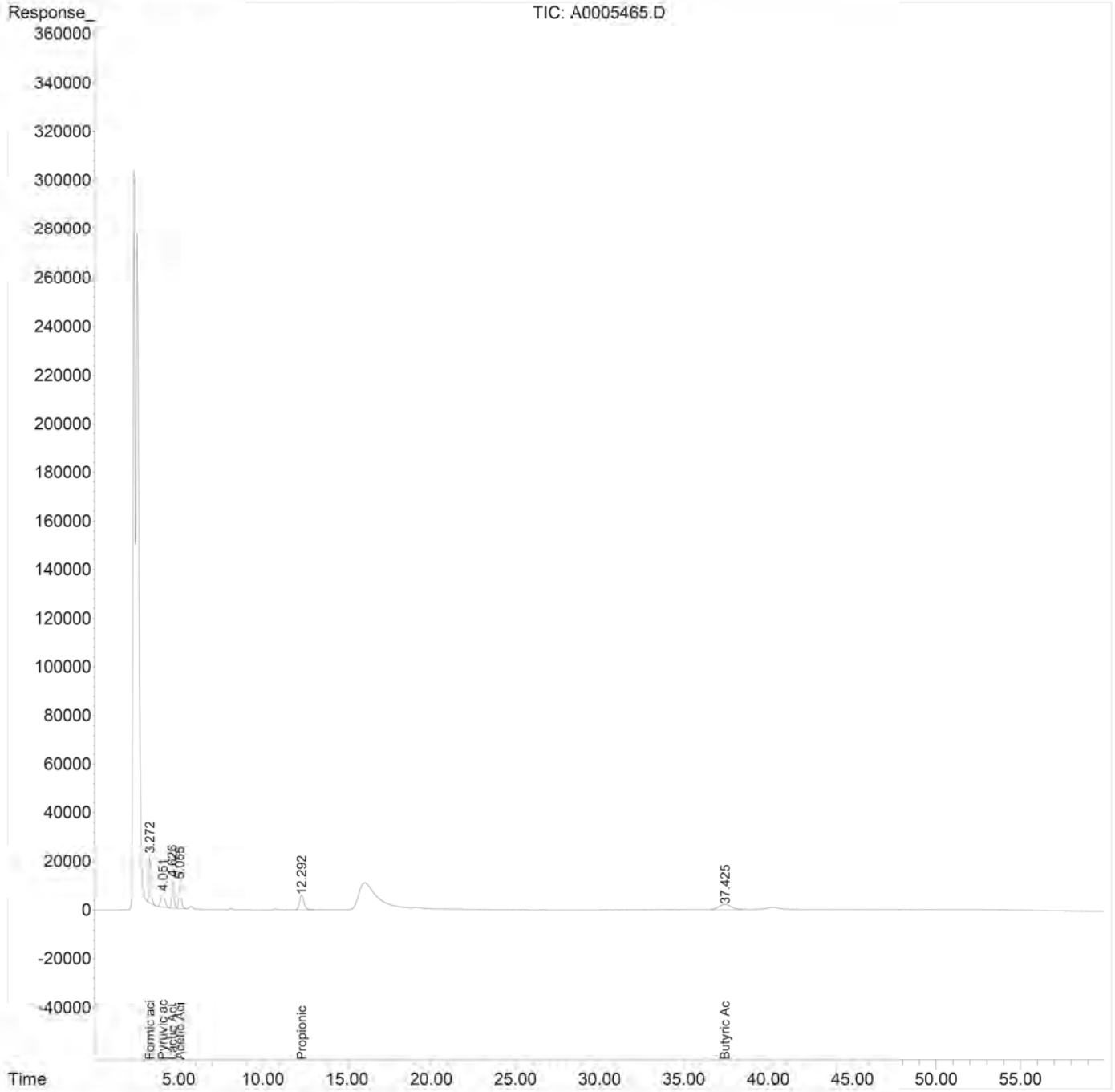
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005465.D
Signal(s) : dad1C.ch
Acq On : 29-Dec-2000, 23:47:48
Operator : A.Felser
Sample : R2005464-001MS
Misc :
ALS Vial : 16 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



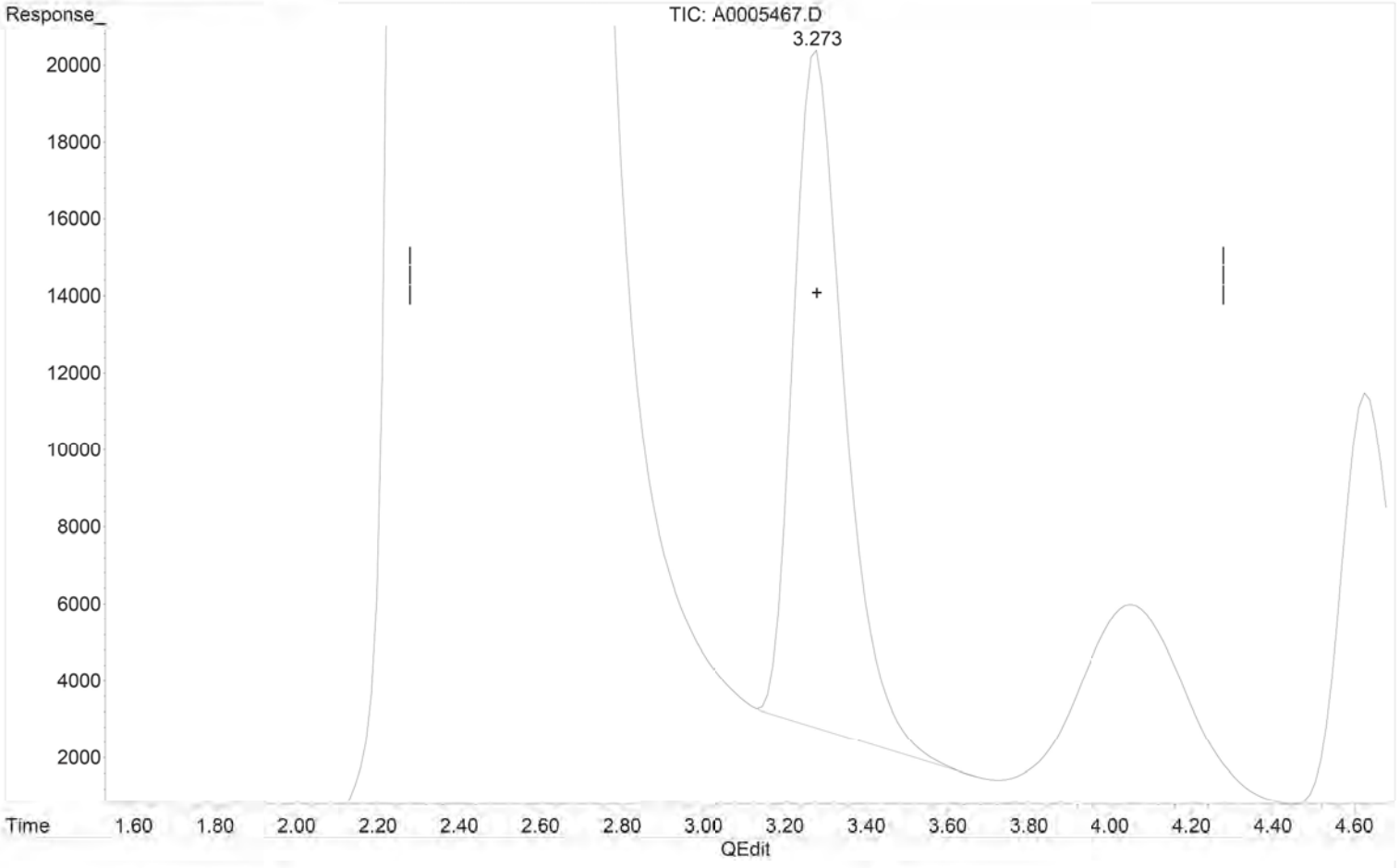
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

3.273min 16.526 ppm m

response 1540796

Manual Integration!

After

Poor integration.

07/02/20

(+) = Expected Retention Time

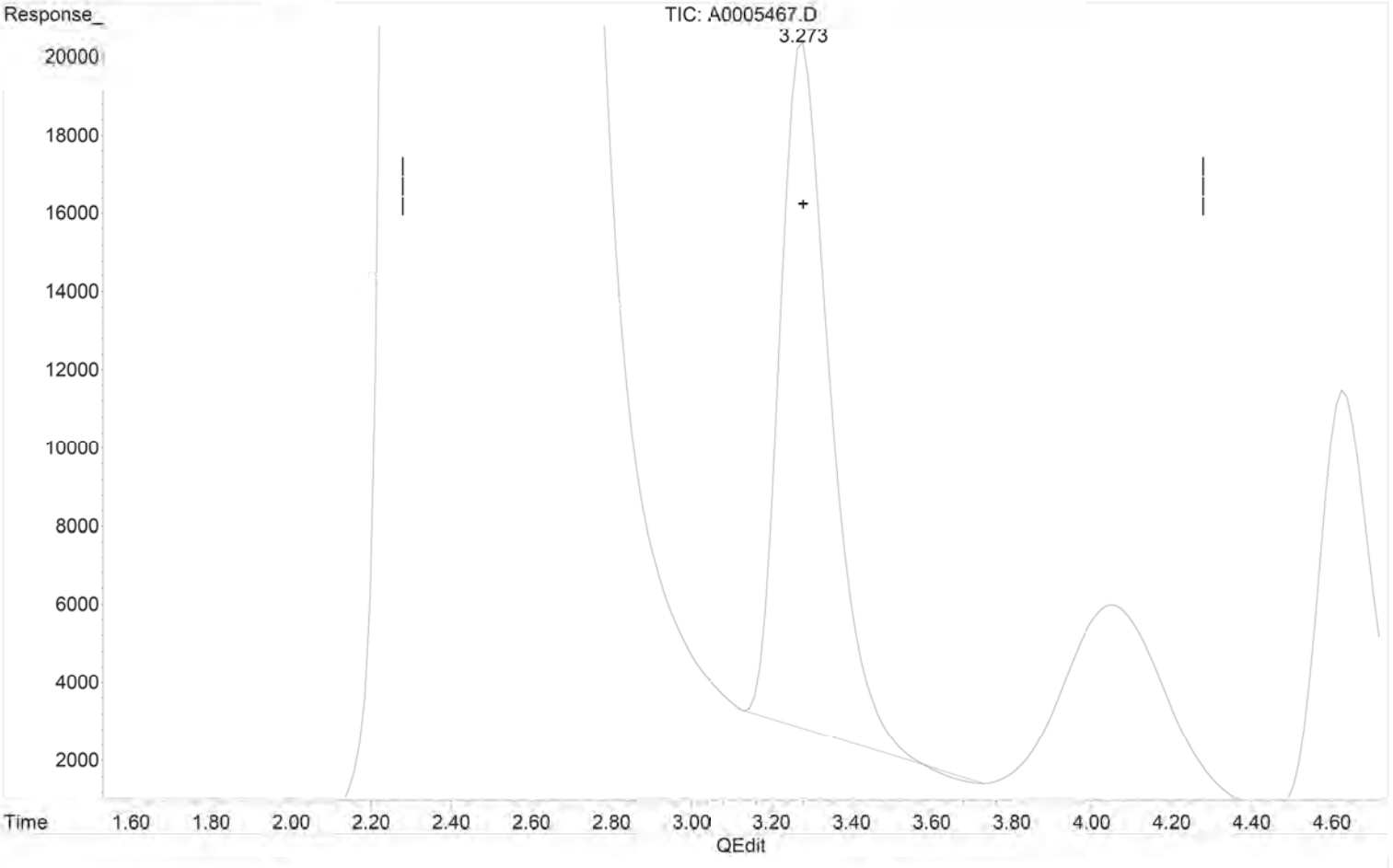
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

3.280min 16.370 ppm

response 1526176

Manual Integration

Before

07/02/20

(+) = Expected Retention Time

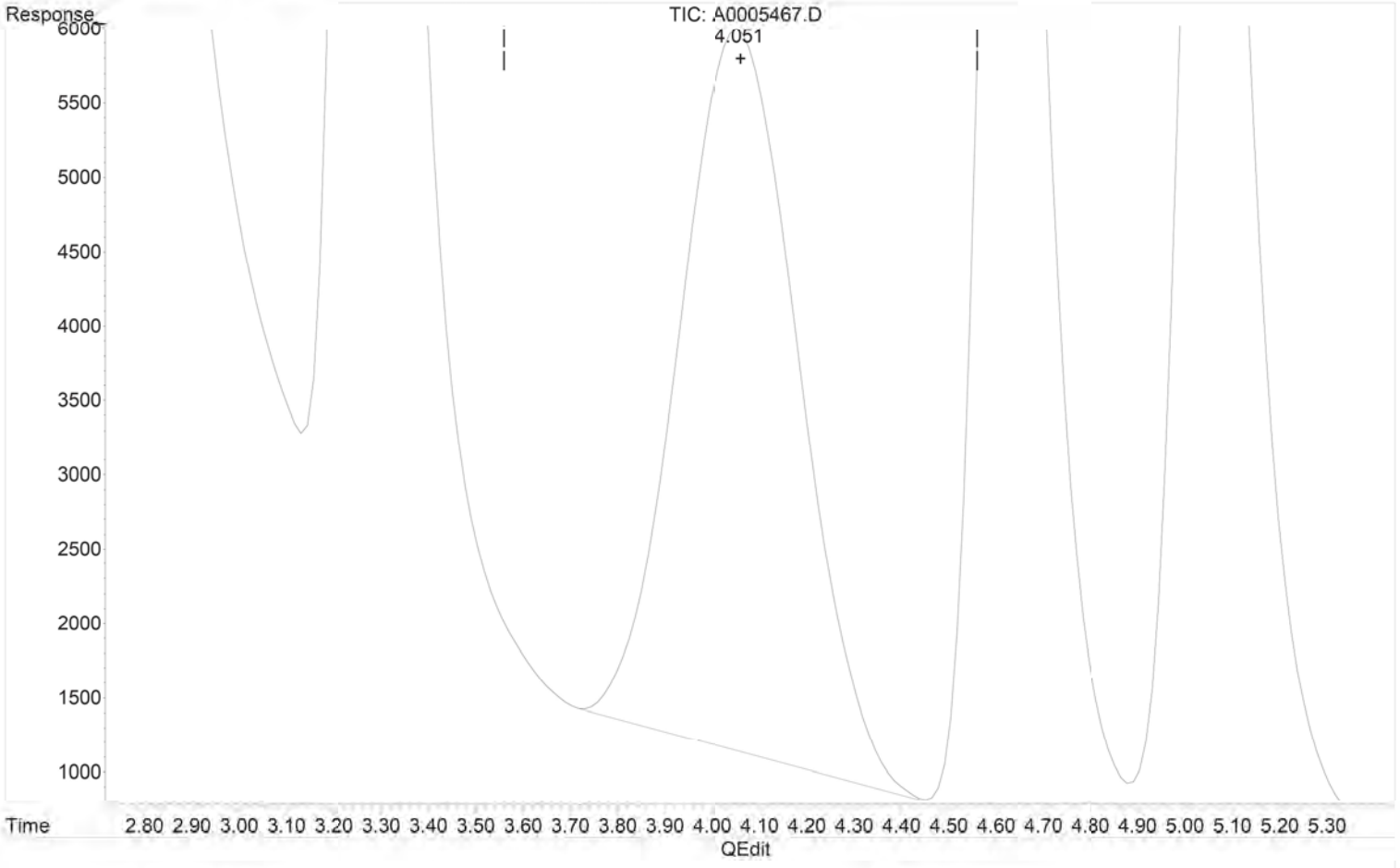
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

4.051min 1.433 ppm m

response 847838

Manual Integration:

After

Poor integration.

07/02/20

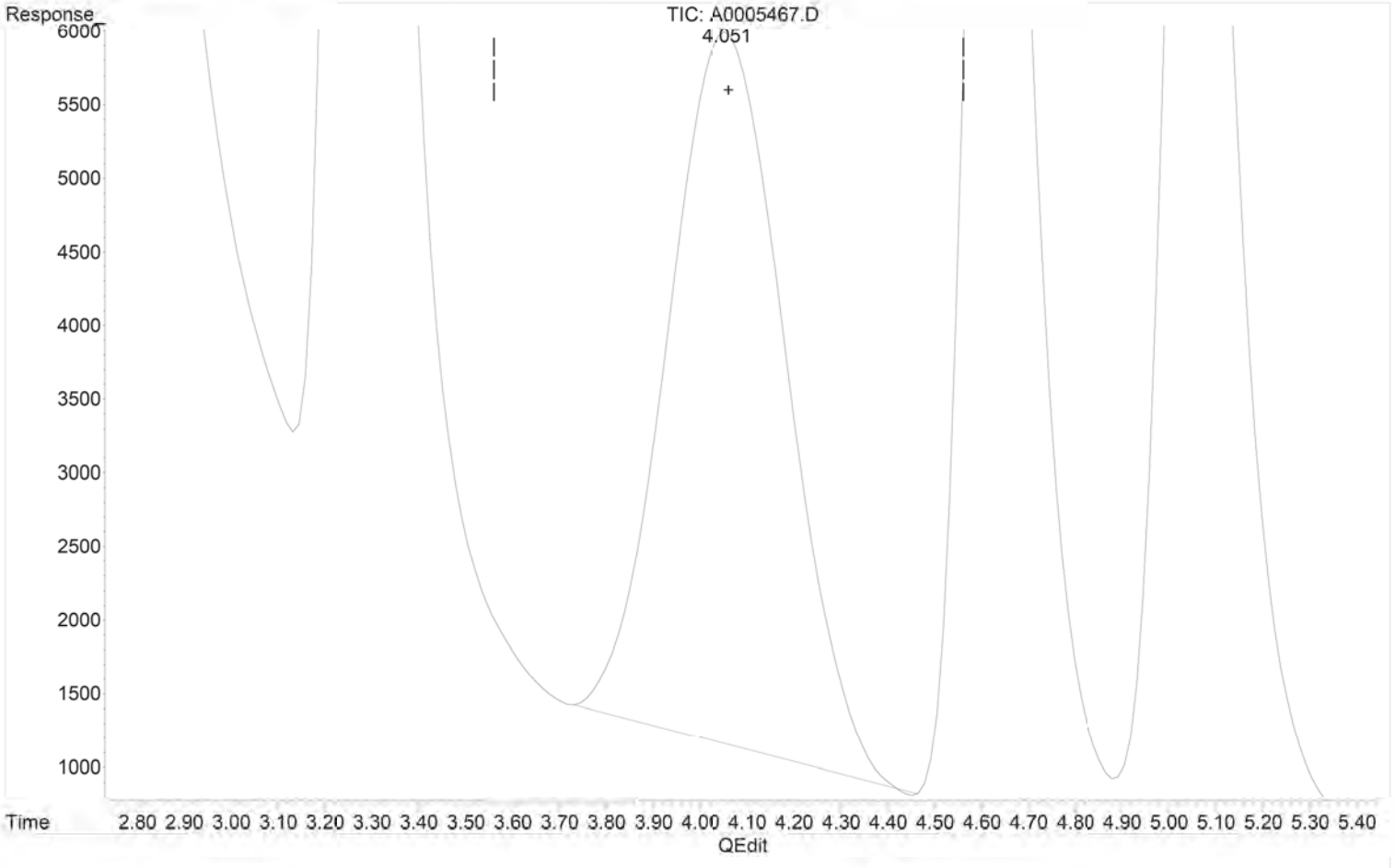
(+) = Expected Retention Time

Quantitation Report (Qedit) 1st

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

4.056min 1.422 ppm

response 840986

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

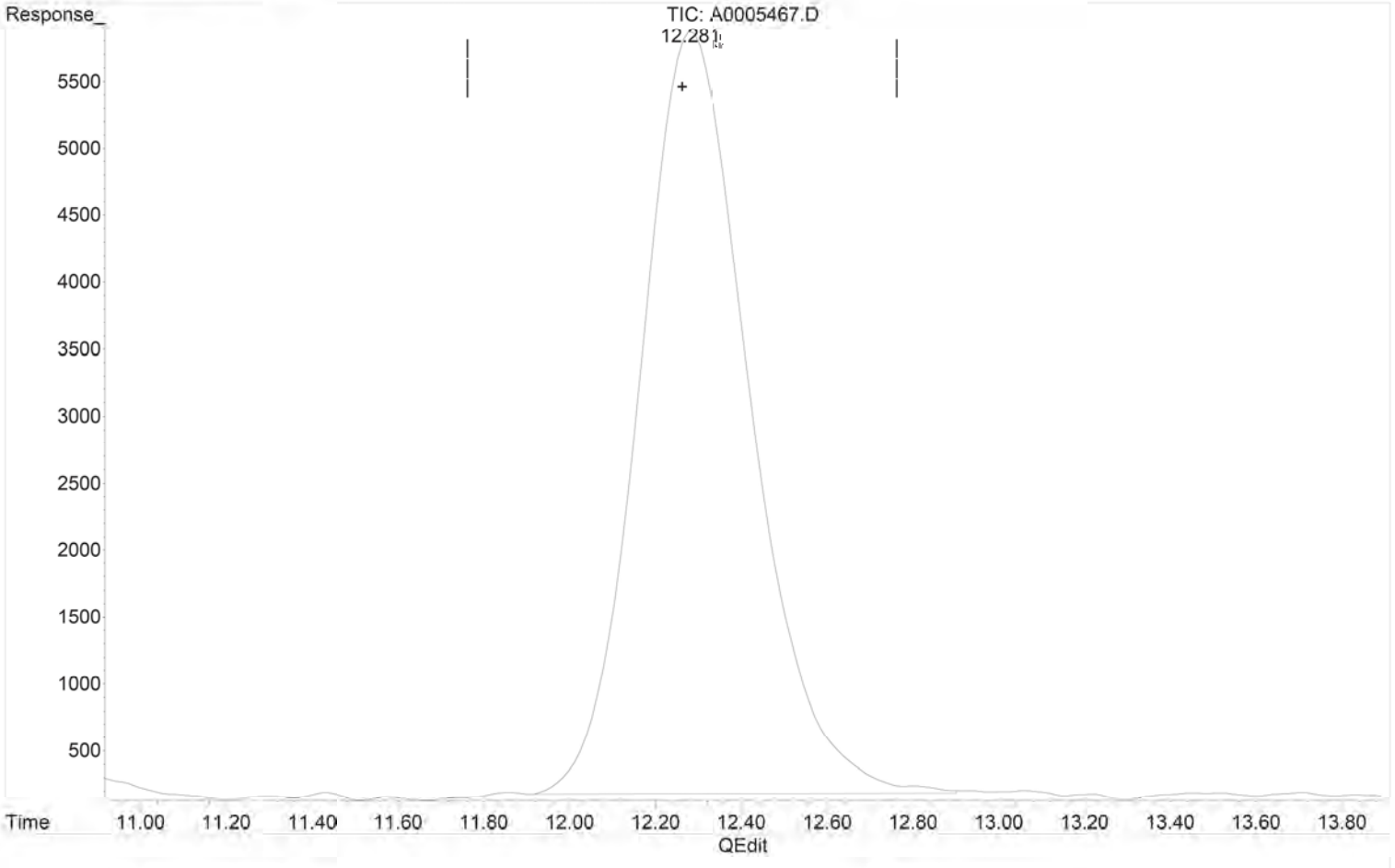
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

12.281min 18.610 ppm m

response 1011590

Manual Integration:

After

Poor integration.

07/02/20

(+) = Expected Retention Time

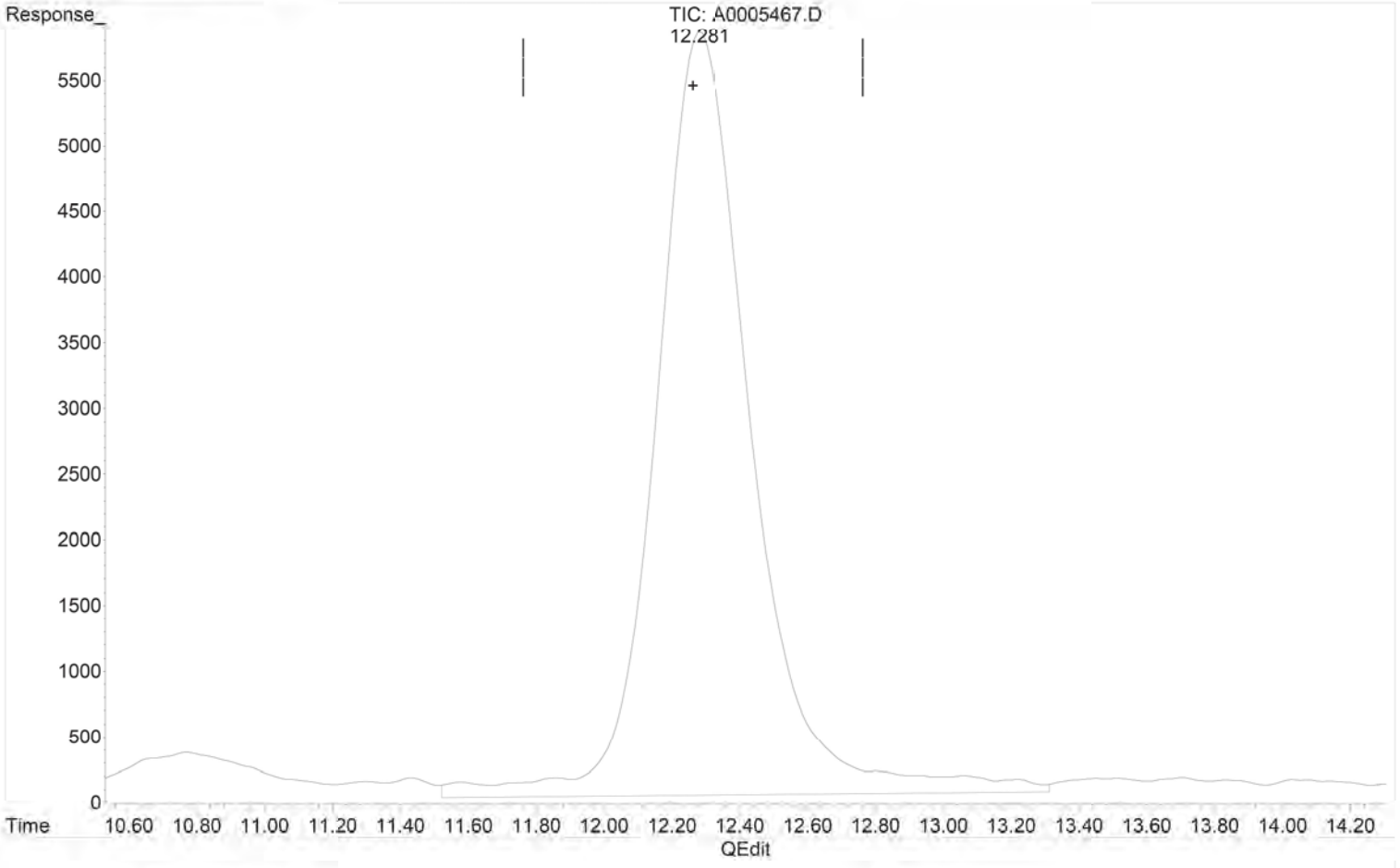
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

12.287min 20.889 ppm

response 1135459

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

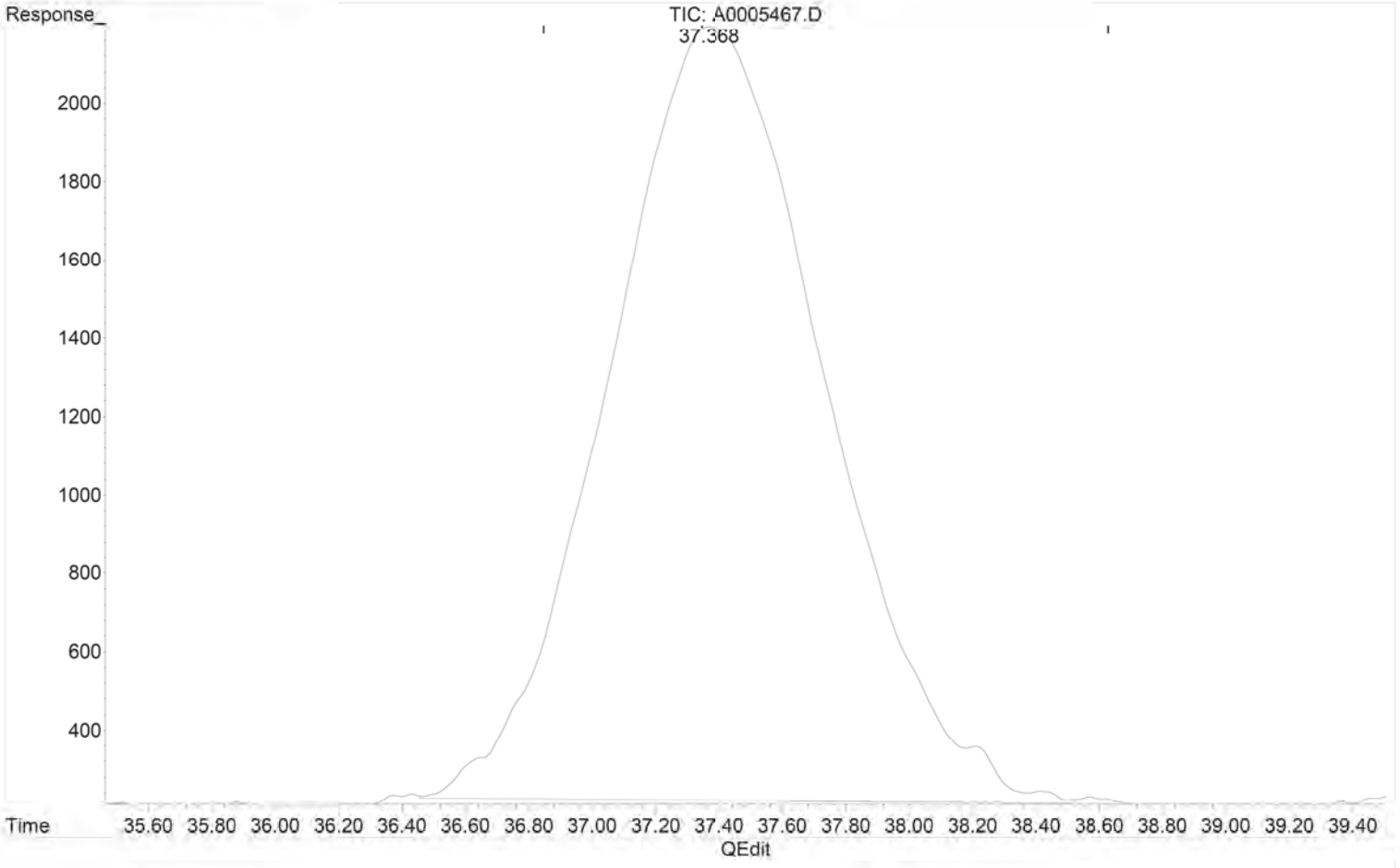
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.368min 17.788 ppm m

response 934955

Manual Integration:

After

Poor integration.

07/02/20

(+) = Expected Retention Time

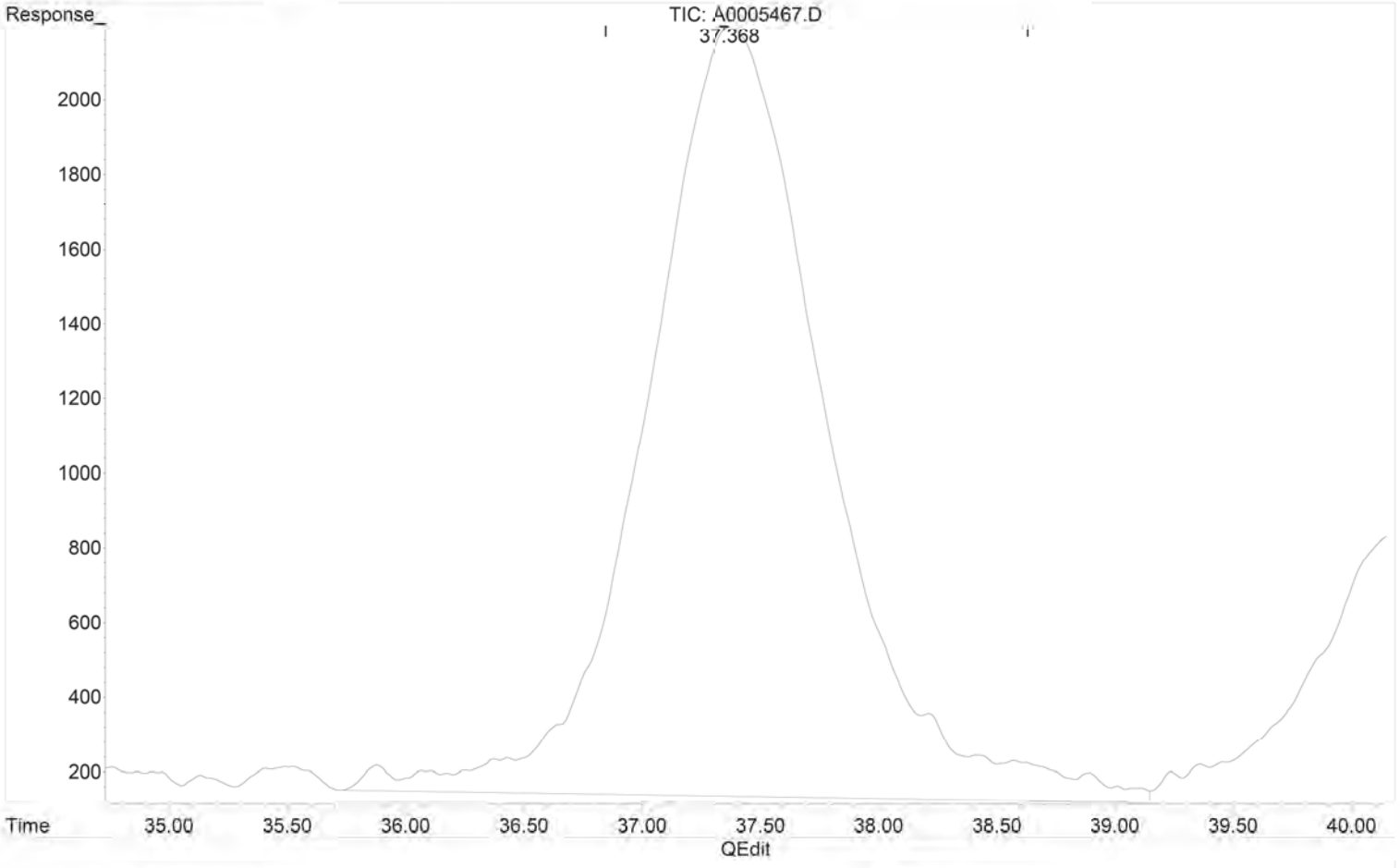
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.380min 20.725 ppm

response 1089360

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : ~~30-Dec-2000, 16:48:42~~ 02-Jul-2020, 09:50
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.273	1540796	16.526	ppm	m
2) T	Pyruvic acid	4.051	847838	1.433	ppm	m
3) T	Lactic Acid	4.633	1001154	17.746	ppm	
4) T	Acetic Acid	5.062	1029809	18.374	ppm	
5) T	Propionic Acid	12.281	1011590	18.610	ppm	m
6) T	Butyric Acid	37.368	934955	17.788	ppm	m

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

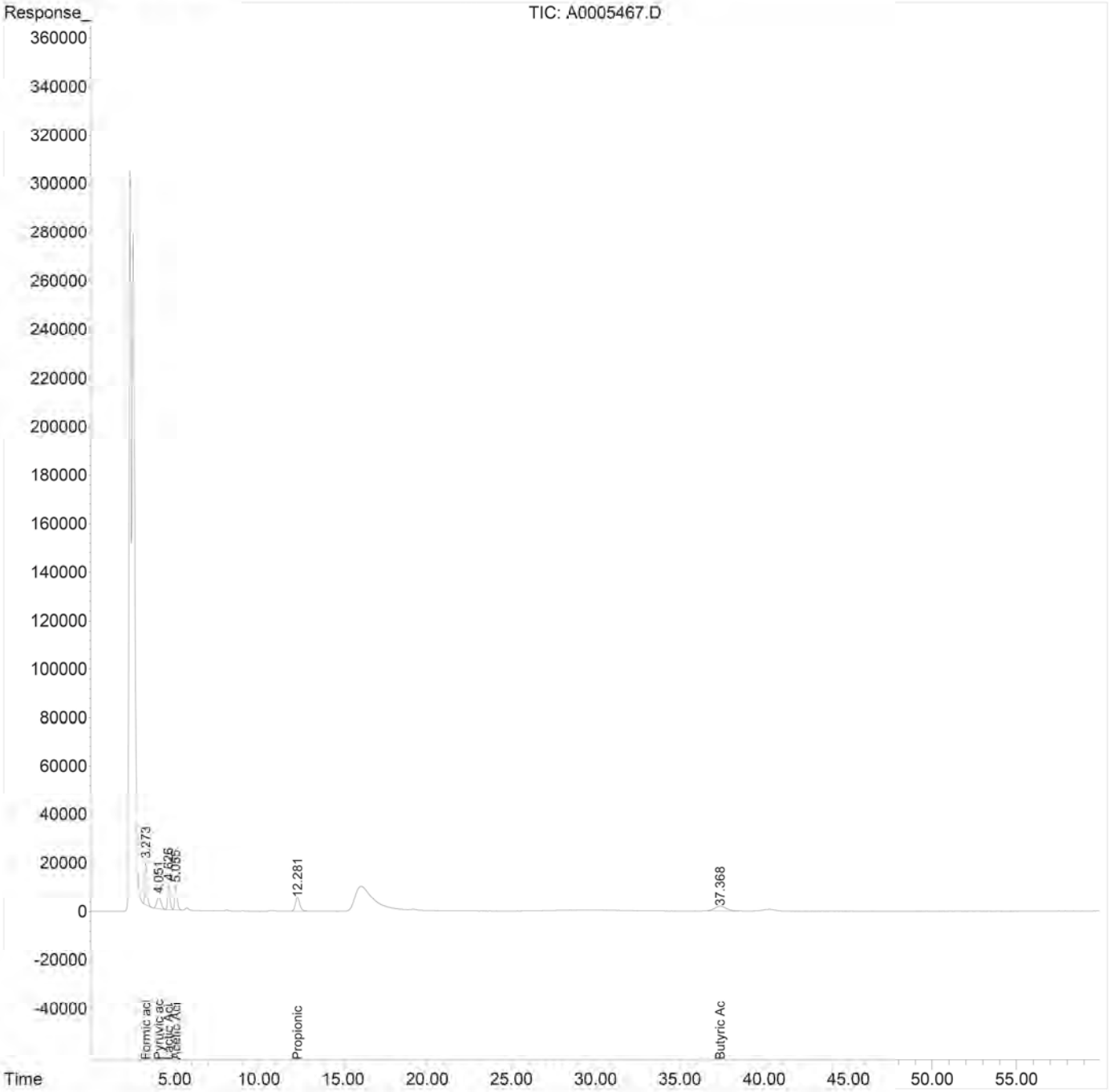
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 16:48:42
Operator : A.Felser
Sample : R2005464-001DMS
Misc :
ALS Vial : 17 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:38:59 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



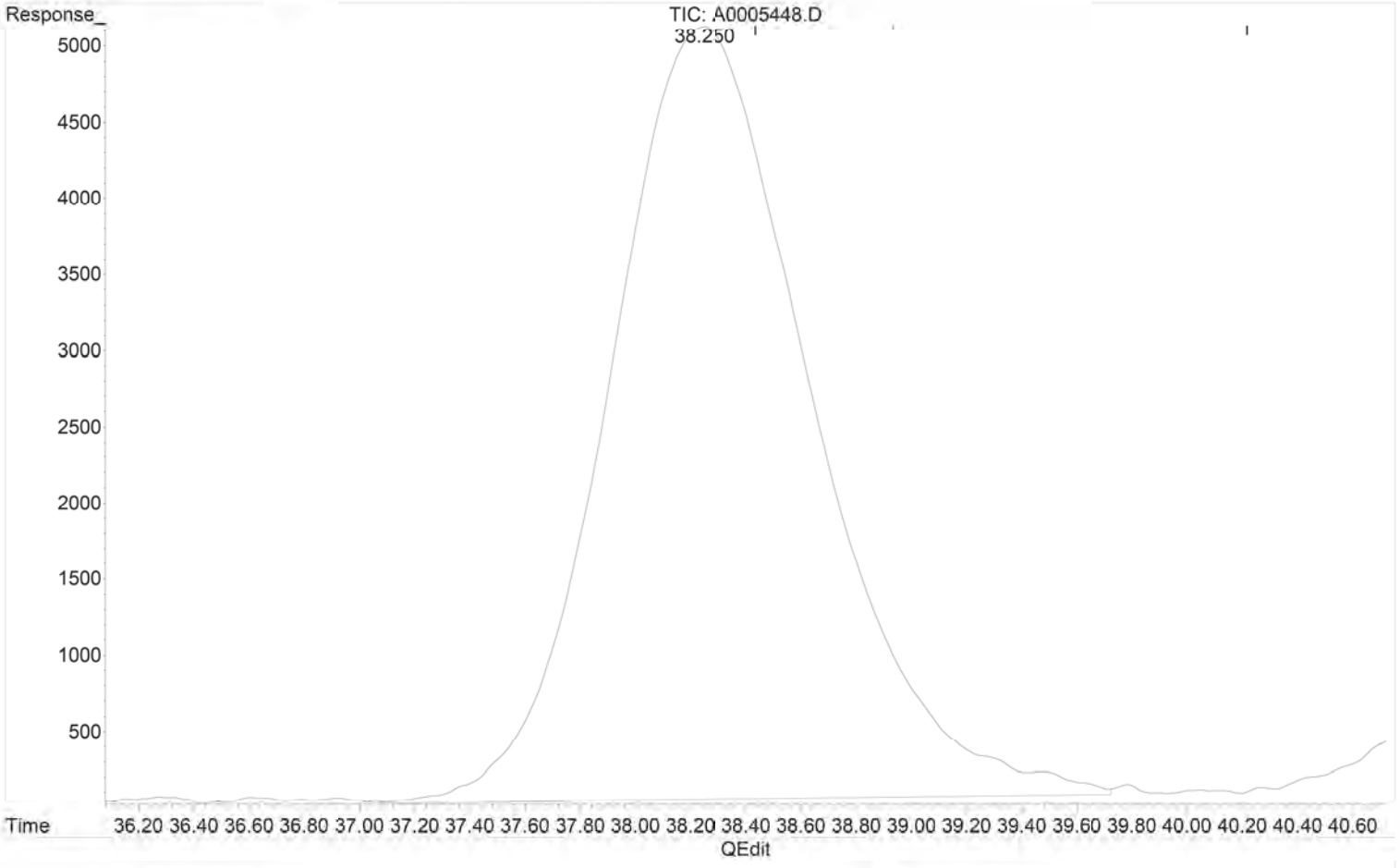
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005448.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 13:56:19
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:02:43 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Wed Jul 01 11:45:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

38.250min 48.980 ppm m

response 2574498

Manual Integration!

After

Peak not found.

07/02/20

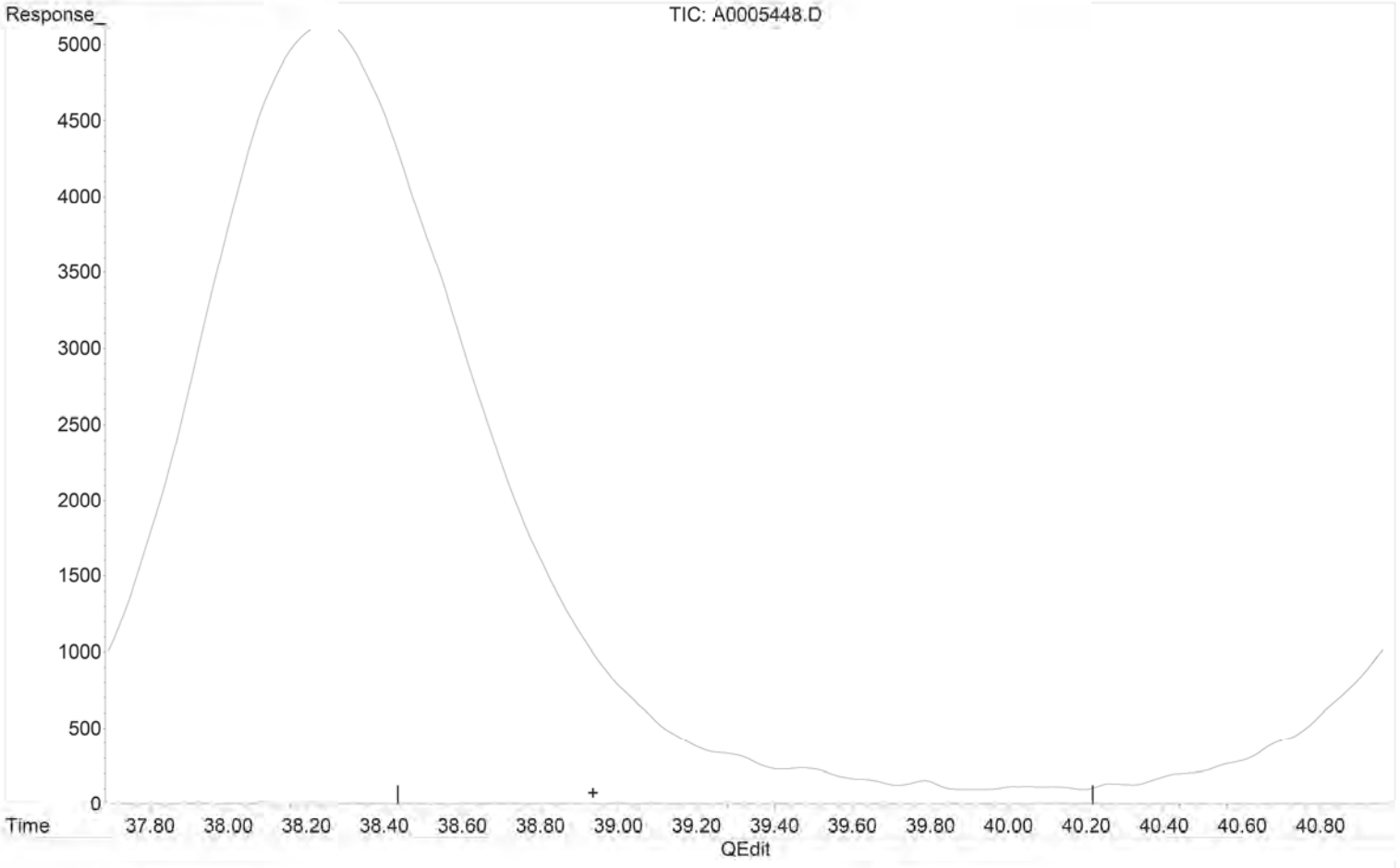
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005448.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 13:56:19
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:02:43 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Wed Jul 01 11:45:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

38.935min 0.000 ppm

response 0

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

1st AF 07/06/20
2nd BA 07/06/20

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005448.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 13:56:19
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:02:43 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Wed Jul 01 11:45:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.232	87.923 E3	5.7	93	0.00
2 T	Pyruvic acid	591.568	618.910 E3	-4.6	105	0.00
3 T	Lactic Acid	56.417	53.048 E3	6.0	94	0.00
4 T	Acetic Acid	56.048	55.724 E3	0.6	99	0.00
5 T	Propionic Acid	54.357	53.918 E3	0.8	96	0.00
6 T	Butyric Acid	52.562	51.490 E3	2.0	97	0.00

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005448.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 13:56:19
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:02:43 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Wed Jul 01 11:45:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.289	4396140	47.153	ppm	
2) T	Pyruvic acid	4.087	3094550	5.231	ppm	
3) T	Lactic Acid	4.668	2652410	47.015	ppm	
4) T	Acetic Acid	5.103	2786198	49.711	ppm	
5) T	Propionic Acid	12.491	2695880	49.595	ppm	
6) T	Butyric Acid	38.250f	2574498	48.980	ppm	m

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

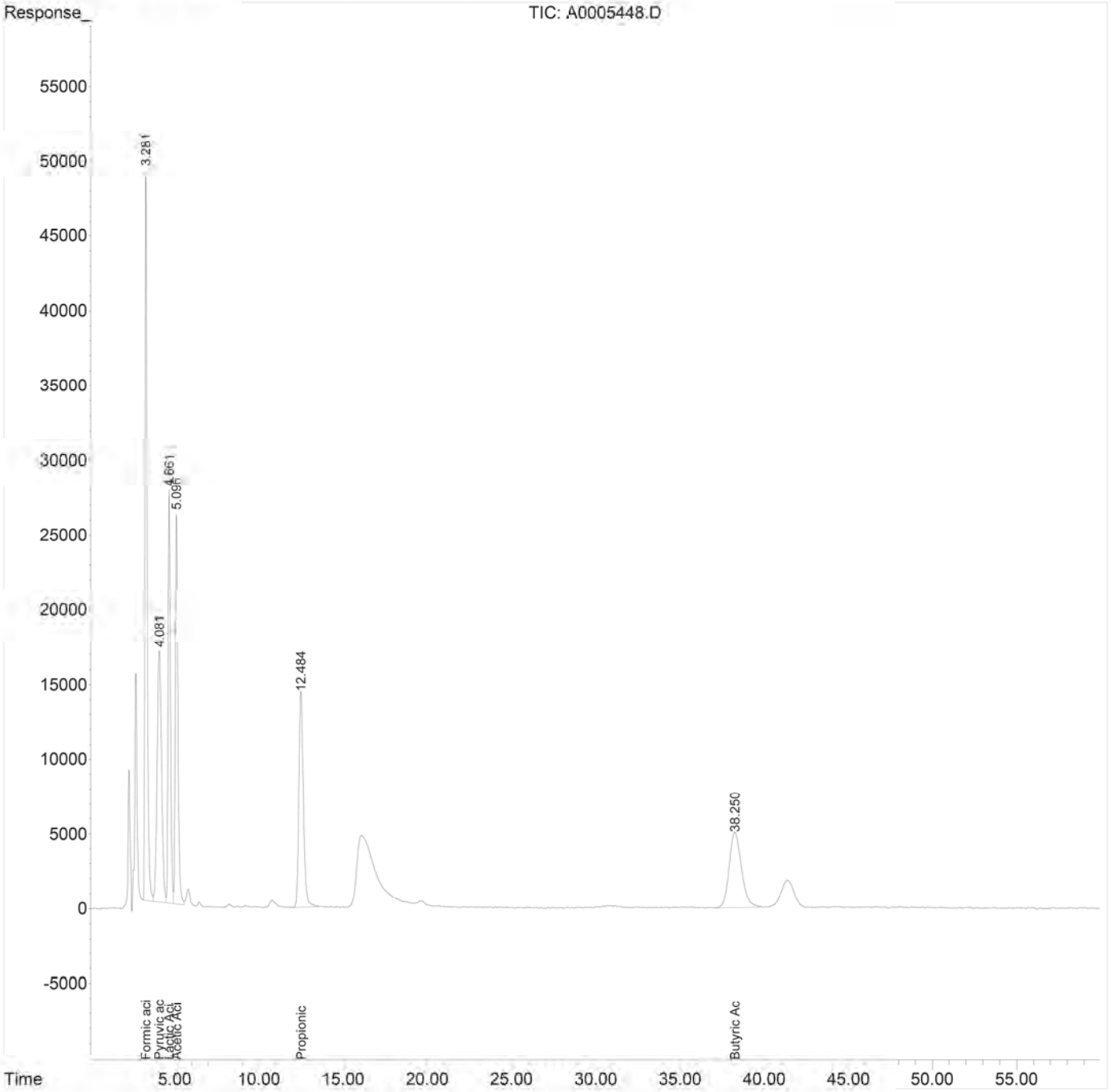
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005448.D
Signal(s) : dad1C.ch
Acq On : 01-Jul-2020, 13:56:19
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:02:43 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Wed Jul 01 11:45:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



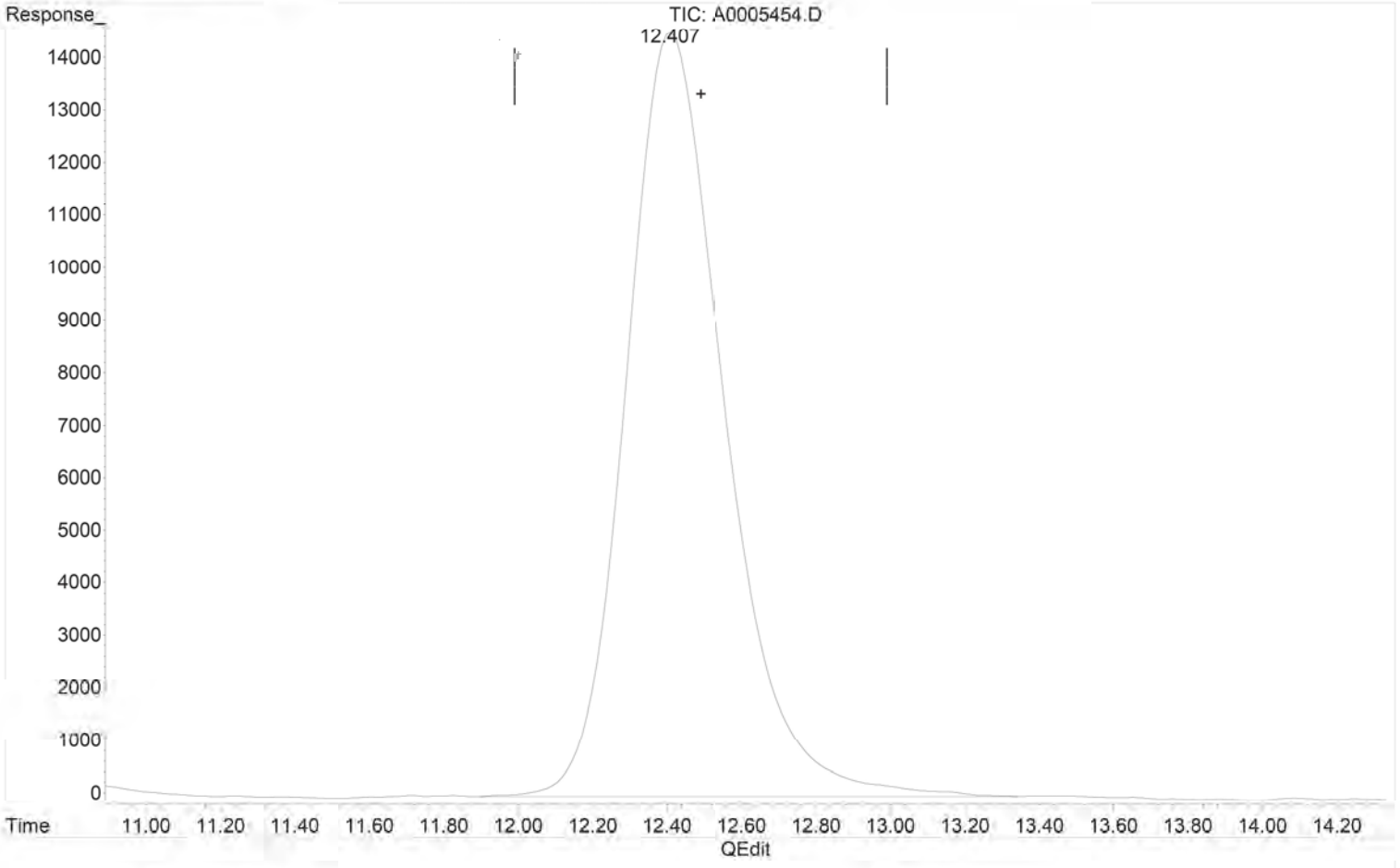
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005454.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:48:28
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:39 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

12.407min 49.189 ppm m

response 2673803

Manual Integration:

After

Poor integration.

07/02/20

(+) = Expected Retention Time

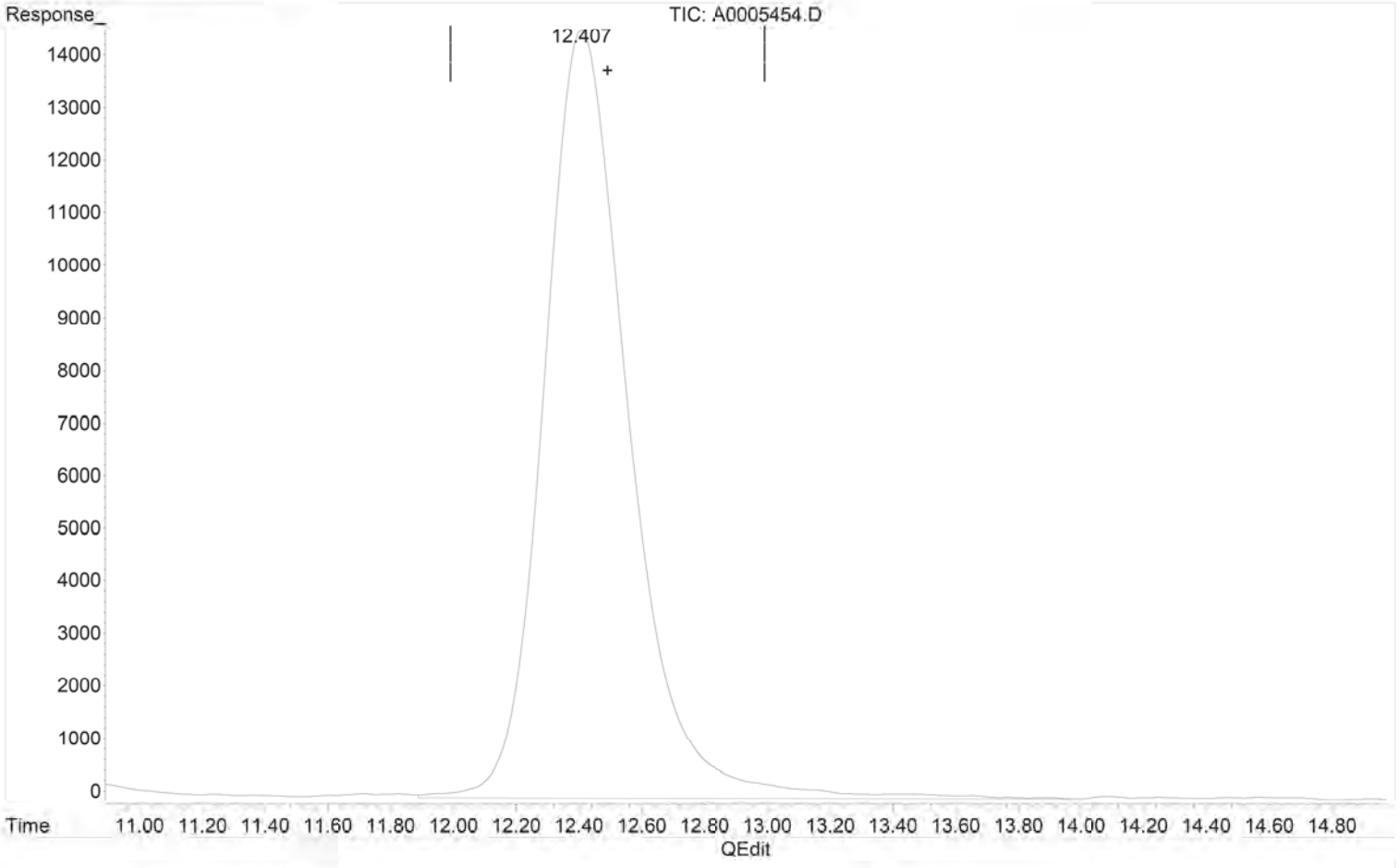
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005454.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:48:28
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:39 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

12.413min 50.550 ppm

response 2747773

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

1st AF 07/06/20
2nd BA 07/06/20

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005454.D
Signal(s) : dad1C.ch
Acq On : ~~31-Dec-2000, 02:48:28~~ 01-Jul-2020, 20:11
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:39 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.232	87.036 E3	6.6	92	0.00
2 T	Pyruvic acid	591.568	615.694 E3	-4.1	104	0.00
3 T	Lactic Acid	56.417	53.445 E3	5.3	95	-0.01
4 T	Acetic Acid	56.048	55.634 E3	0.7	98	-0.01
5 T	Propionic Acid	54.357	53.476 E3	1.6	96	-0.08
6 T	Butyric Acid	52.562	49.573 E3	5.7	93	-0.31

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005454.D
Signal(s) : dad1C.ch
Acq On : ~~31 Dec 2000, 02:48:28~~ 01-Jul-2020, 20:11
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:39 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.286	4351784	46.677	ppm	
2) T	Pyruvic acid	4.078	3078468	5.204	ppm	
3) T	Lactic Acid	4.656	2672249	47.366	ppm	
4) T	Acetic Acid	5.088	2781679	49.630	ppm	
5) T	Propionic Acid	12.407	2673803	49.189	ppm	m
6) T	Butyric Acid	37.941	2478649	47.157	ppm	

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

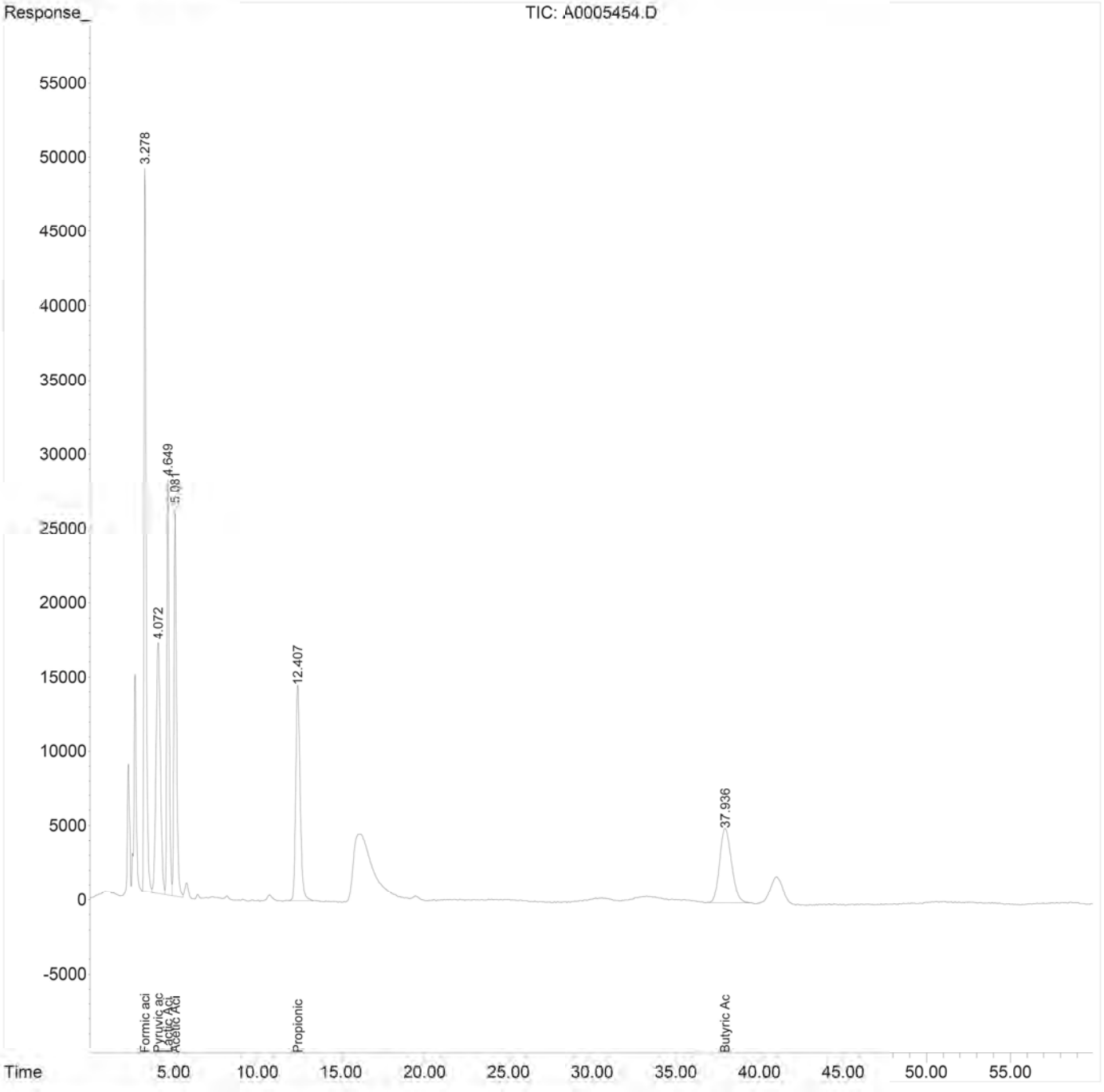
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005454.D
Signal(s) : dad1C.ch
Acq On : 31-Dec-2000, 02:48:28
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:04:39 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:03:09 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



1st AF 07/06/20
2nd BA 07/06/20

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005460.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 02:32:48
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:05:35 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:13 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.232	86.967 E3	6.7	92	0.00
2 T	Pyruvic acid	591.568	618.225 E3	-4.5	105	0.00
3 T	Lactic Acid	56.417	53.615 E3	5.0	95	-0.01
4 T	Acetic Acid	56.048	55.562 E3	0.9	98	-0.01
5 T	Propionic Acid	54.357	53.174 E3	2.2	95	-0.07
6 T	Butyric Acid	52.562	50.719 E3	3.5	95	-0.34

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005460.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 02:32:48
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:05:35 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:13 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.283	4348362	46.640 ppm
2) T	Pyruvic acid	4.070	3091124	5.225 ppm
3) T	Lactic Acid	4.644	2680731	47.517 ppm
4) T	Acetic Acid	5.074	2778090	49.566 ppm
5) T	Propionic Acid	12.337	2658692	48.911 ppm
6) T	Butyric Acid	37.600	2535956	48.247 ppm

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

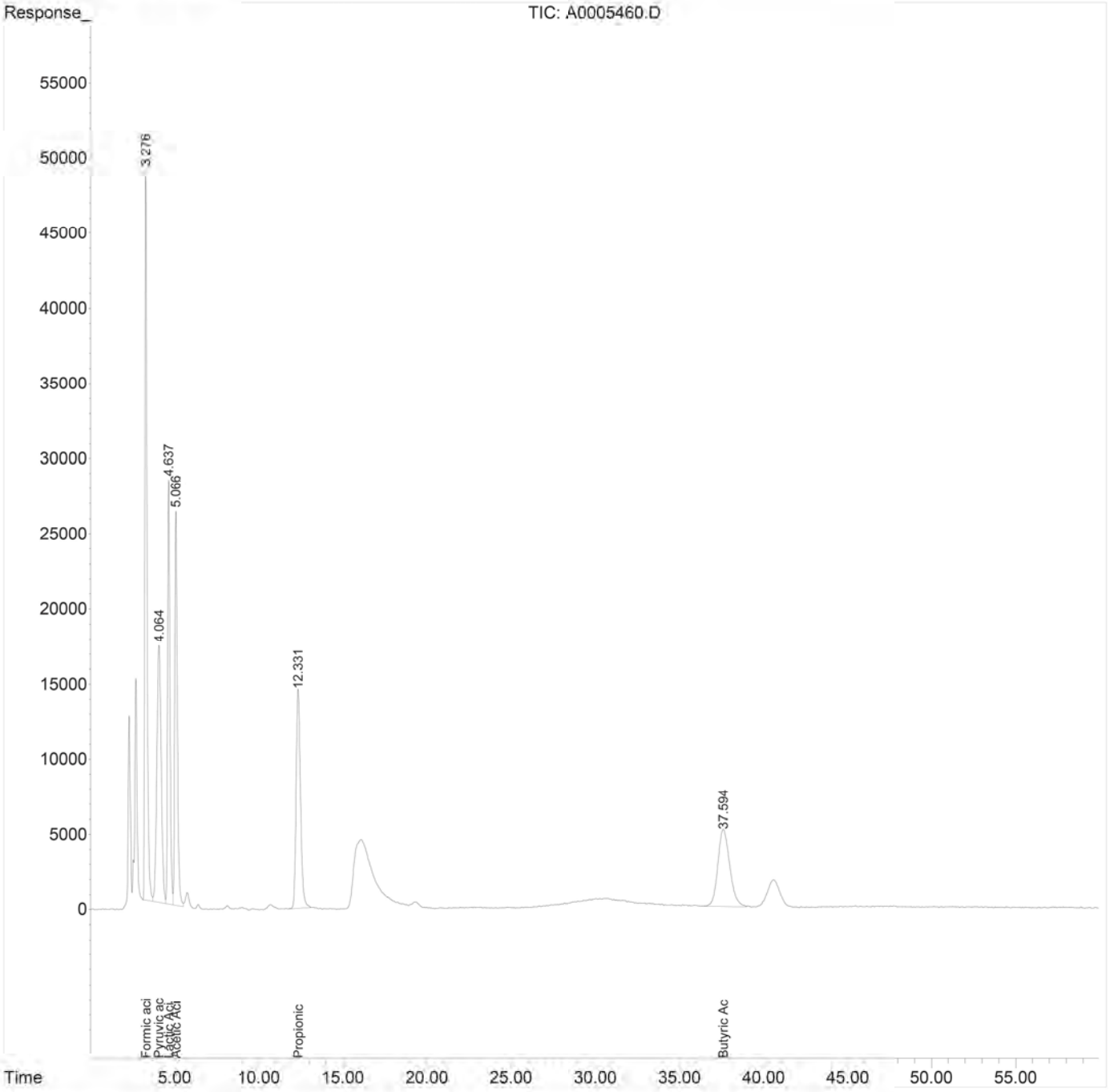
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005460.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 02:32:48
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:05:35 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:13 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



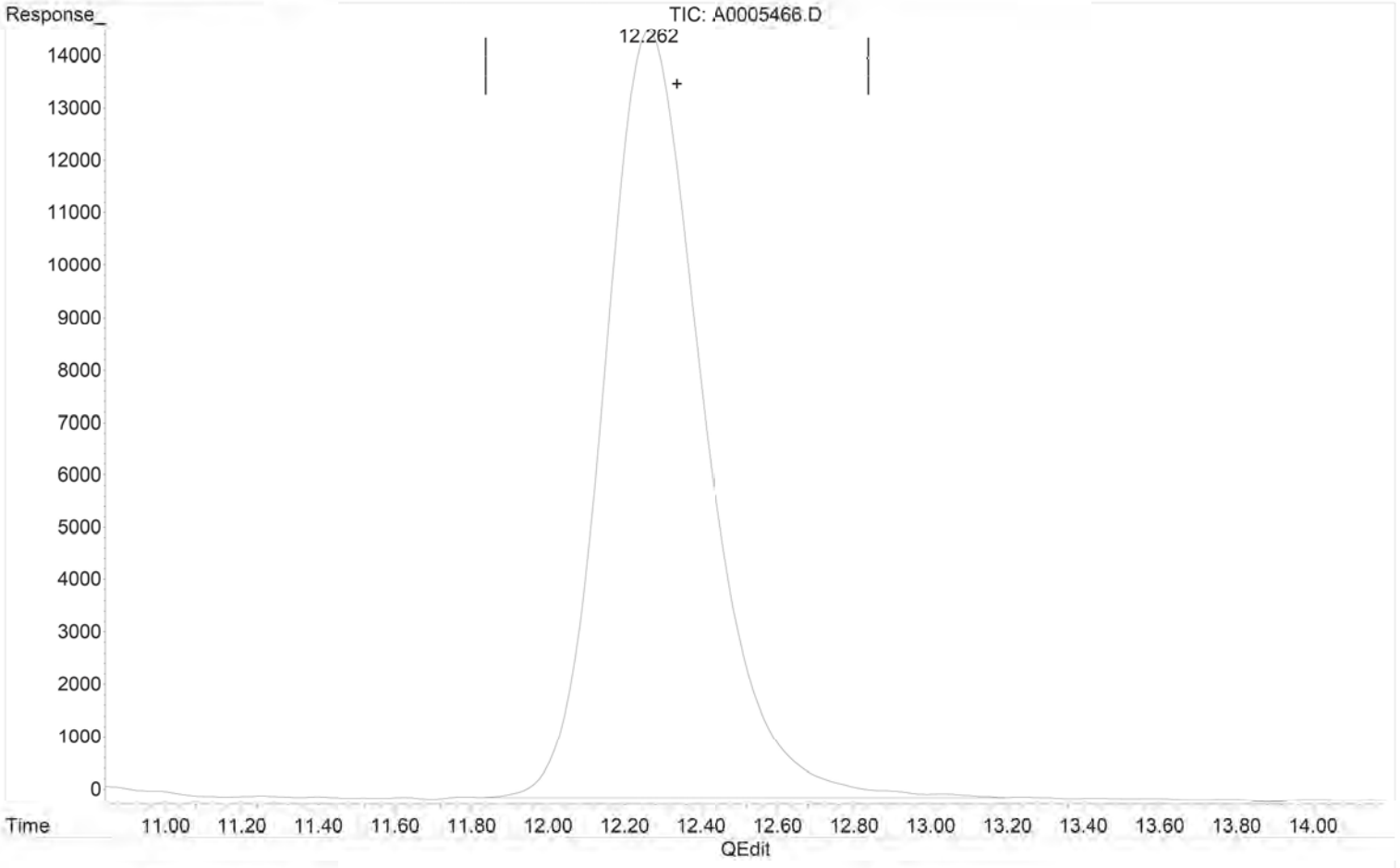
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005466.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 08:50:41
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

12.262min 48.691 ppm m

response 2646708

Manual Integration:

After

Poor integration.

07/02/20

(+) = Expected Retention Time

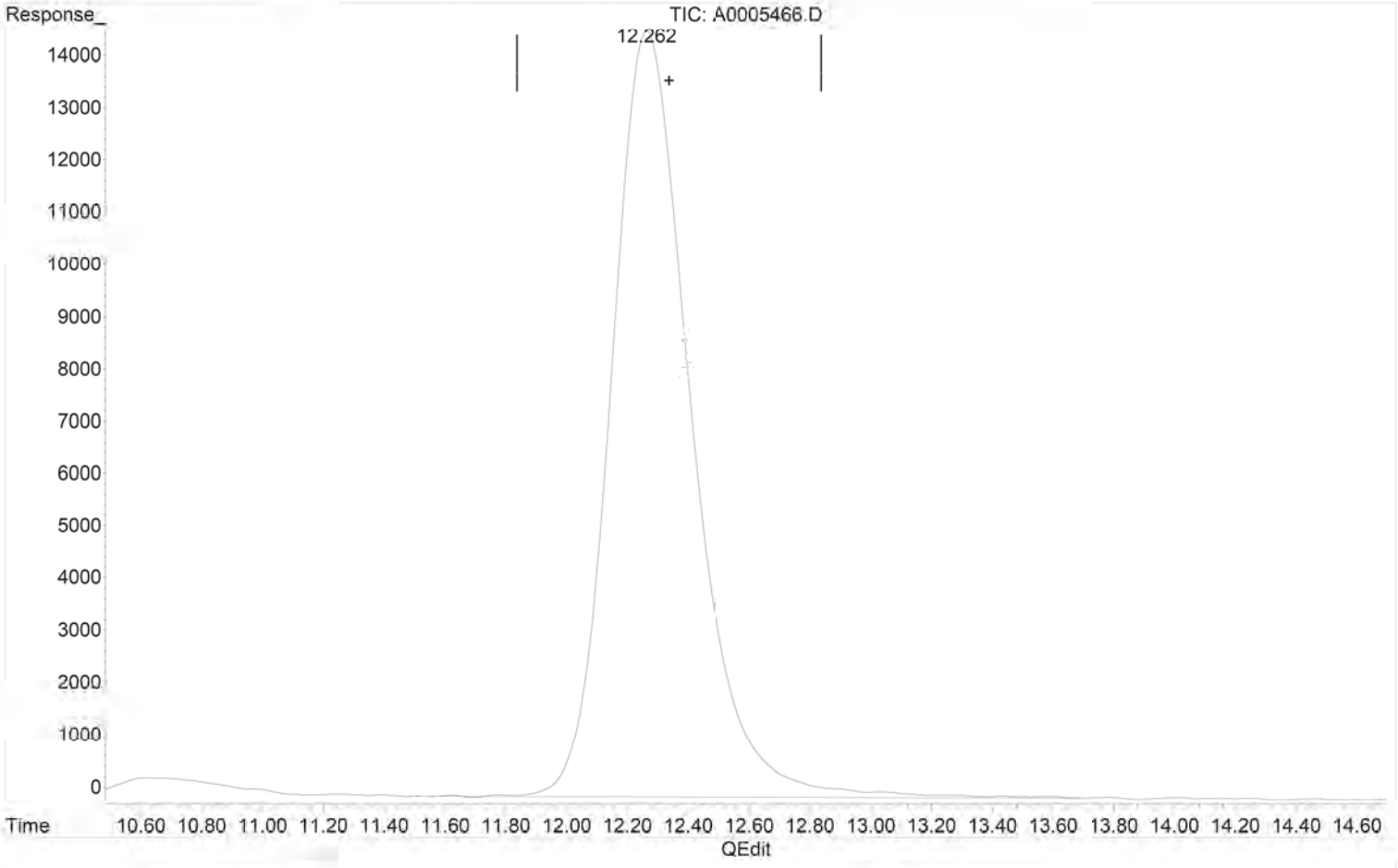
1st

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005466.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 08:50:41
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)

12.268min 49.322 ppm

response 2681012

Manual Integration:

Before

07/02/20

(+) = Expected Retention Time

1st AF 07/06/20
2nd BA 07/06/20

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005466.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 08:50:41
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.232	85.866 E3	7.9	91	0.00
2 T	Pyruvic acid	591.568	594.210 E3	-0.4	101	0.00
3 T	Lactic Acid	56.417	52.771 E3	6.5	94	-0.01
4 T	Acetic Acid	56.048	54.437 E3	2.9	96	-0.02
5 T	Propionic Acid	54.357	52.934 E3	2.6	95	-0.07
6 T	Butyric Acid	52.562	52.270 E3	0.6	98	-0.25

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005466.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 08:50:41
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	3.279	4293319	46.050	ppm	
2) T	Pyruvic acid	4.060	2971052	5.022	ppm	
3) T	Lactic Acid	4.630	2638527	46.769	ppm	
4) T	Acetic Acid	5.057	2721854	48.563	ppm	
5) T	Propionic Acid	12.262	2646708	48.691	ppm	m
6) T	Butyric Acid	37.347	2613511	49.723	ppm	

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

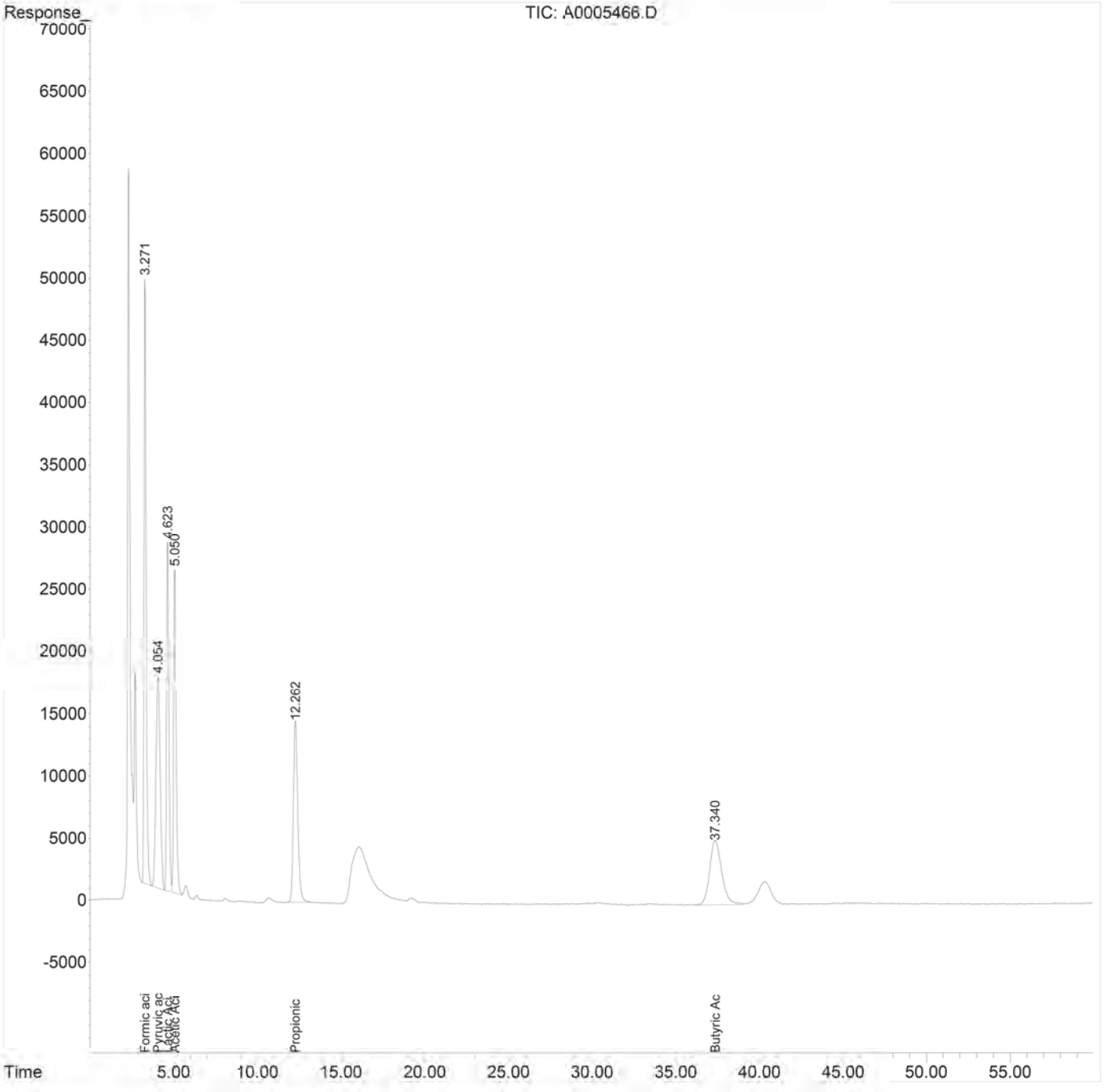
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005466.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 08:50:41
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 11:06:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 11:05:58 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



1st AF 07/06/20
2nd BA 07/06/20

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005472.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 15:08:24
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 t	Formic acid	93.232	85.492 E3	8.3	91	0.00
2 T	Pyruvic acid	591.568	593.597 E3	-0.3	101	0.00
3 T	Lactic Acid	56.417	53.078 E3	5.9	94	0.00
4 T	Acetic Acid	56.048	54.351 E3	3.0	96	0.00
5 T	Propionic Acid	54.357	53.792 E3	1.0	96	-0.02
6 T	Butyric Acid	52.562	52.259 E3	0.6	98	-0.19

Evaluate Continuing Calibration Report - Not Founds

(#) = Out of Range SPCC's out = 0 CCC's out = 0

1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005472.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 15:08:24
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) t	Formic acid	3.279	4274586	45.849 ppm
2) T	Pyruvic acid	4.054	2967984	5.017 ppm
3) T	Lactic Acid	4.627	2653881	47.041 ppm
4) T	Acetic Acid	5.055	2717571	48.486 ppm
5) T	Propionic Acid	12.242	2689612	49.480 ppm
6) T	Butyric Acid	37.161	2612962	49.712 ppm

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

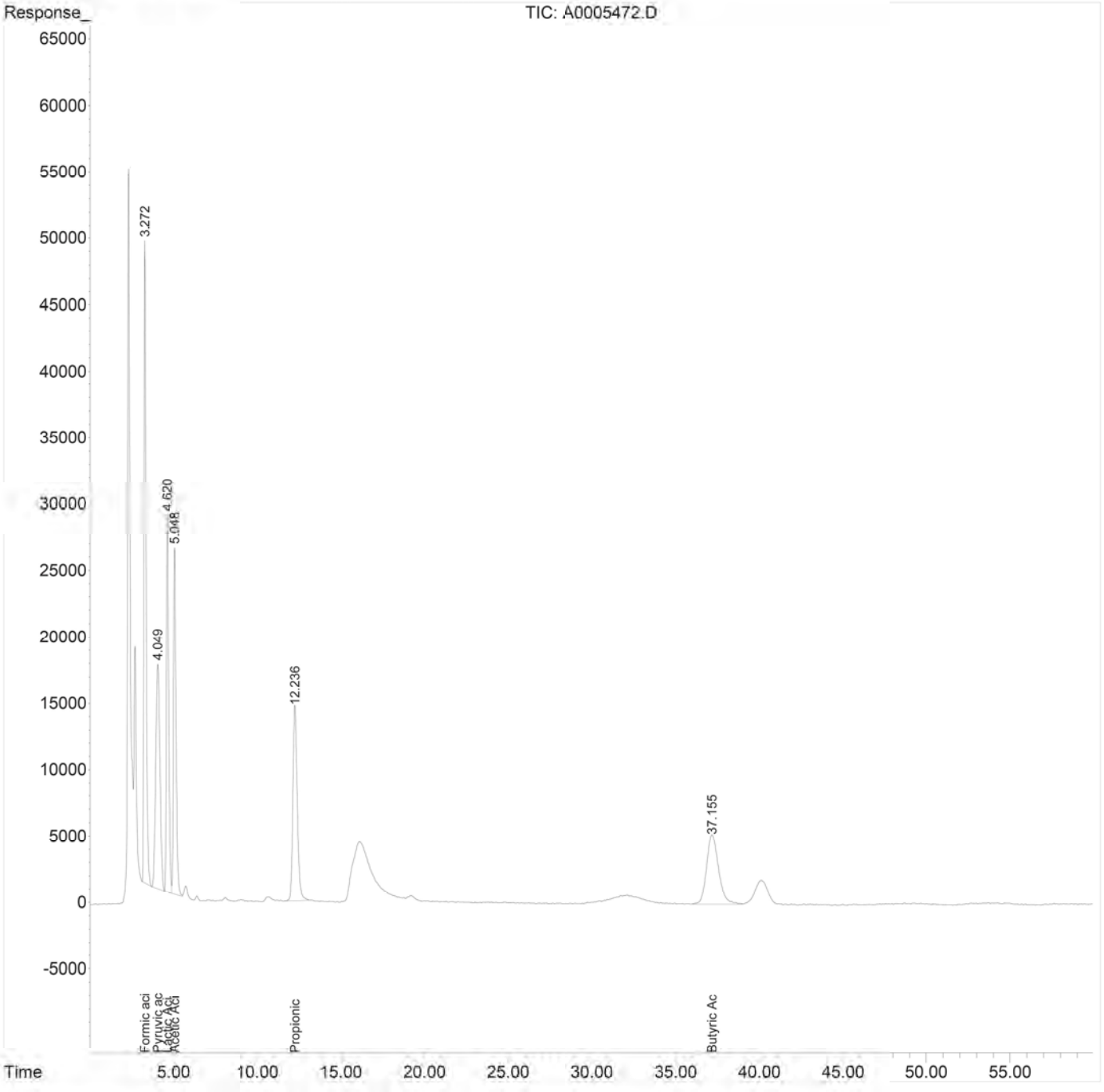
1st AF 07/06/20
2nd BA 07/06/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\070120\
Data File : A0005472.D
Signal(s) : dad1C.ch
Acq On : 02-Jul-2020, 15:08:24
Operator : A.Felser
Sample : CCV
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Jul 02 16:39:09 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Jul 02 16:38:47 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



Analysis: Met Acids Analyst: Archer Run Method: NEWMETA.M
Date: 03/12/2020 Instr. HPLC05 Quant Method: MA03/220.M
LIMS Run#:
Setup: Column: Synergi Hydro-RP 150x4.6 Col.Temp: 35°C Flow: 0.6mL/min
Mobile Phase: 0.02M KH2PO4 prep 0.1% PO4 ul Inj.: 50
Mobile Phase ID: O-760-76 03/12/2020

Pos.	Sample	Diln.	Stds. ID	File#	OK?	Comments
1	Blk			A0004461	—	
1	Blk			62	—	
1	Blk			63		
1	last Blk			64	Y	
2	STD 1	2µL/1mL	205268	65	Y	
3	2	4µL/1mL		66	Y	
4	3	10µL/1mL		67	Y	
5	4	20µL/1mL		68	Y	
6	5	40µL/1mL		69	Y	
7	6	0.1mL/1mL		70	Y	
8	7	0.2mL/1mL		71	Y	
9	8	0.4mL/1mL	↓	72	Y	
10	ICV	100µL/1mL	203153	73	N	Interference w/ Butyric

Archer 03/27/2020

Primary: 205268 exp: 09/21/20 Secondary: 203153 exp: 09/21/20
pH Paper: 205502 Acid: 203550

Runlog HPLCr2
3/23/18
O-998 Page 20

Analysis: Met Acids Analyst: ASelner Run Method: NEWMETA.M
Date: 03/16/2020 Instr. HPLC05 Quant Method: MA031220.M
LIMS Run#: 673626
Setup: Column: Synergi Hydro RP 150 x 4.6 Col.Temp: 35°C Flow: 0.6mL/min
Mobile Phase: 0.02M KH2PO4 pH 6.0 in DI Water ul Inj.: 50
Mobile Phase ID: O-7668-76 03/12/2020

Pos.	Sample	Diln.	Stds. ID	File#	OK?	Comments
1	DLK			A0004774	—	
1	DLK			75		
2	CCV	100ppm/1mL	205268	76	Y	
3	ICV	↓	203153	77	Y	
4	CCV	100ppm/1mL	205268	78	Y	Retest ↑
5	MD			79	Y	
6	LCS	100ppm/1mL	203153	80	Y	
7	DLCS	↓	↓	81	Y	
8	K2001981-001			82	N	Acetic >LR, dilute 1/2
9	↓ -001 MS		203153	83	N	↓
4	CCV	100ppm/1mL	205268	84	Y	
10	K2001981-001 Dmp		203153	85	N	Acetic >LR
11	K2001990-001	2		86	Y	
12	R2001765-012			87	Y	
13	↓ -022			88	Y	
14	↓ -023			89	Y	
4	CCV	100ppm/1mL	205268	90	Y	
15	LOQ/MDL	10ppm/1mL	203153	91	Y	
16	LODV	5ppm/1mL	↓	92	Y	
17	R2002223-001			93	Y	
18	↓ -003			94	Y	
19	↓ -005			95	Y	
4	CCV	100ppm/1mL	205268	96	Y	
20	K2001981-001	2		97		
4	CCV	100ppm/1mL	205268	98	Y	

05/17/2020

Primary: 205268 exp: 03/21/20 Secondary: 203153 exp: 03/28/20
pH Paper: 205502 Acid: 203940

Runlog HPLCr2
3/23/18

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.949	18444040	201.560	ppm	
2) T	Pyruvic acid	3.625	11605902	19.912	ppm	m
3) T	Lactic Acid	4.103	11063811	199.720	ppm	m
4) T	Acetic Acid	4.584	11047591	197.987	ppm	m
5) T	Propionic Acid	11.450	10994386	200.127	ppm	
6) T	Butyric Acid	36.001f	10326182	196.253	ppm	m

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

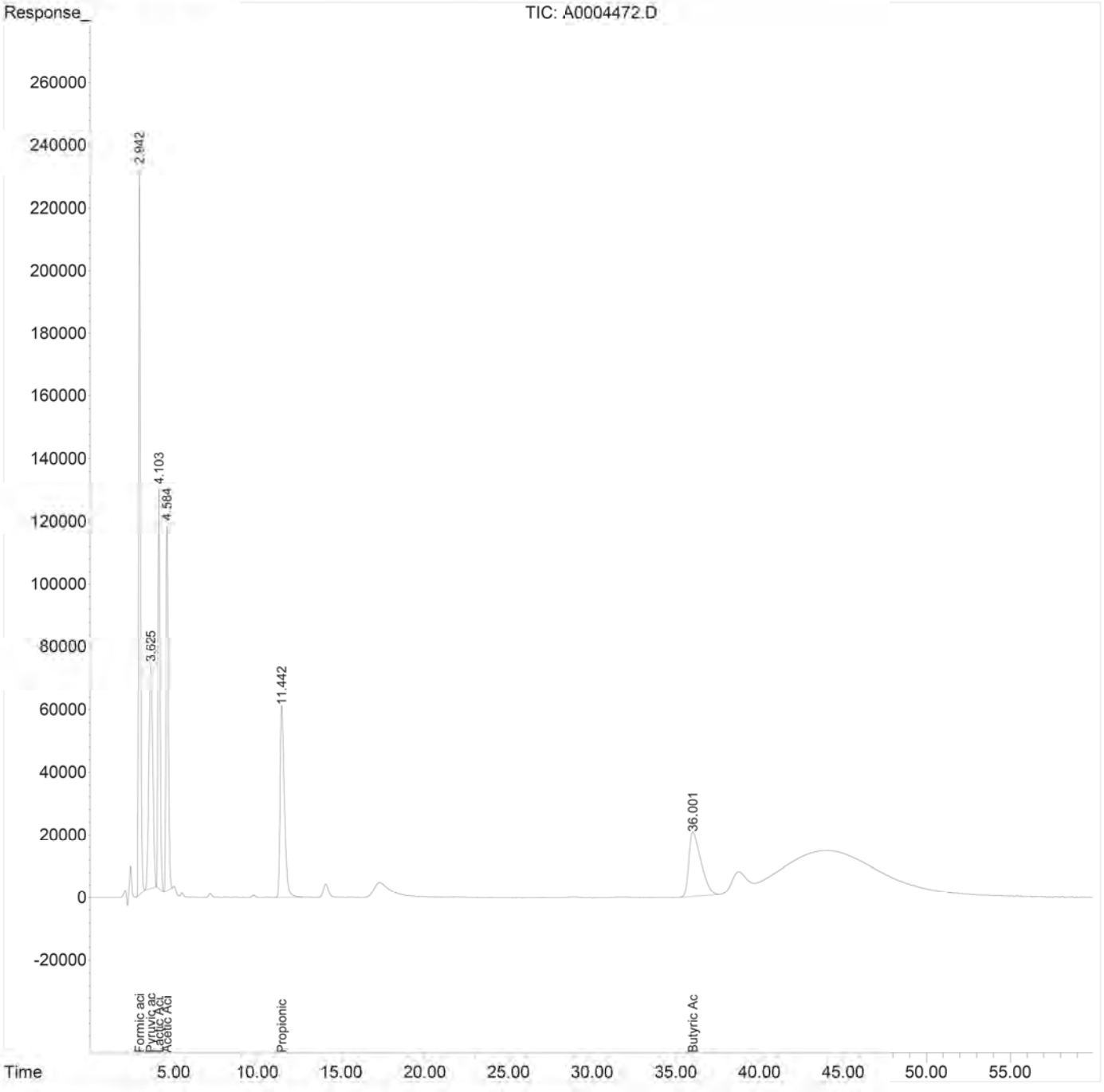
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004464.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 11:36:51
Operator : A.Felser
Sample : INST BLK
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:30:23 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:29:26 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) t	Formic acid	0.000	0	N.D.	ppm
2) T	Pyruvic acid	0.000	0	N.D.	ppm
3) T	Lactic Acid	0.000	0	N.D.	ppm
4) T	Acetic Acid	0.000	0	N.D.	ppm
5) T	Propionic Acid	0.000	0	N.D.	ppm
6) T	Butyric Acid	0.000	0	N.D.	ppm

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

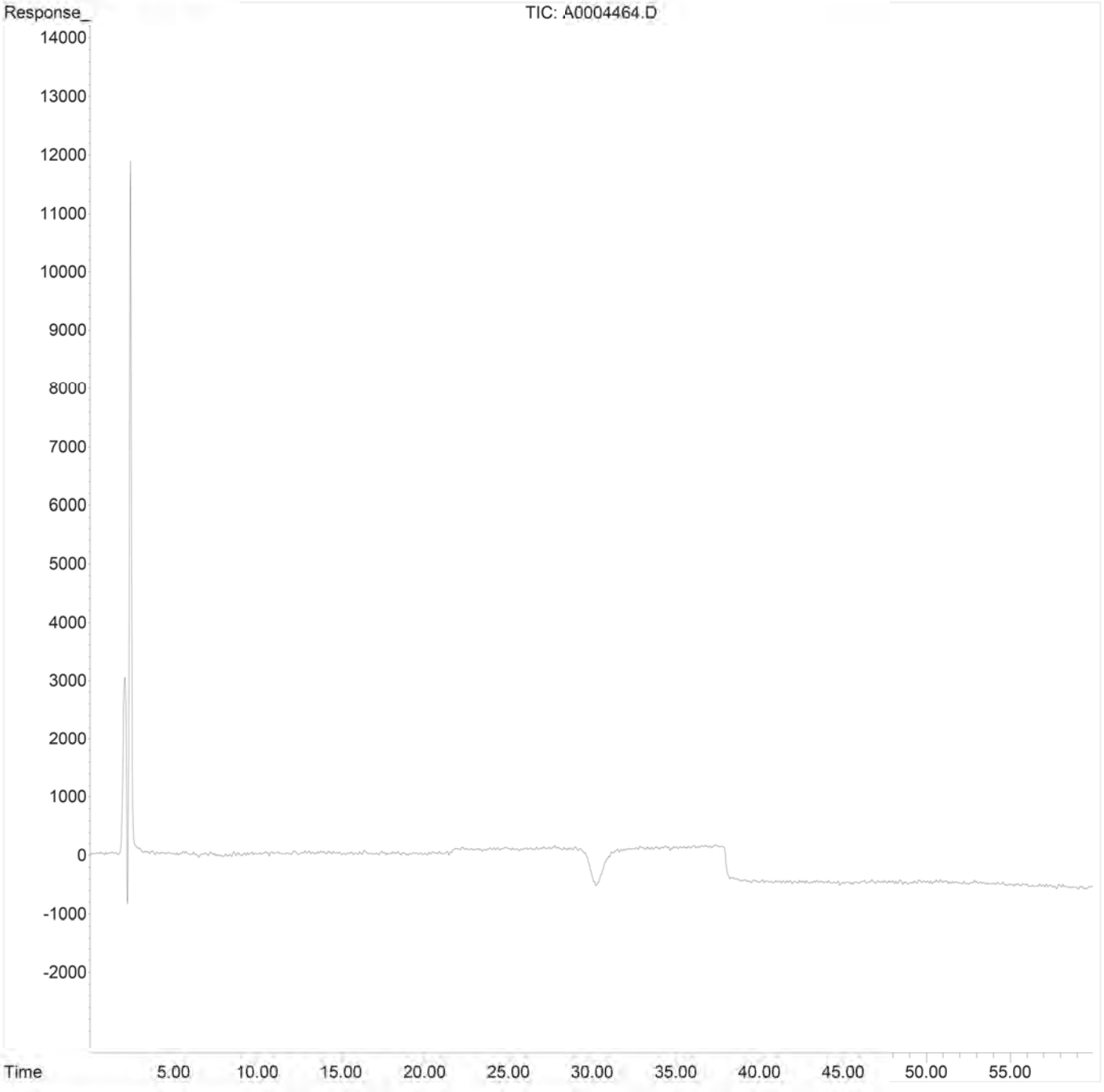
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004464.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 11:36:51
Operator : A.Felser
Sample : INST BLK
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:30:23 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:29:26 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



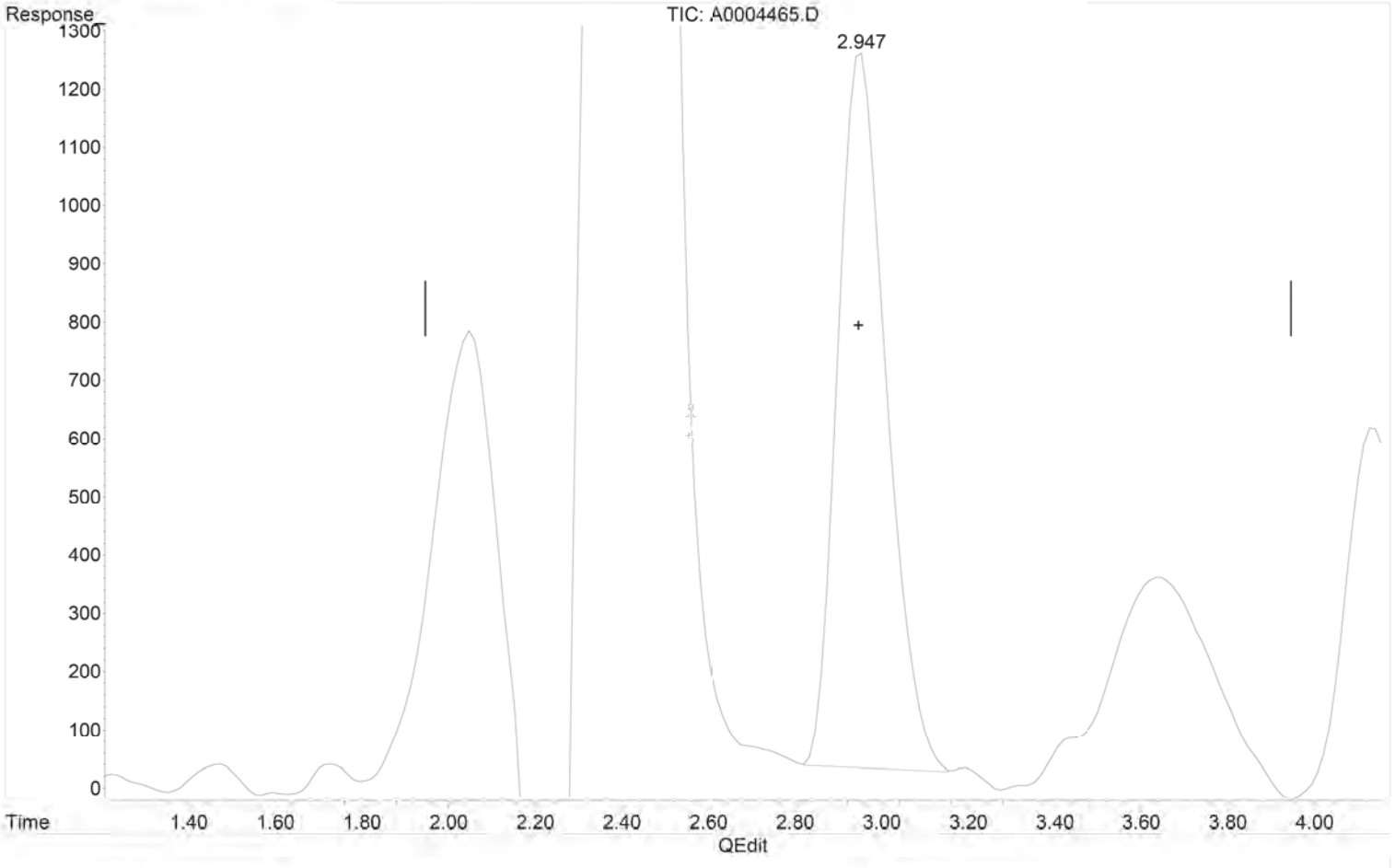
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.947min 1.051 ppm m

response 96141

Manual Integration:

After

Peak not found.

03/16/20

(+) = Expected Retention Time

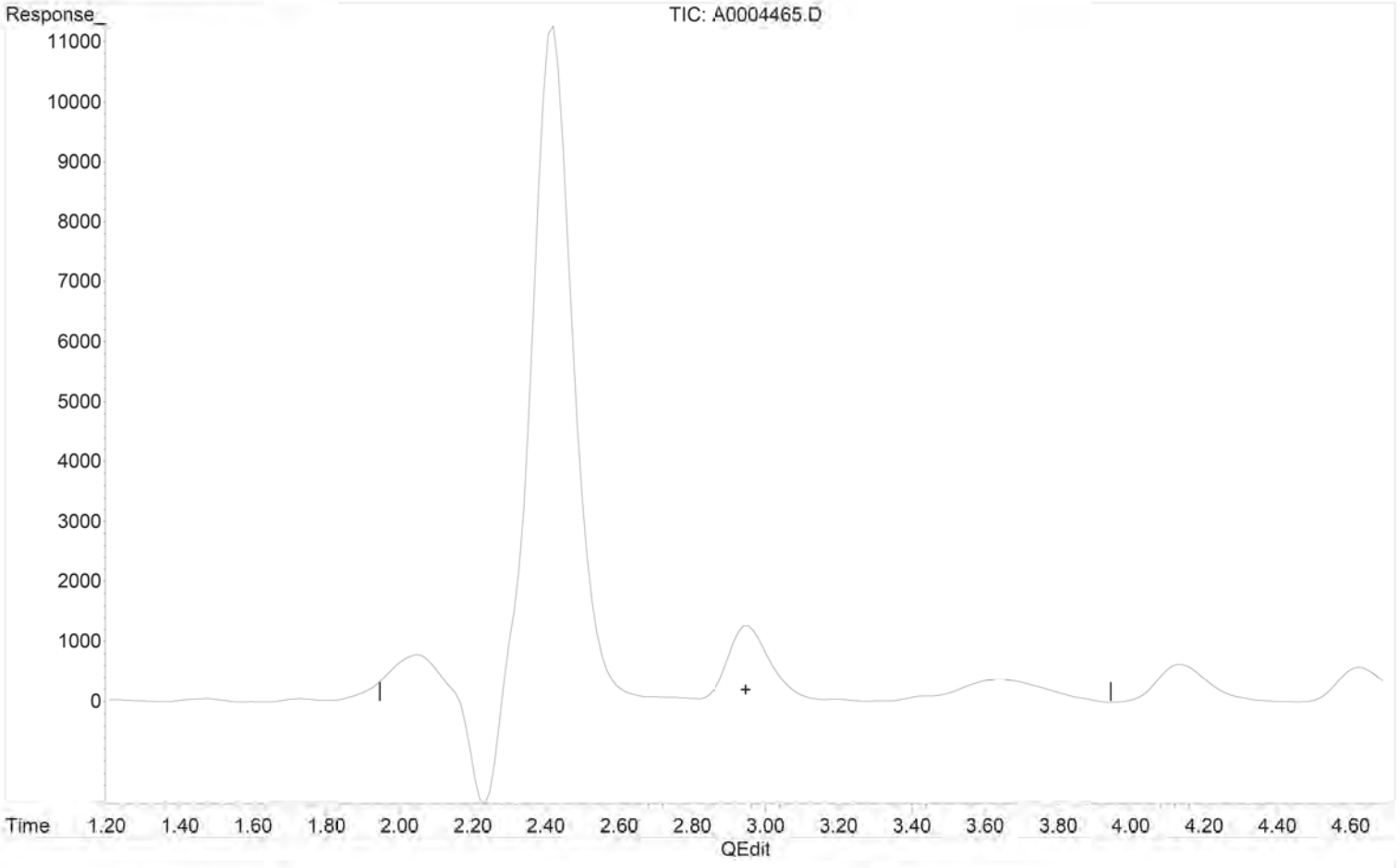
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.946min 0.000 ppm

response 0

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:18:43 2020

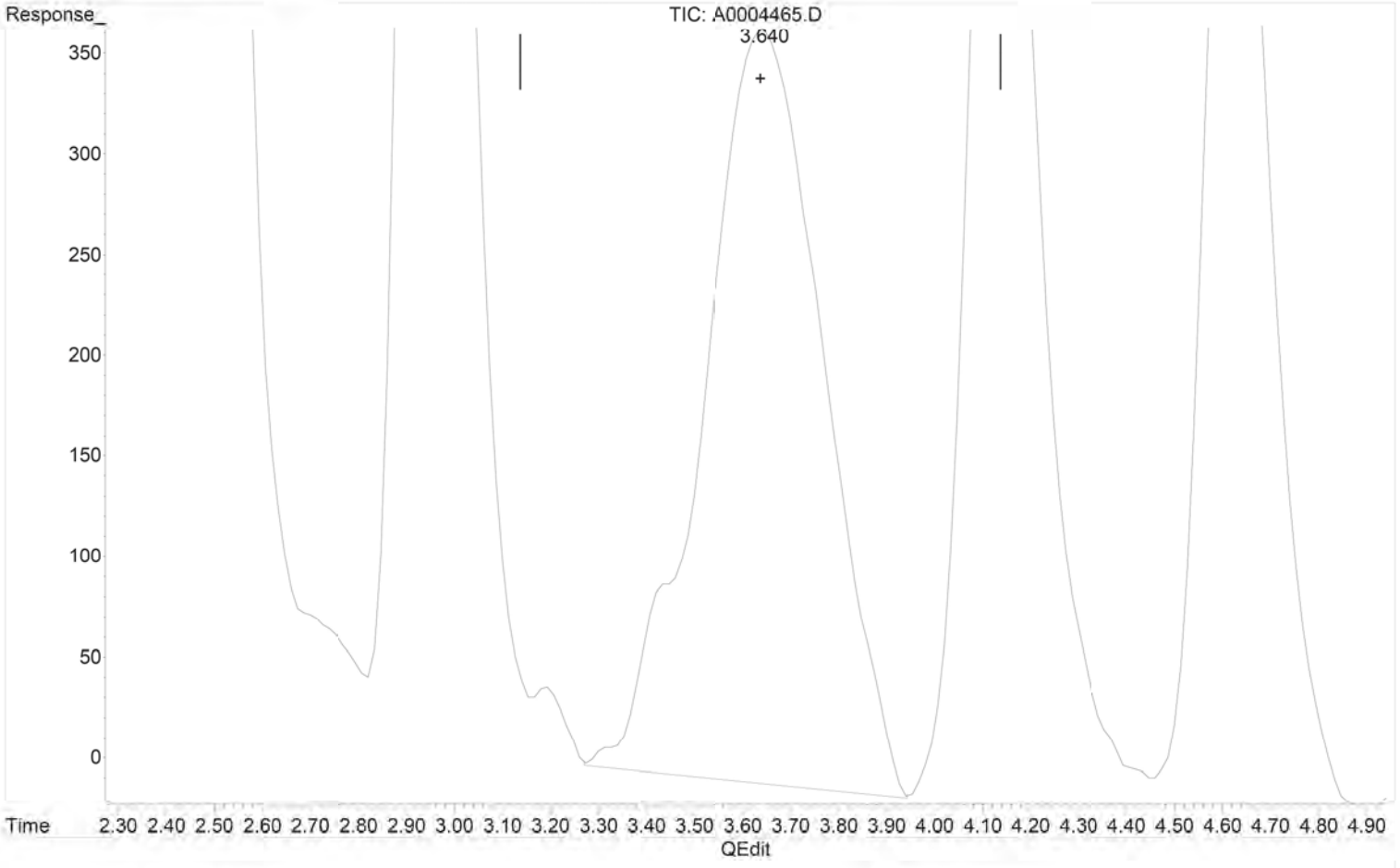
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.640min 0.112 ppm m
response 65073

Manual Integration:
After
Peak not found.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:19:08 2020

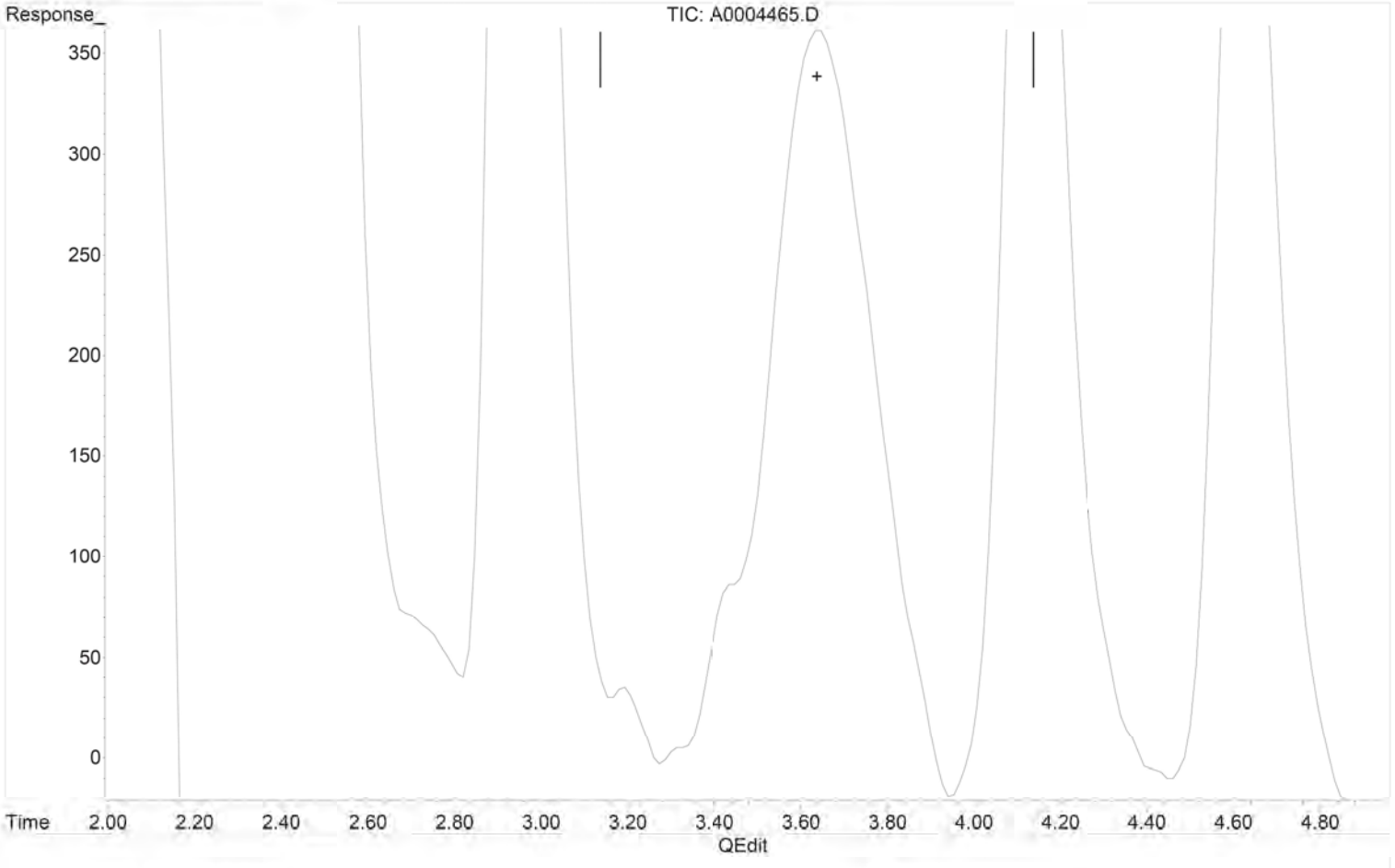
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.645min -0.100 ppm
response 58358

Manual Integration:
Before

03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:18:56 2020

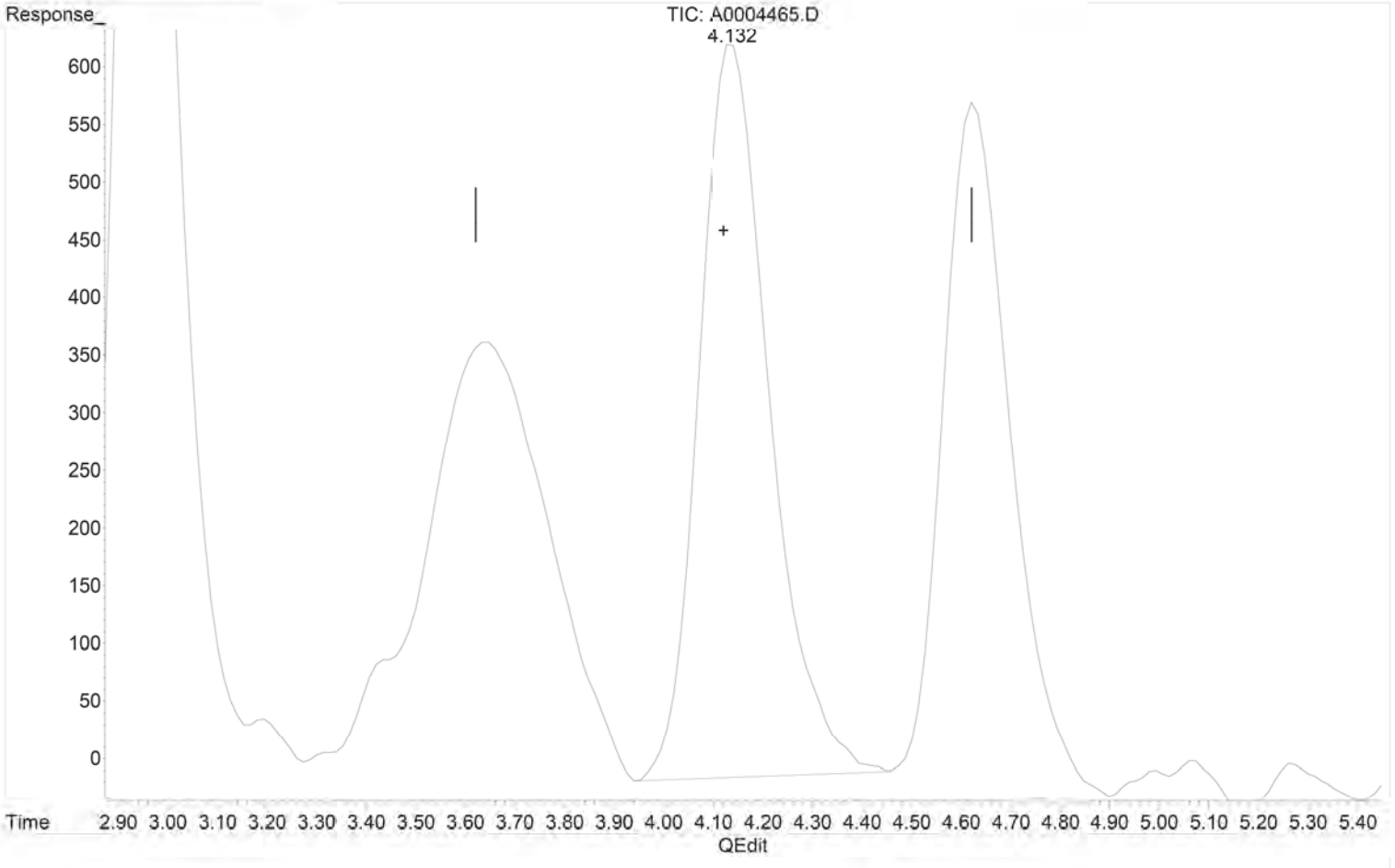
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.132min 1.131 ppm m

response 62664

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

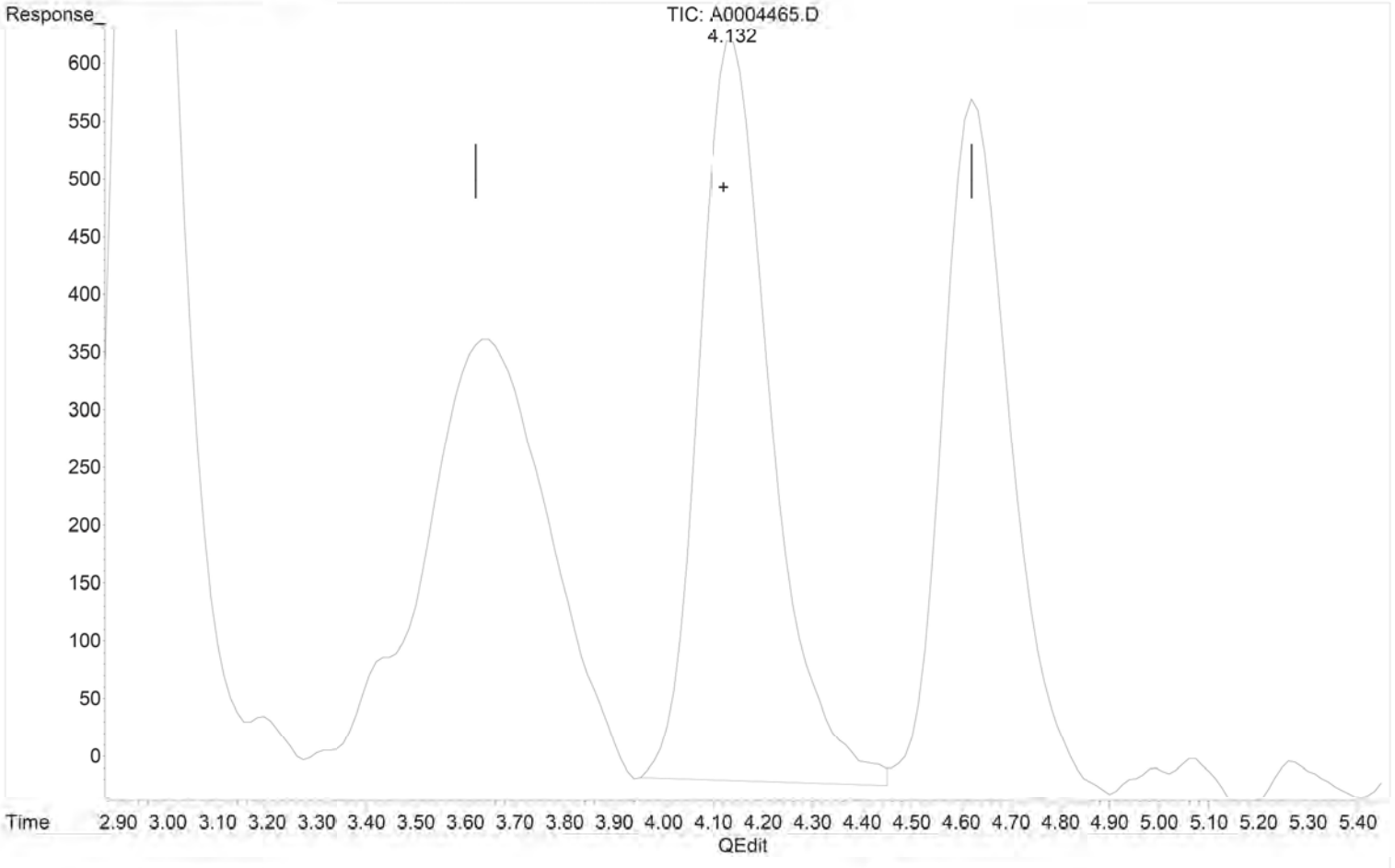
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.140min 1.165 ppm

response 64524

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

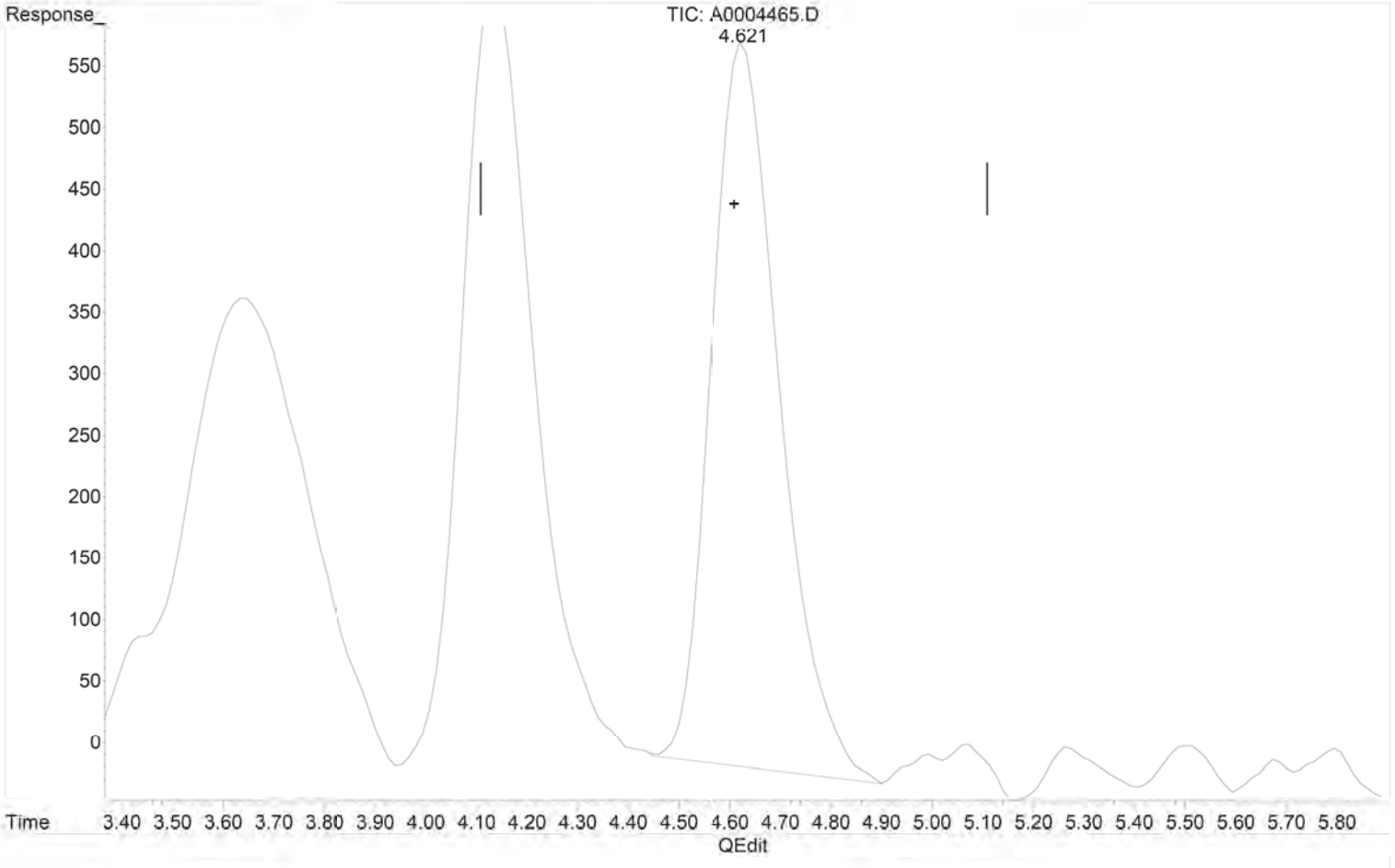
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.621min 0.989 ppm m
response 55208

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:19:51 2020

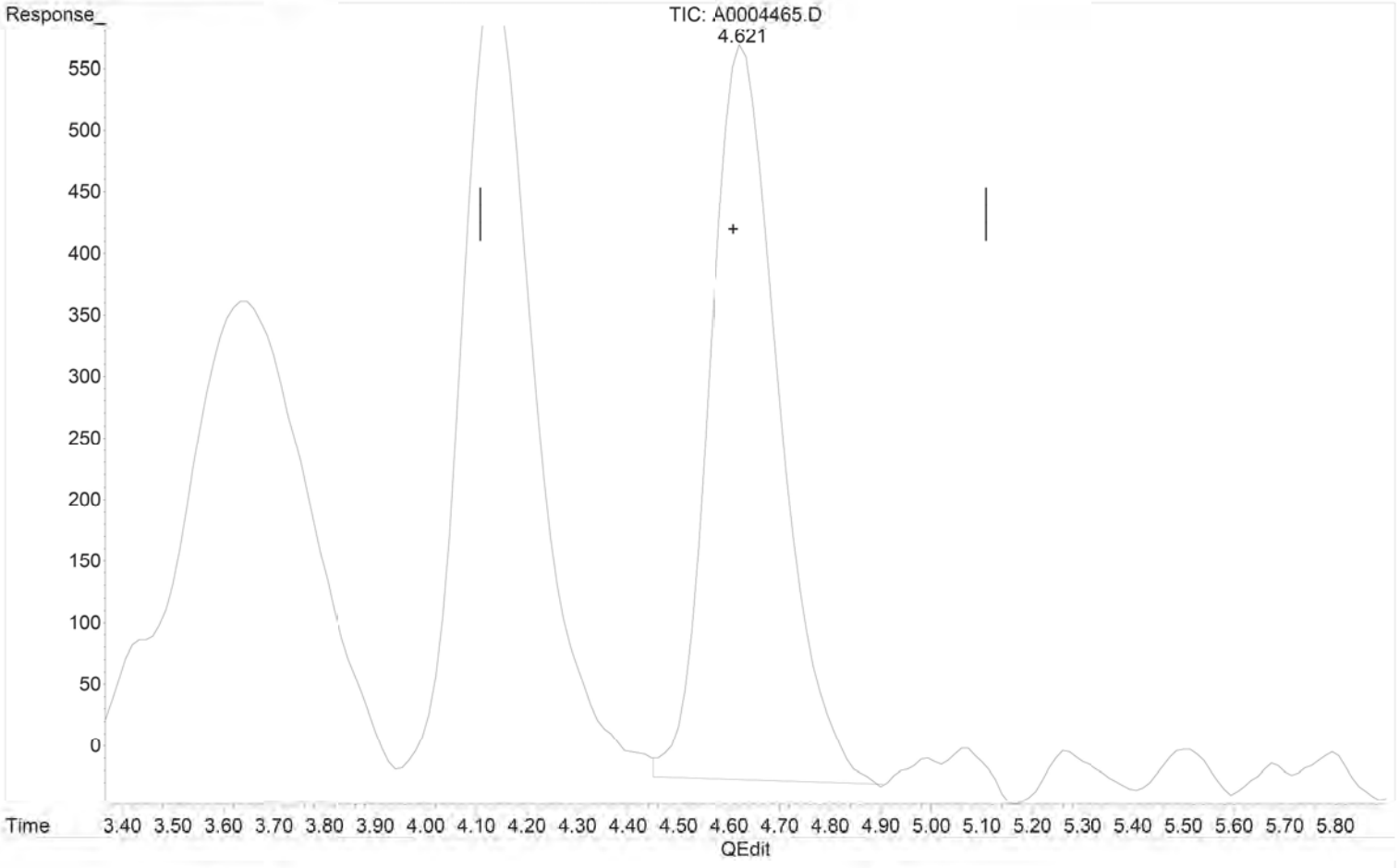
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.629min 1.019 ppm

response 56862

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:19:41 2020

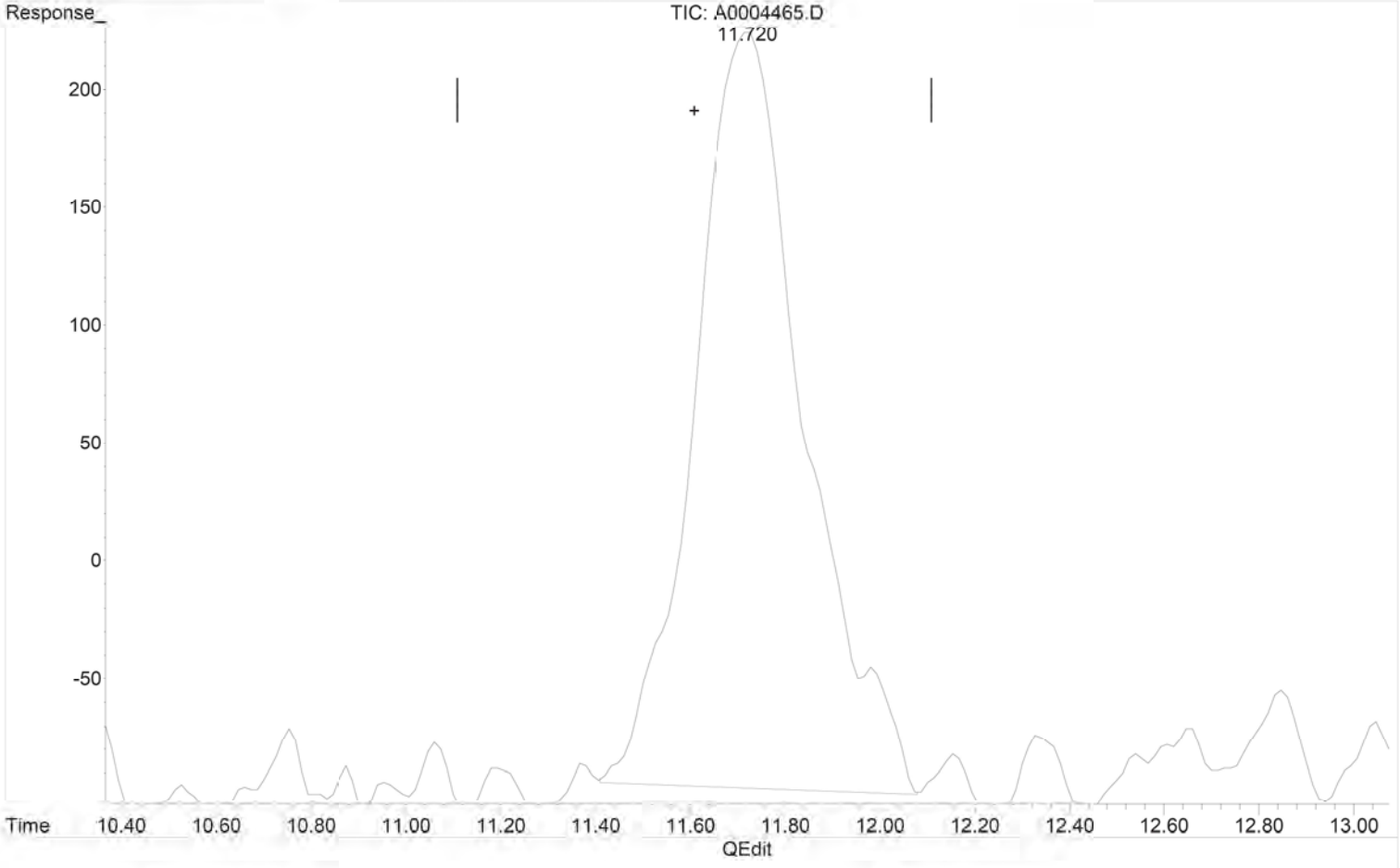
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.720min 0.938 ppm m
response 51534

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:20:06 2020

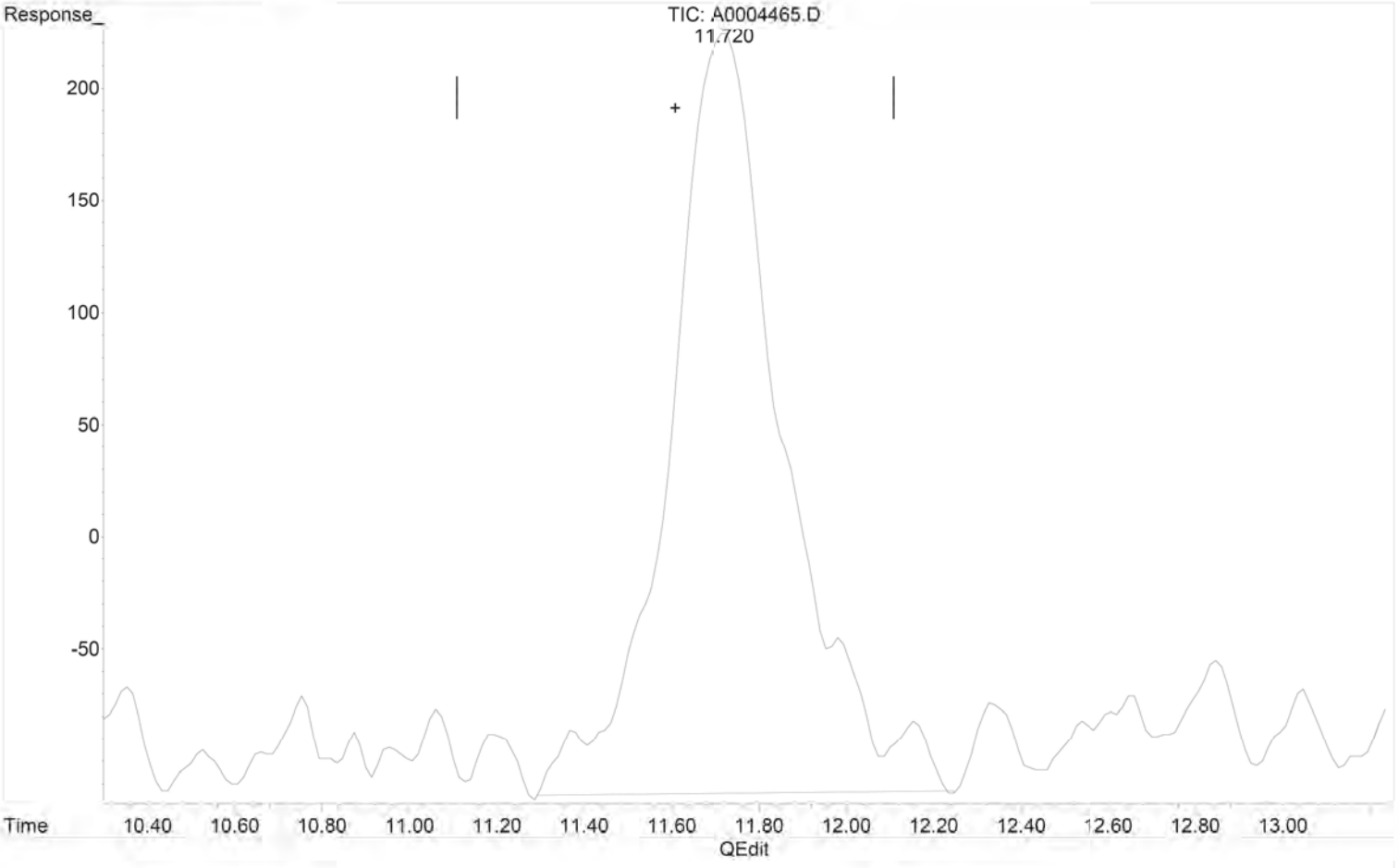
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.721min 1.124 ppm
response 61737

Manual Integration:
Before

03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:19:59 2020

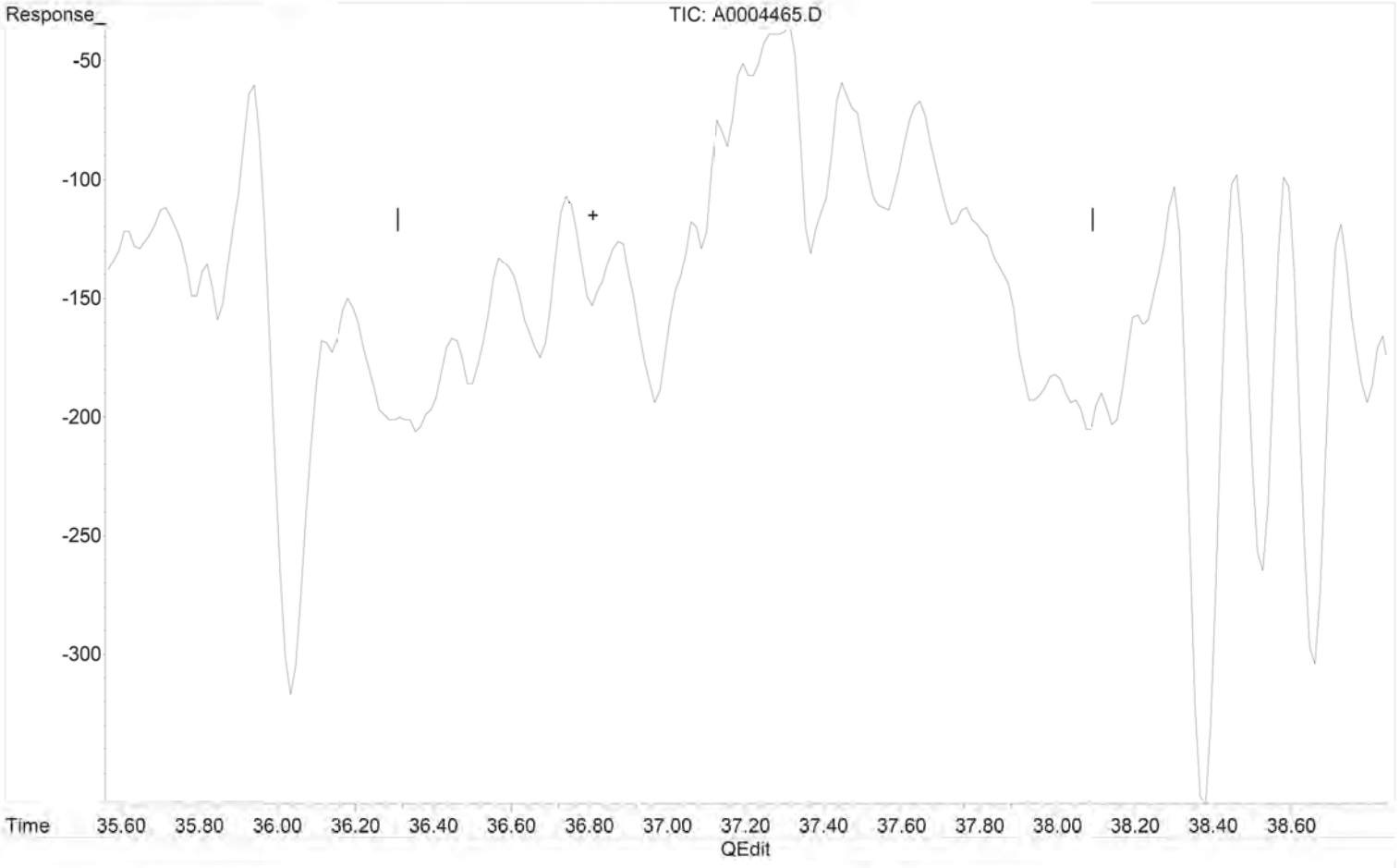
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.309min 1.012 ppm m

response 53231

Manual Integration!

After

Peak not found.

03/16/20

(+) = Expected Retention Time

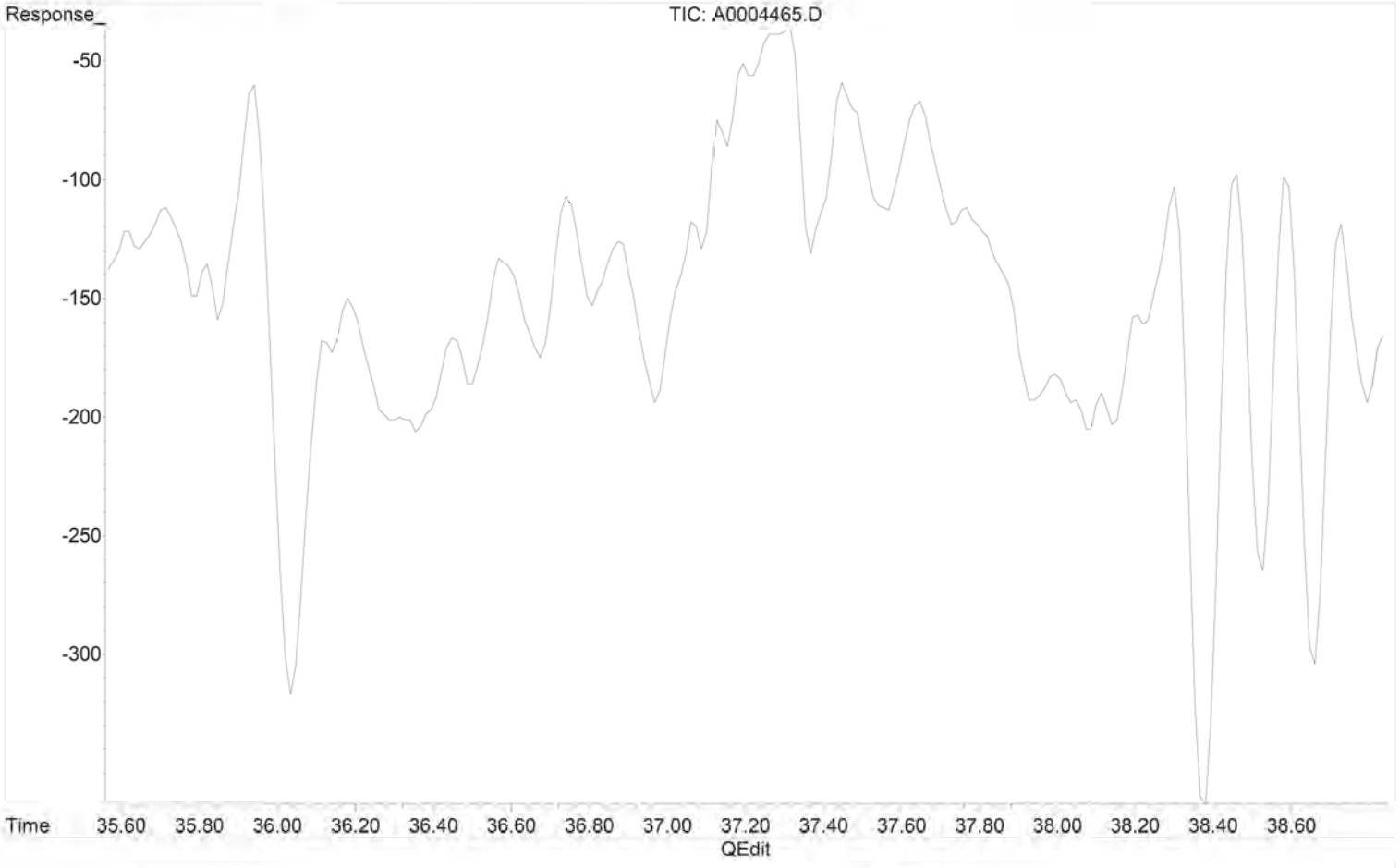
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

0.000min 0.000 ppm d

response 0

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.947	96141	1.051	ppm	m
2) T	Pyruvic acid	3.640	65073	0.112	ppm	m
3) T	Lactic Acid	4.132	62664	1.131	ppm	m
4) T	Acetic Acid	4.621	55208	0.989	ppm	m
5) T	Propionic Acid	11.720	51534	0.938	ppm	m
6) T	Butyric Acid	37.309f	53231	1.012	ppm	m

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

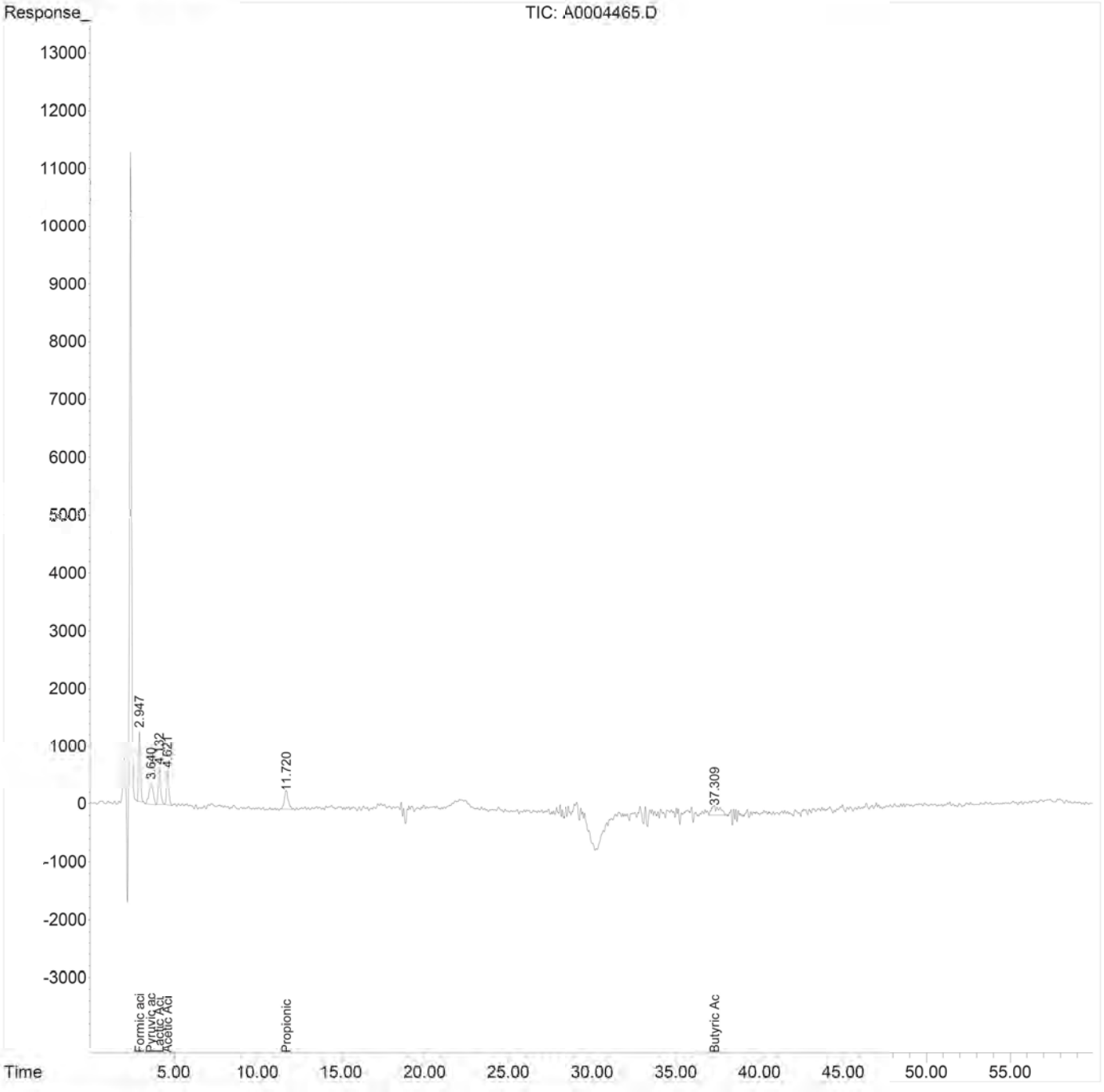
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004465.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 12:39:51
Operator : A.Felser
Sample : STD 1
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:16 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



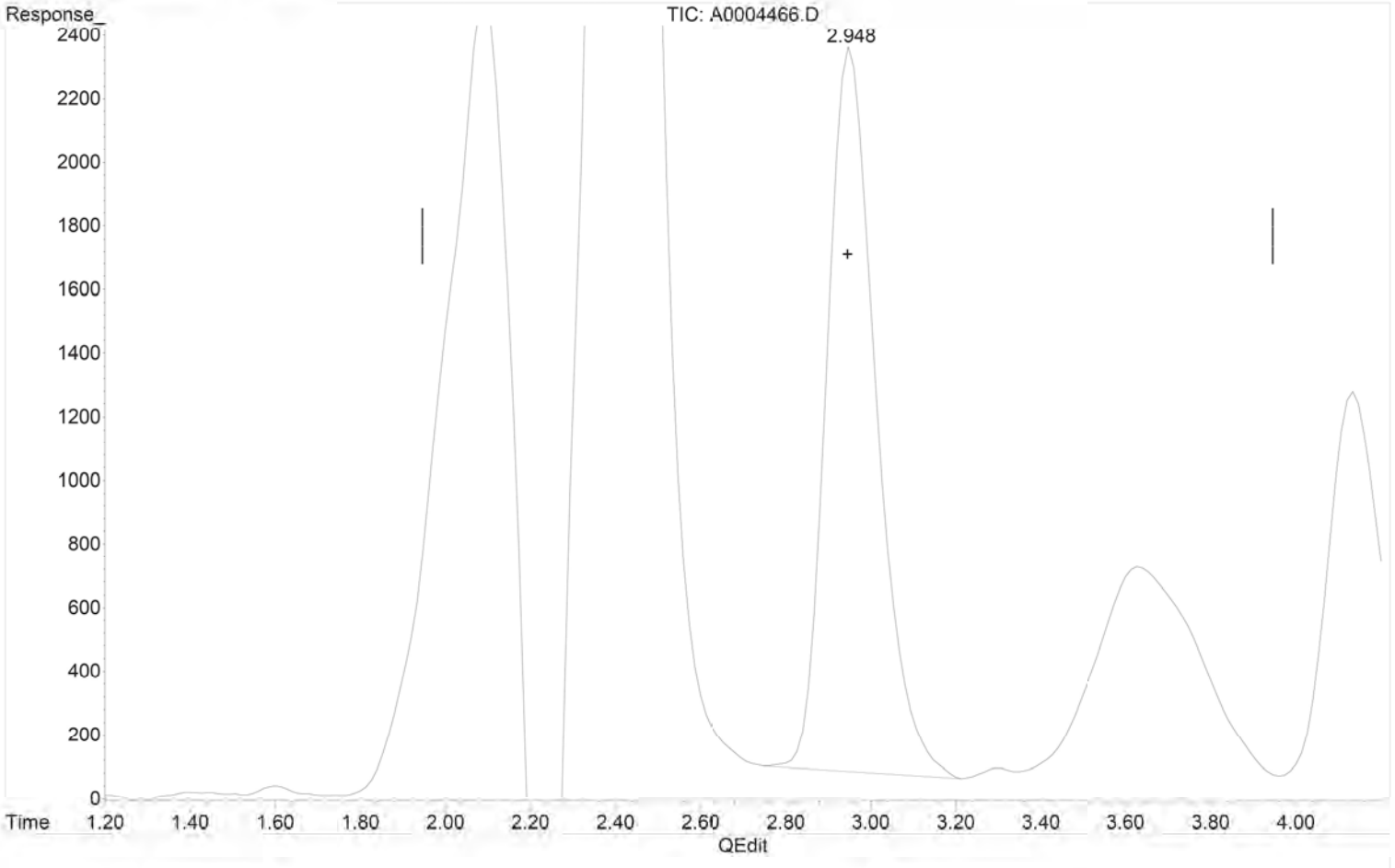
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.948min 2.019 ppm m

response 184745

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

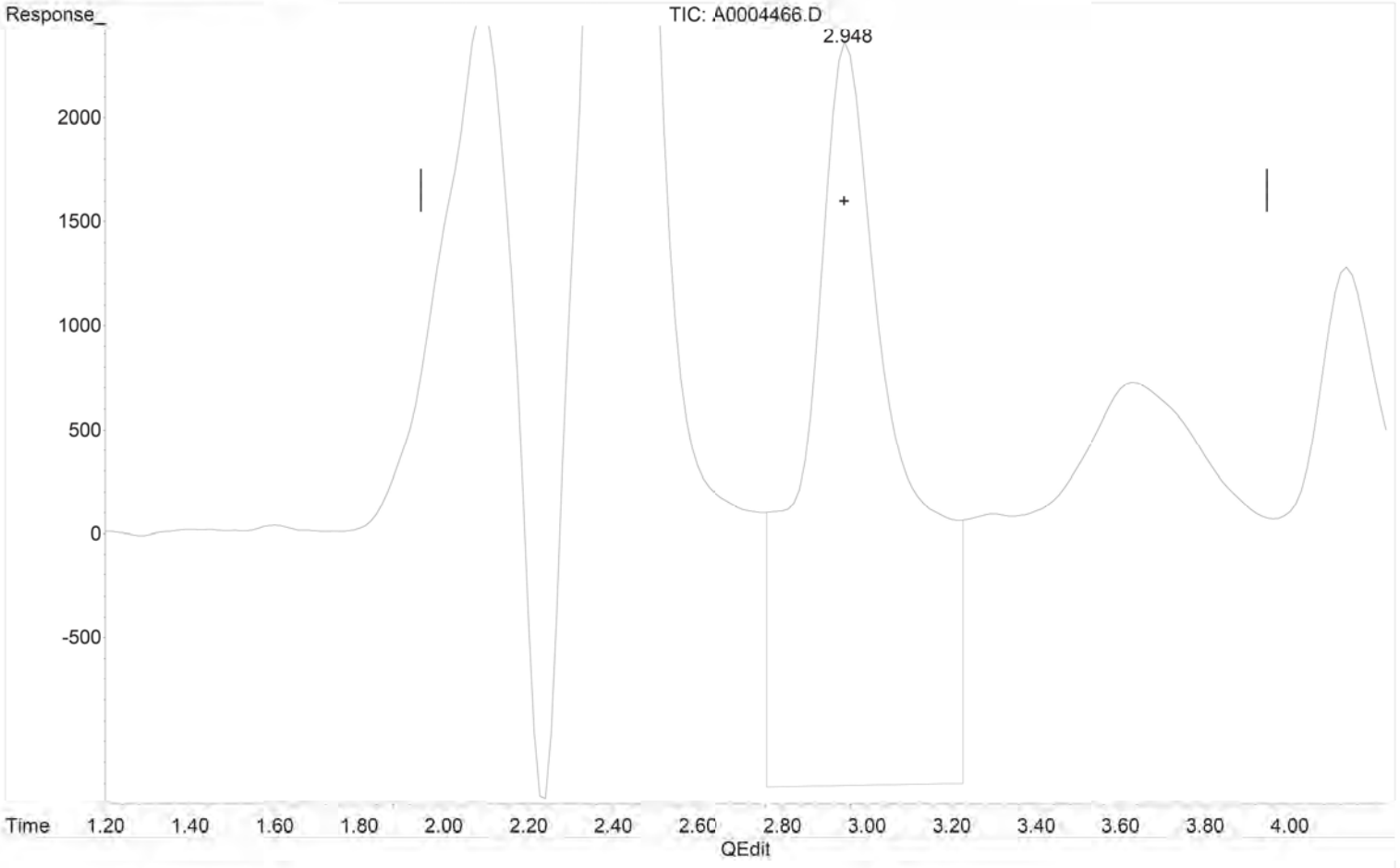
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.955min 5.943 ppm

response 543858

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

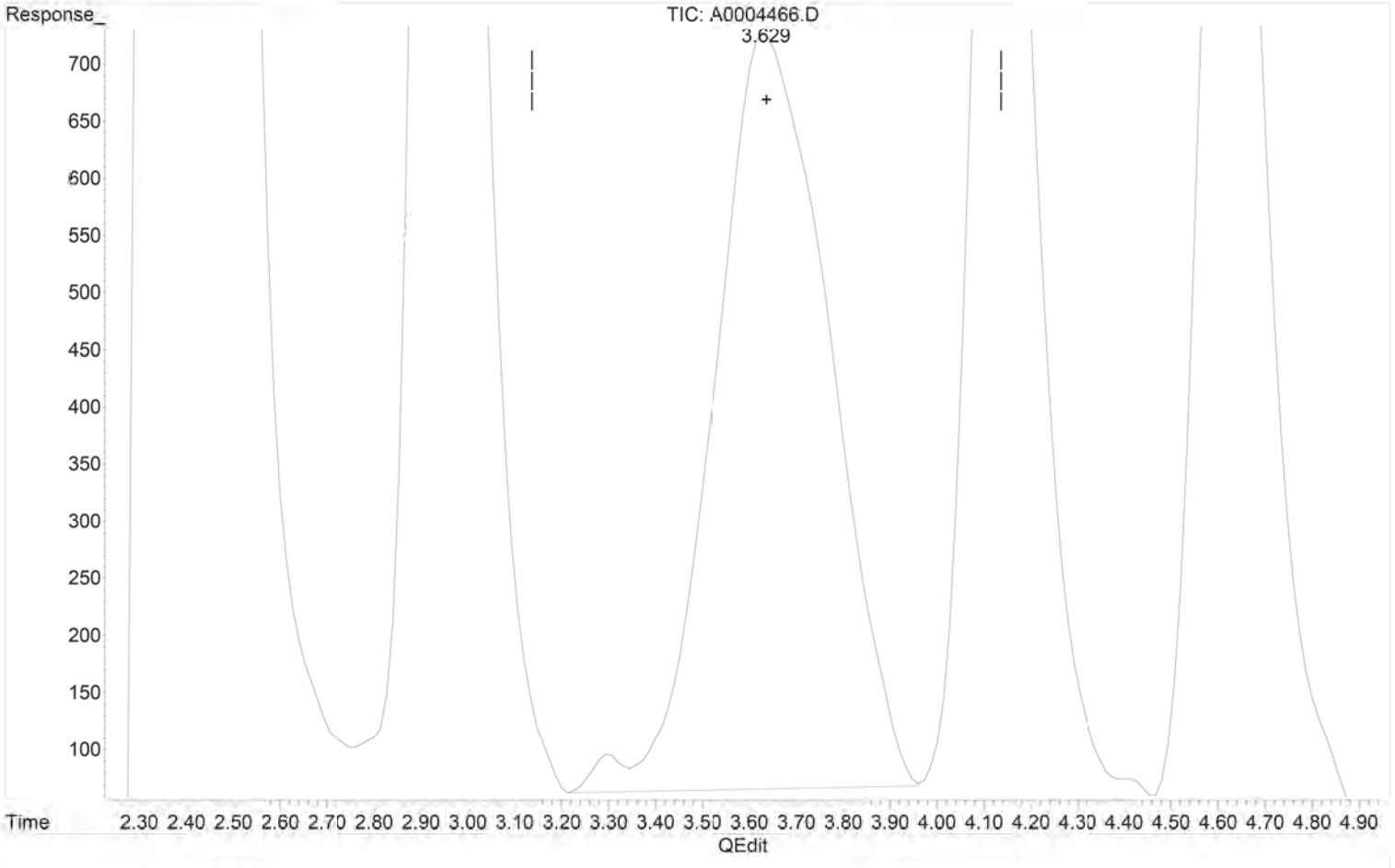
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.629min 0.194 ppm m
response 113308

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:21:23 2020

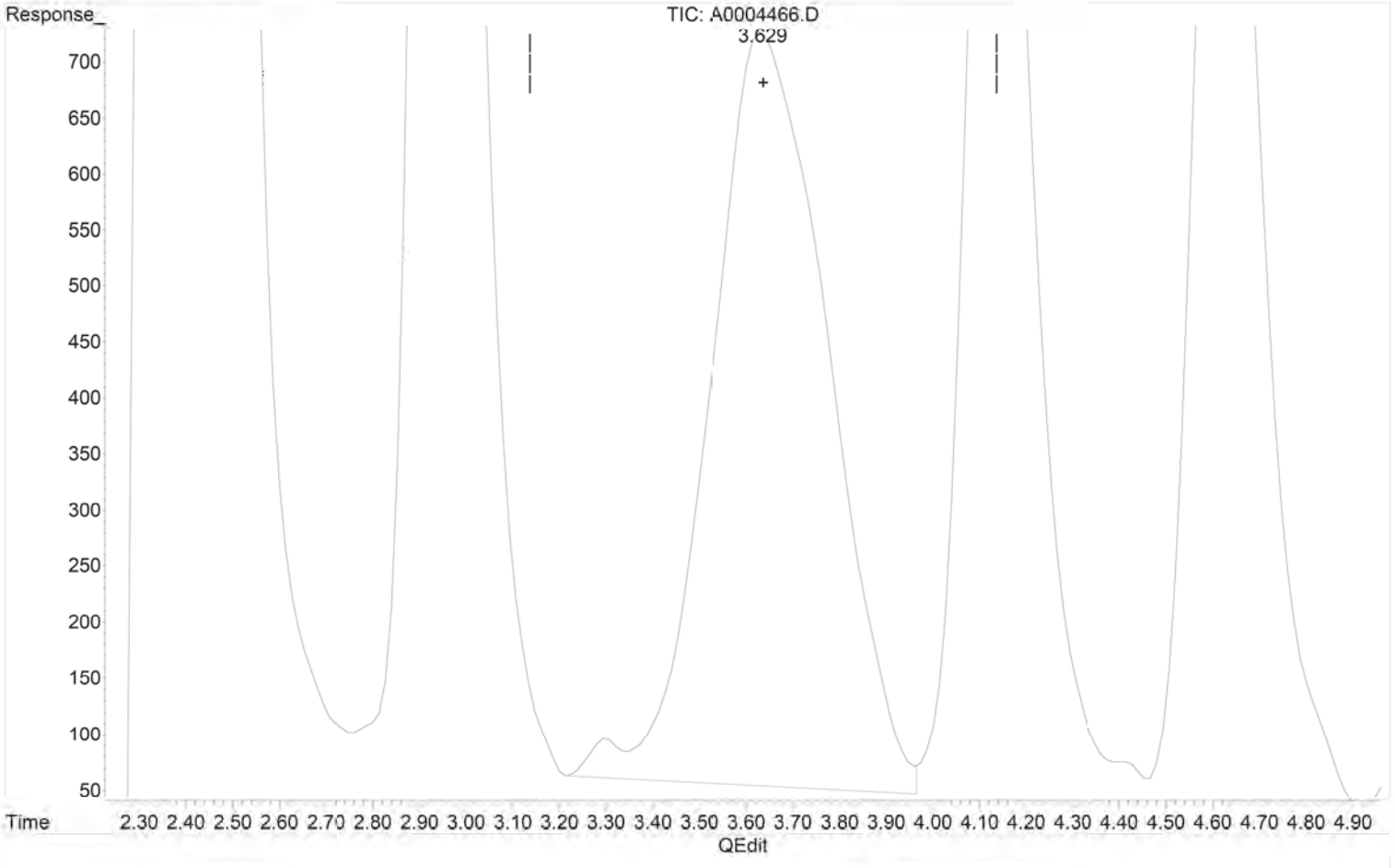
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.639min 0.203 ppm

response 118180

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

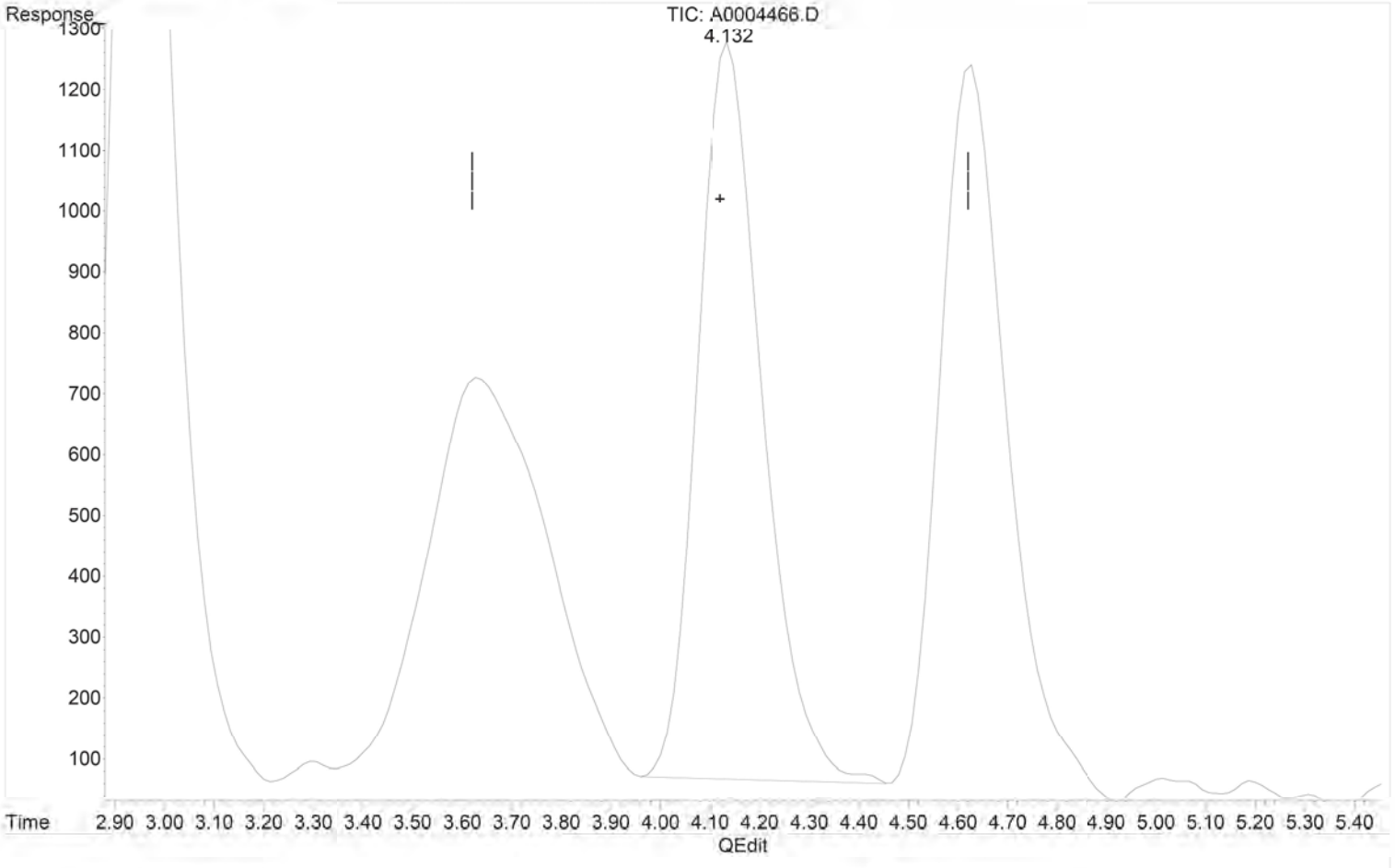
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.132min 1.974 ppm m

response 109344

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

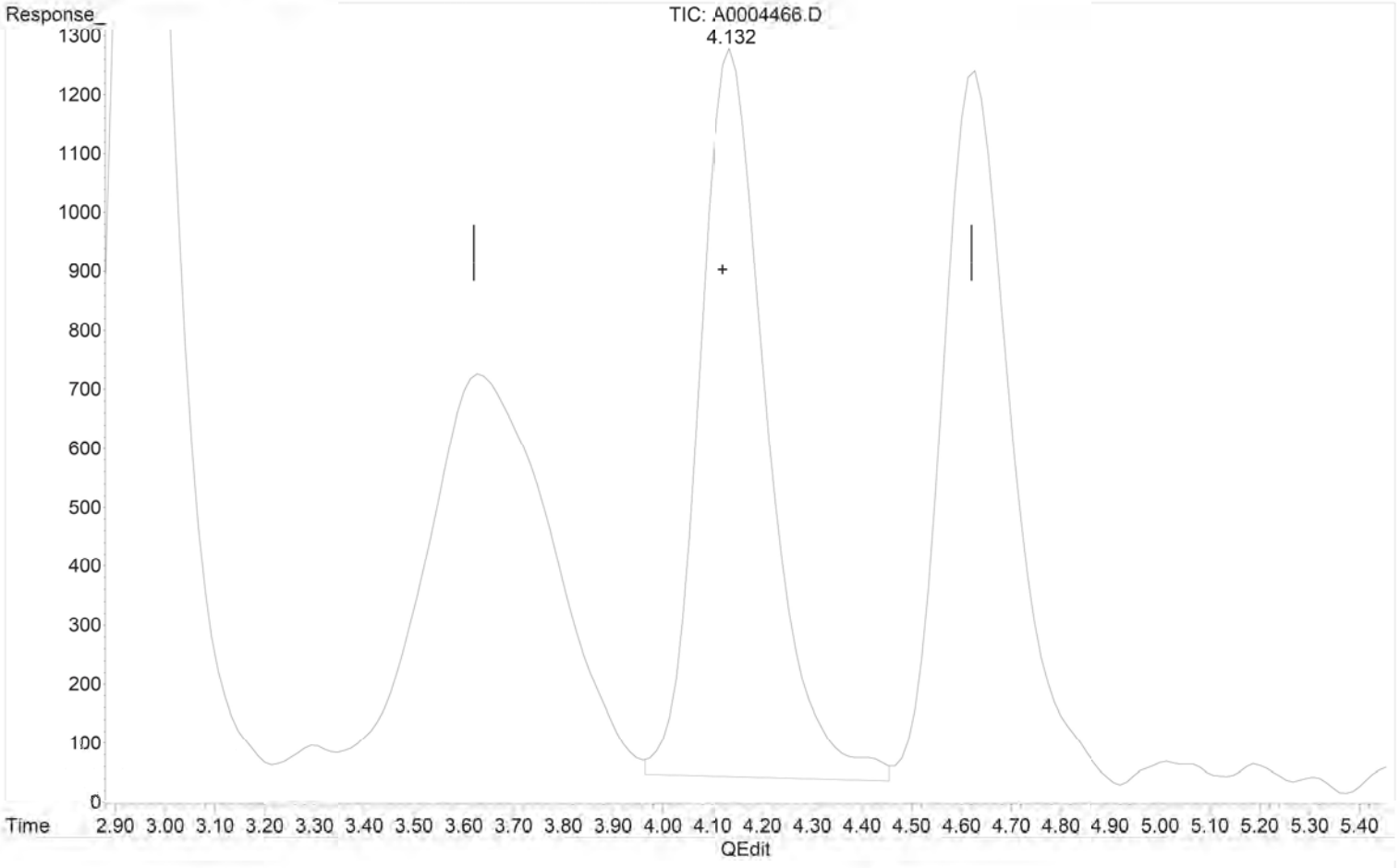
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.139min 2.102 ppm

response 116418

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

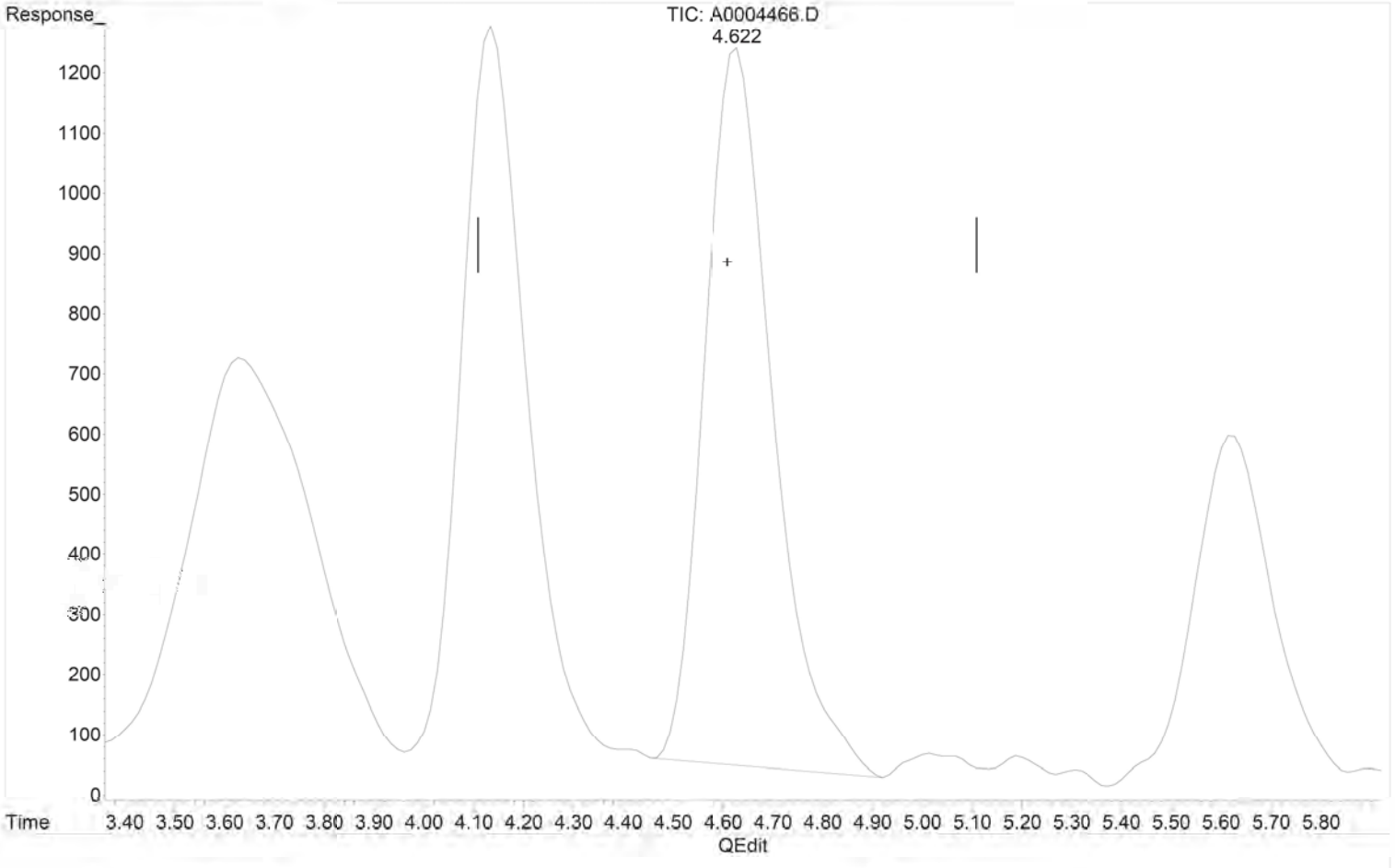
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.622min 2.028 ppm m
response 113173

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:21:48 2020

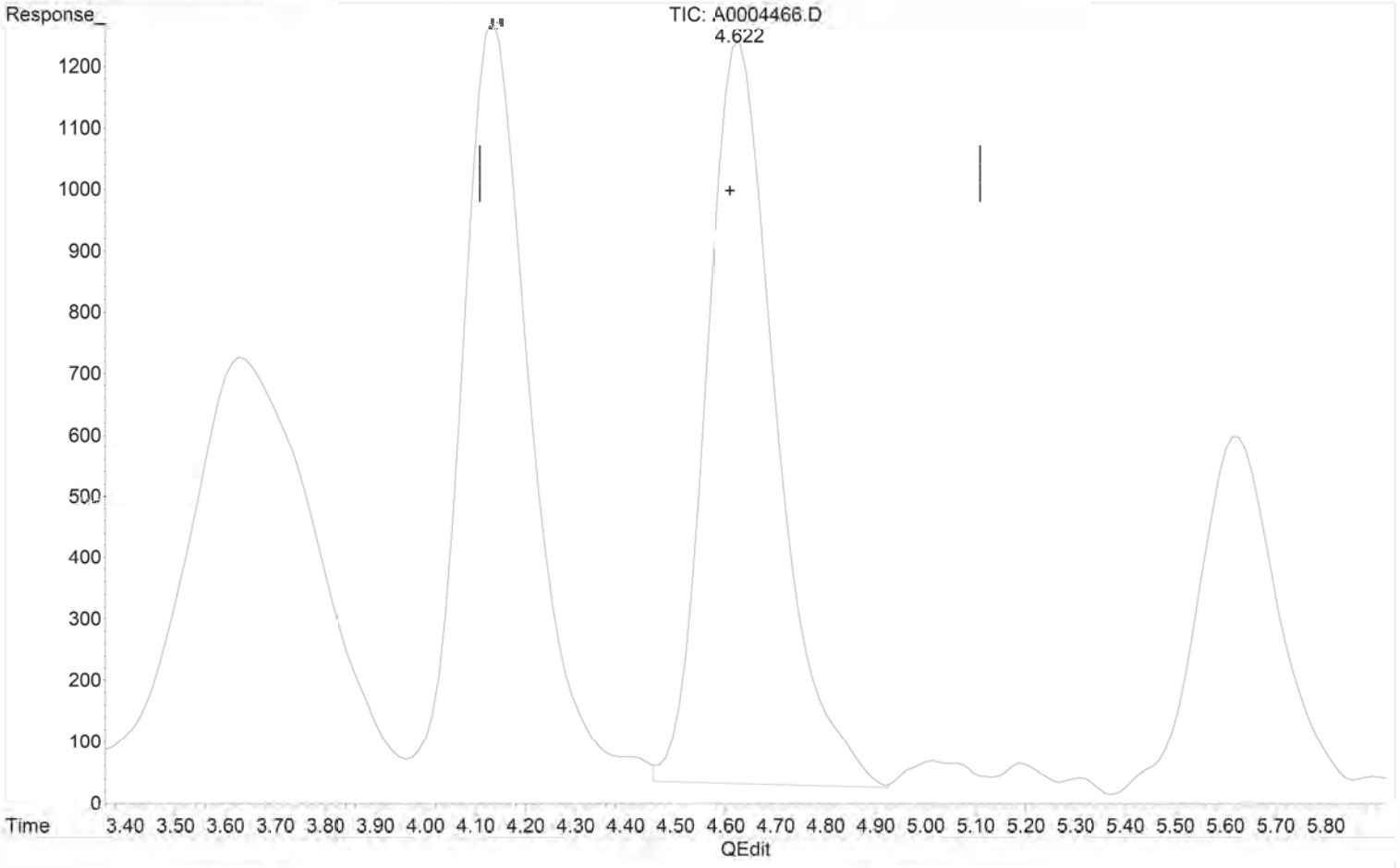
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.629min 2.100 ppm

response 117200

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

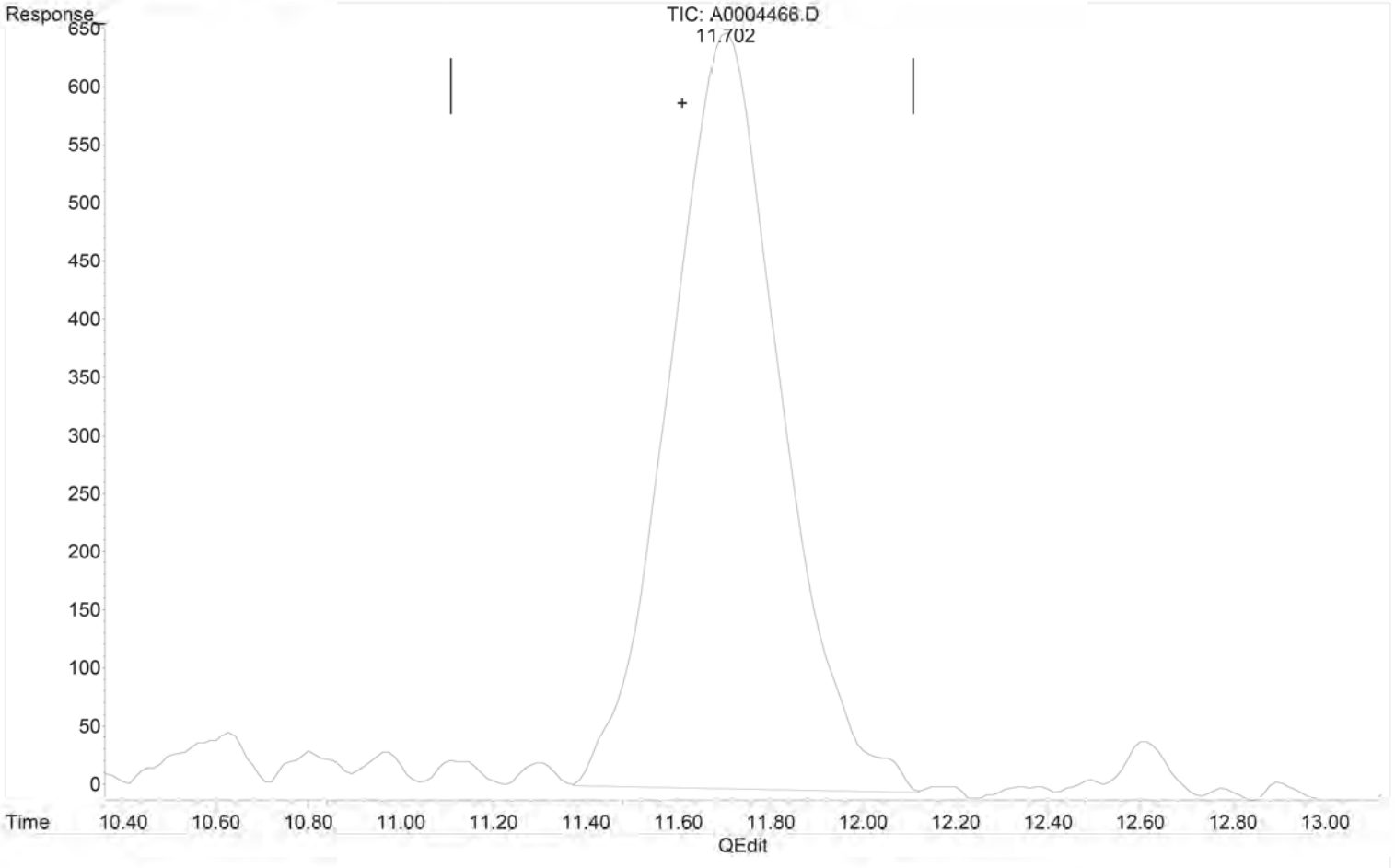
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.702min 1.979 ppm m
response 108705

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:22:02 2020

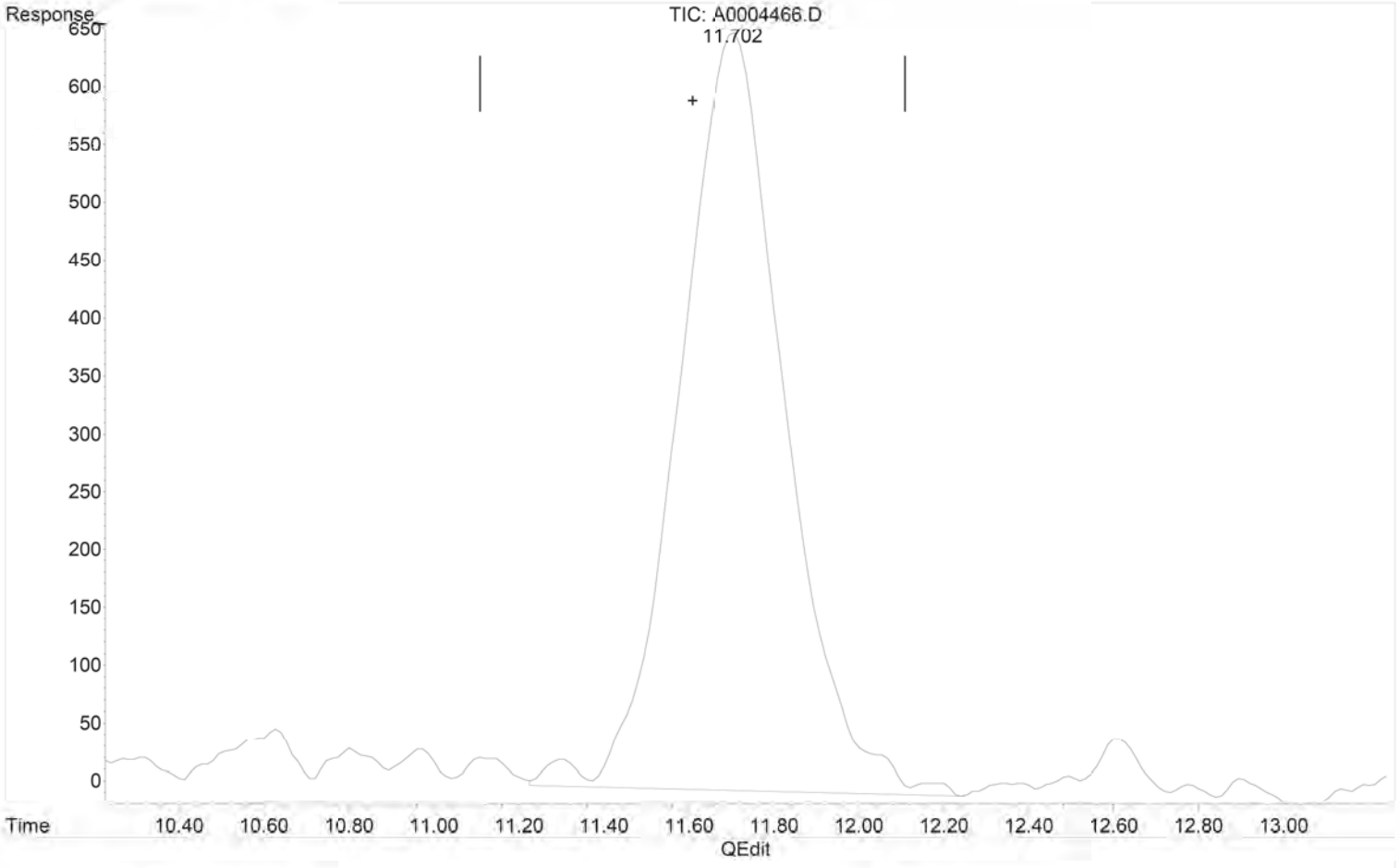
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.707min 2.047 ppm
response 112454

Manual Integration:
Before

03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:21:52 2020

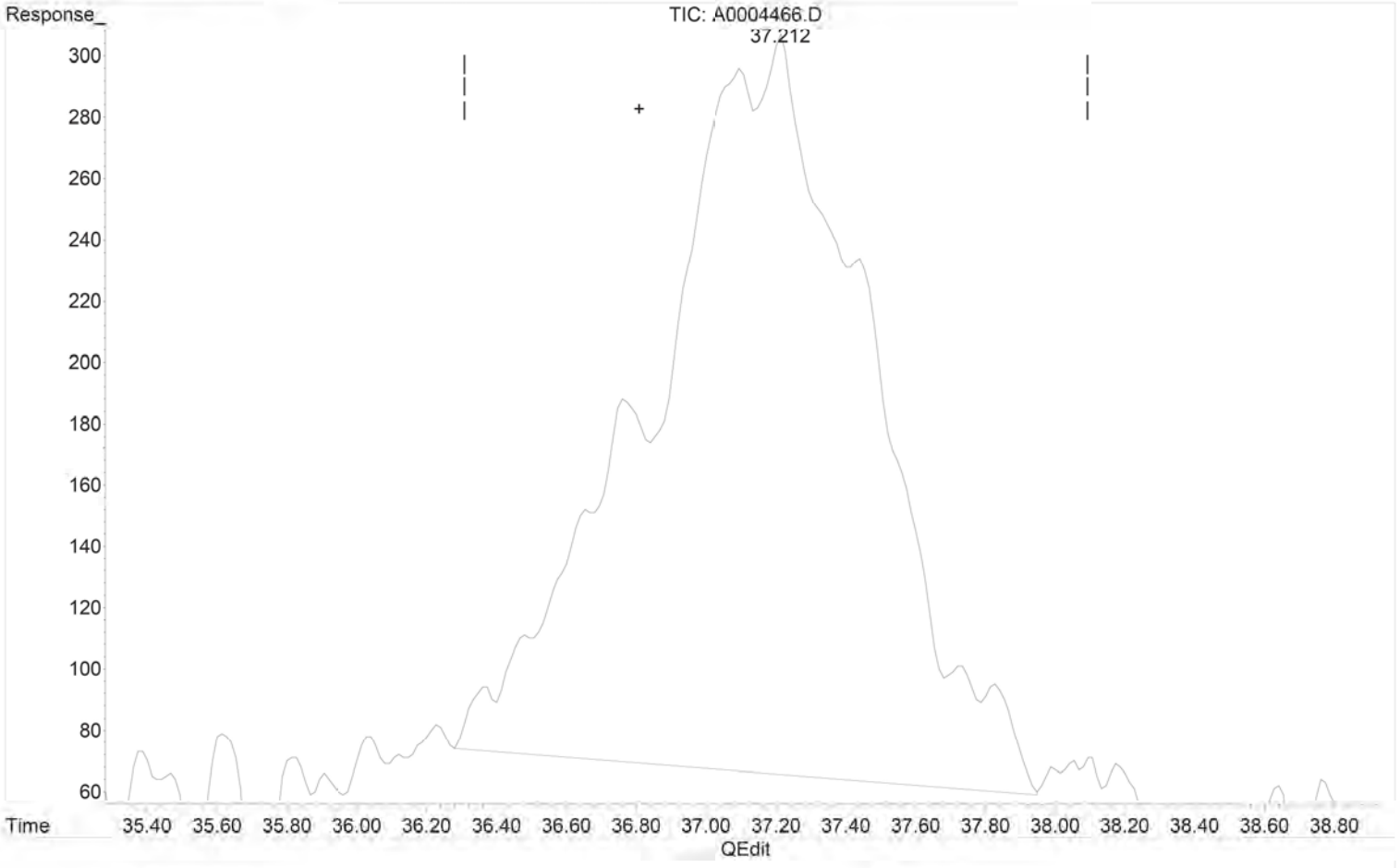
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.212min 2.029 ppm m

response 106761

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

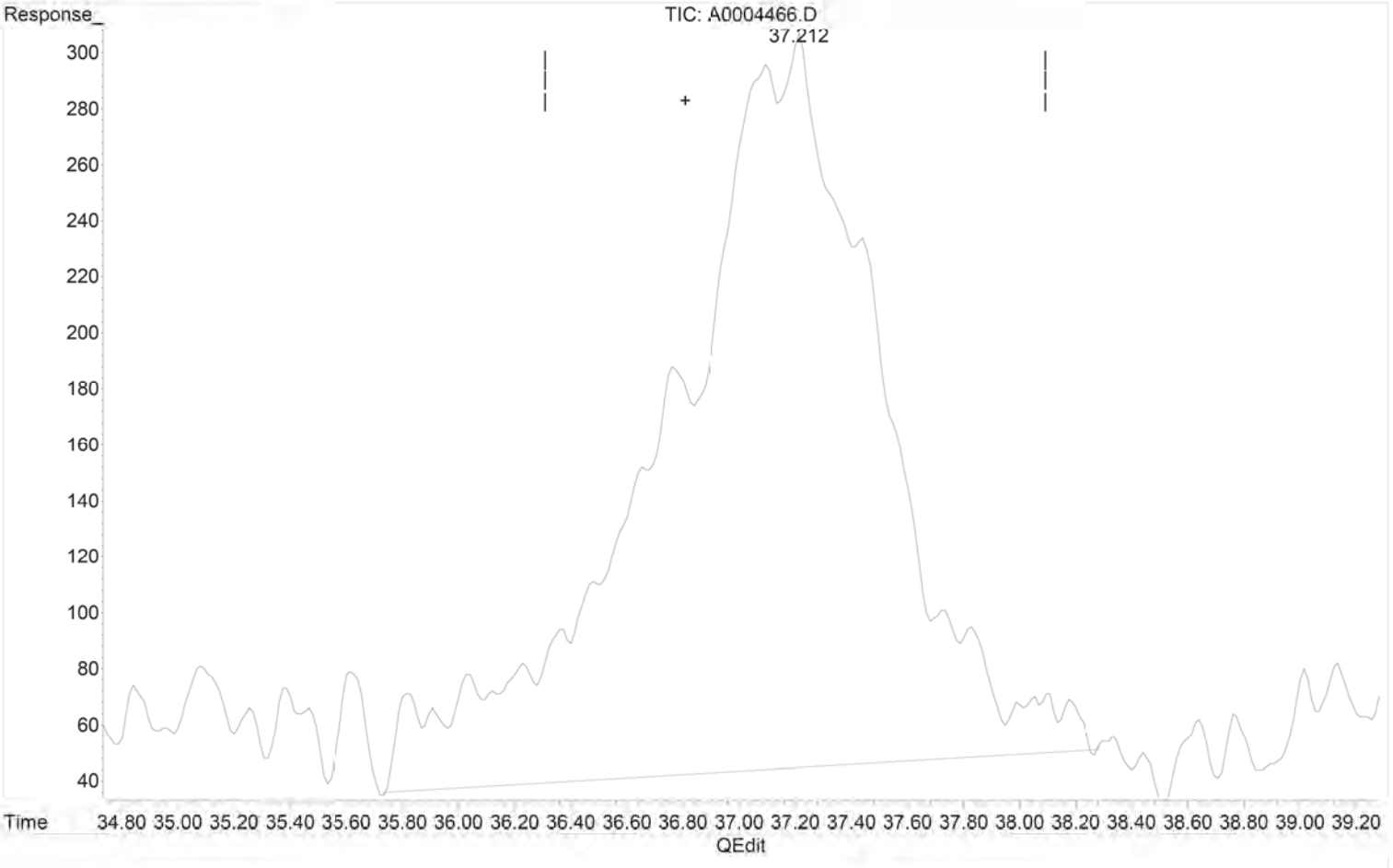
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.213min 2.698 ppm

response 141960

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.948	184745	2.019	ppm	m
2) T	Pyruvic acid	3.629	113308	0.194	ppm	m
3) T	Lactic Acid	4.132	109344	1.974	ppm	m
4) T	Acetic Acid	4.622	113173	2.028	ppm	m
5) T	Propionic Acid	11.702	108705	1.979	ppm	m
6) T	Butyric Acid	37.212	106761	2.029	ppm	m

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

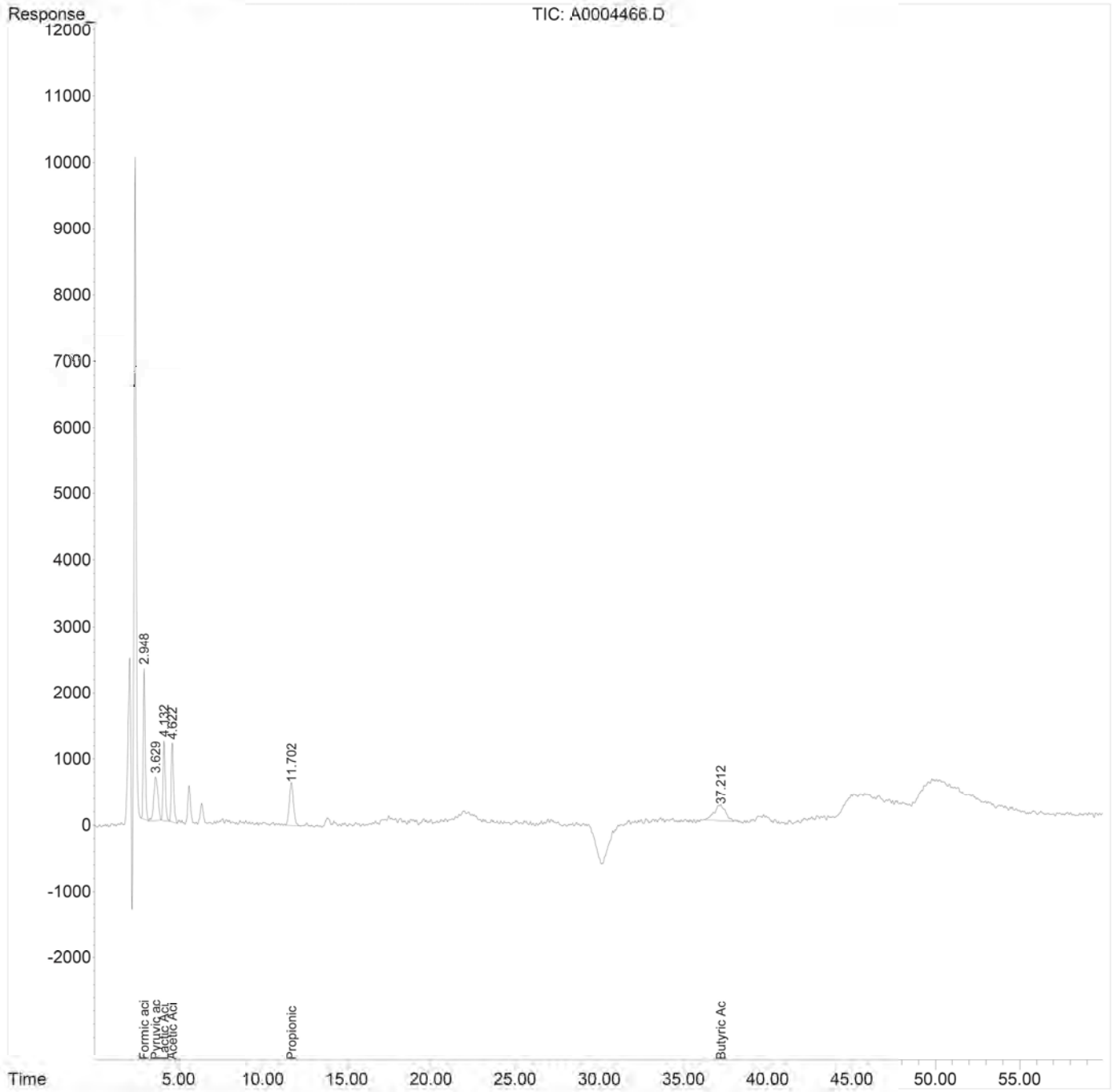
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004466.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 13:42:51
Operator : A.Felser
Sample : STD 2
Misc :
ALS Vial : 3 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:18 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



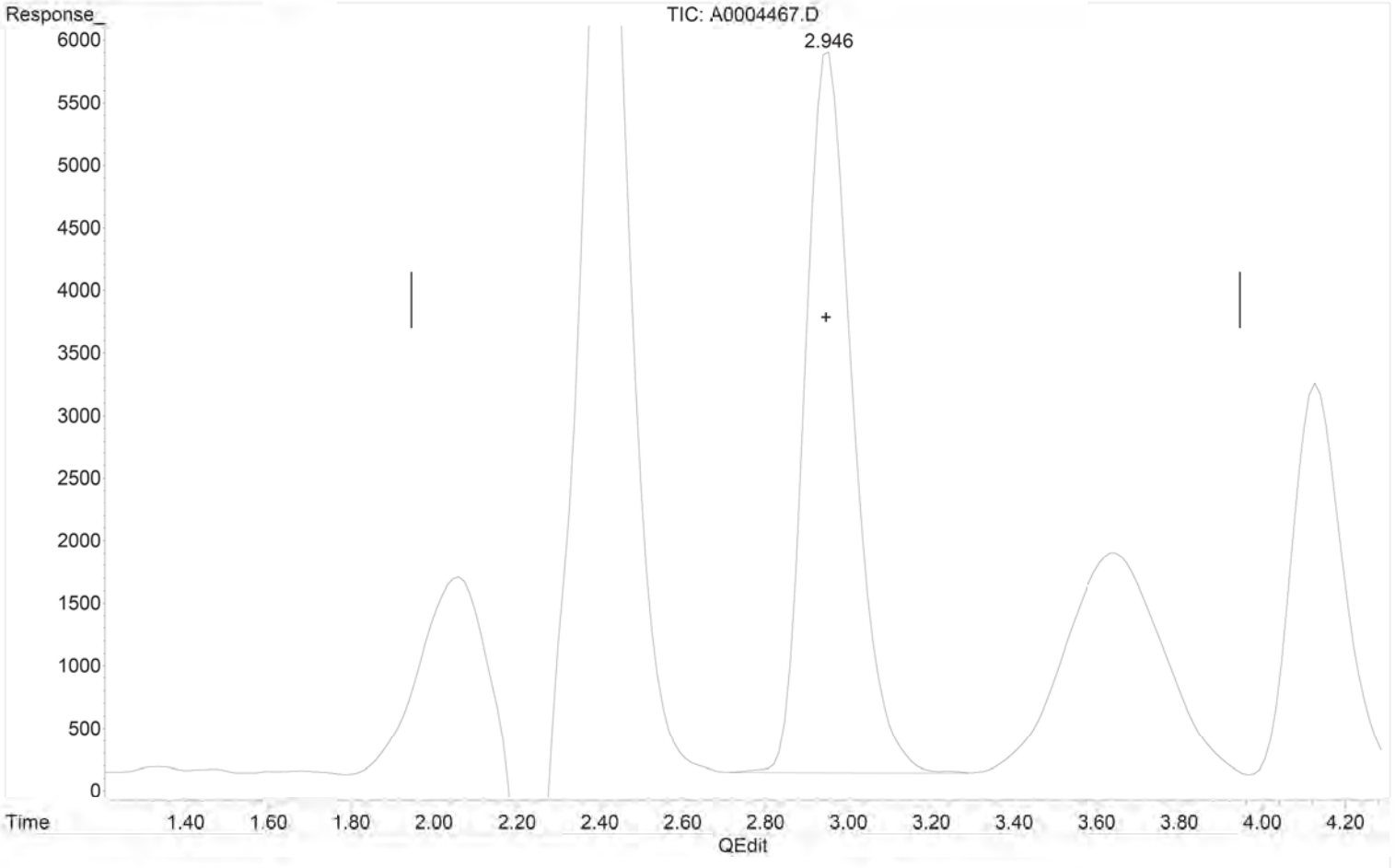
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.946min 5.032 ppm m

response 460497

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

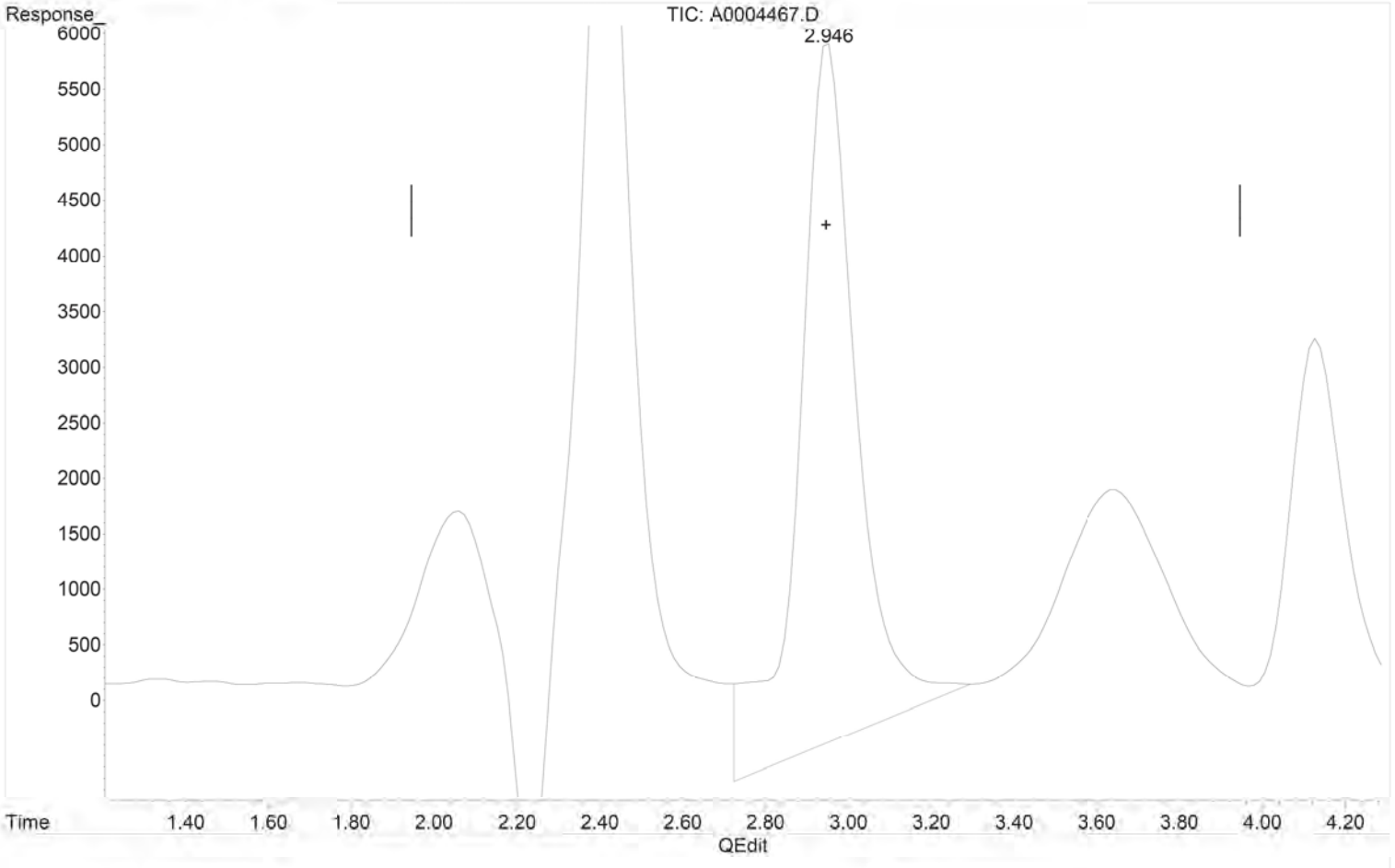
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.953min 6.666 ppm

response 609950

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:22:36 2020

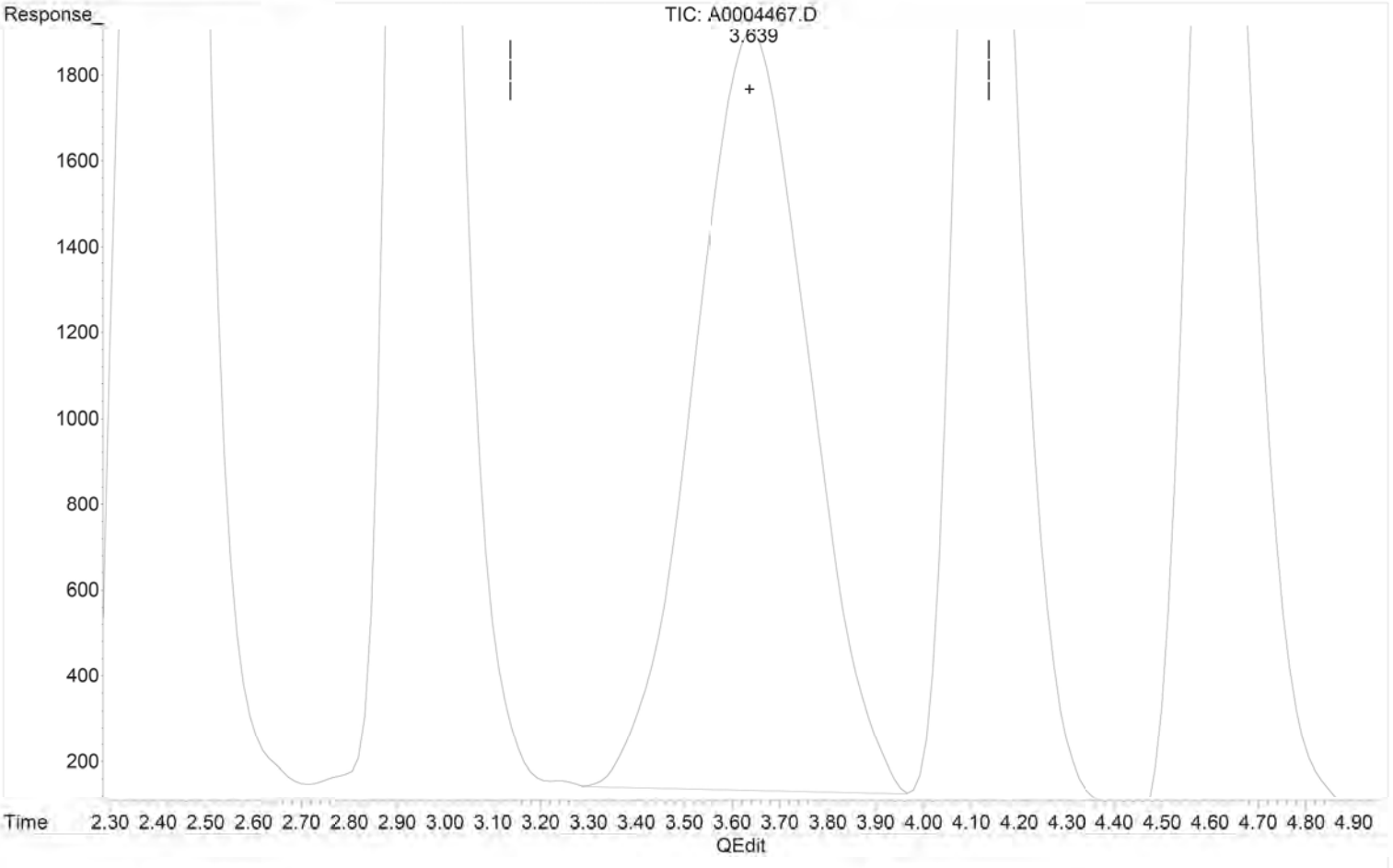
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.639min 0.503 ppm m
response 293242

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:23:00 2020

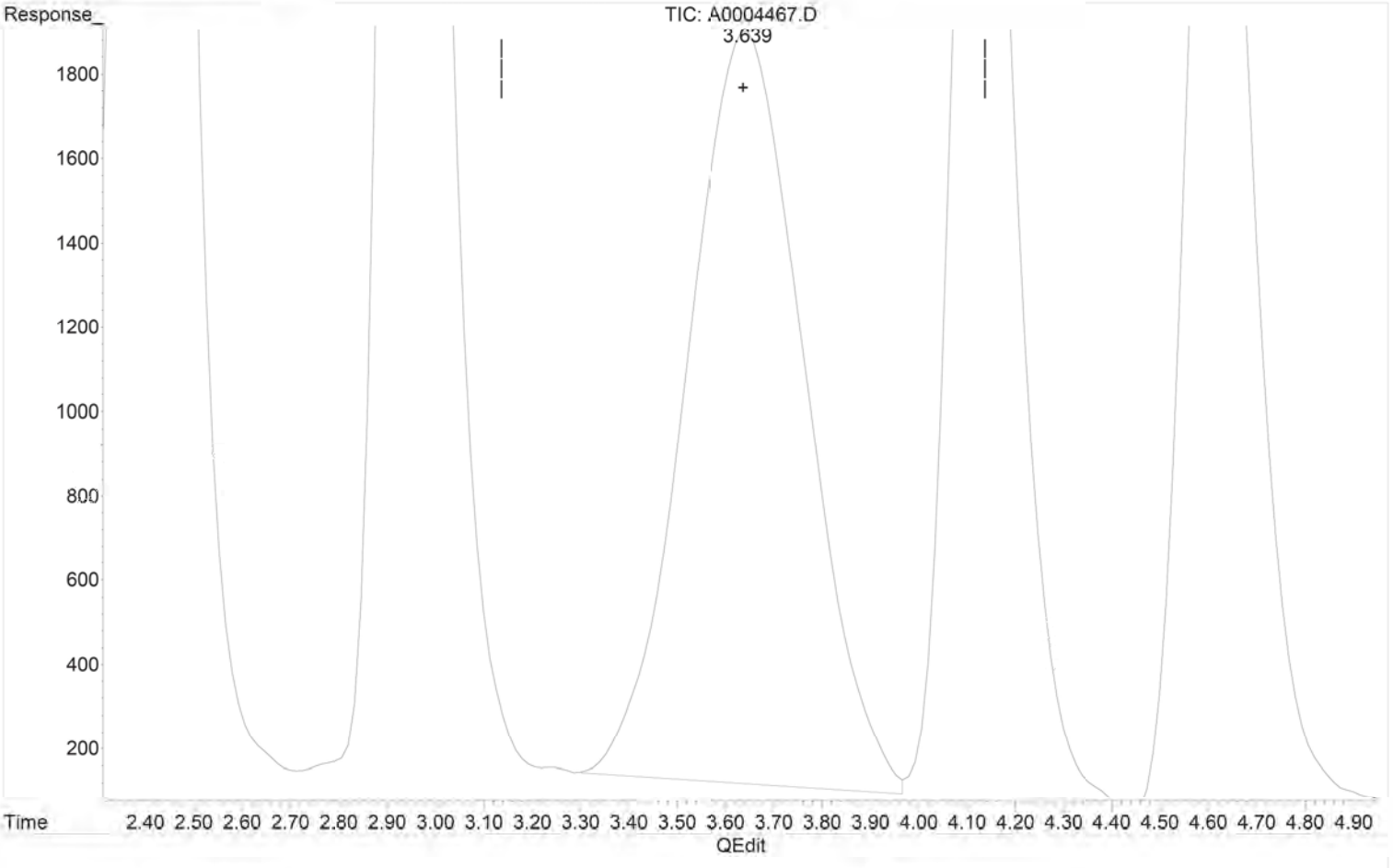
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.645min 0.513 ppm

response 299278

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

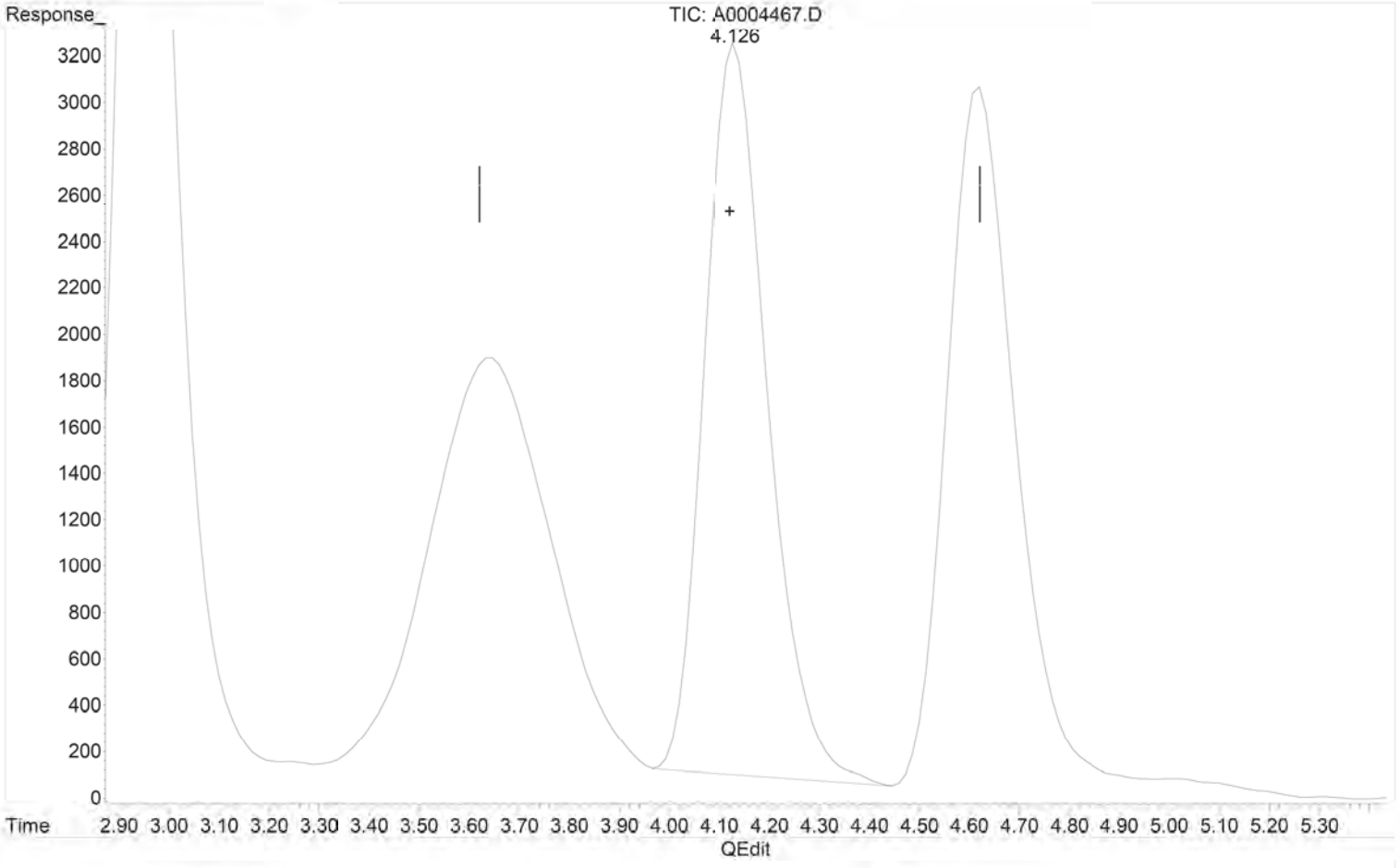
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)
4.126min 4.978 ppm m
response 275770

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:23:13 2020

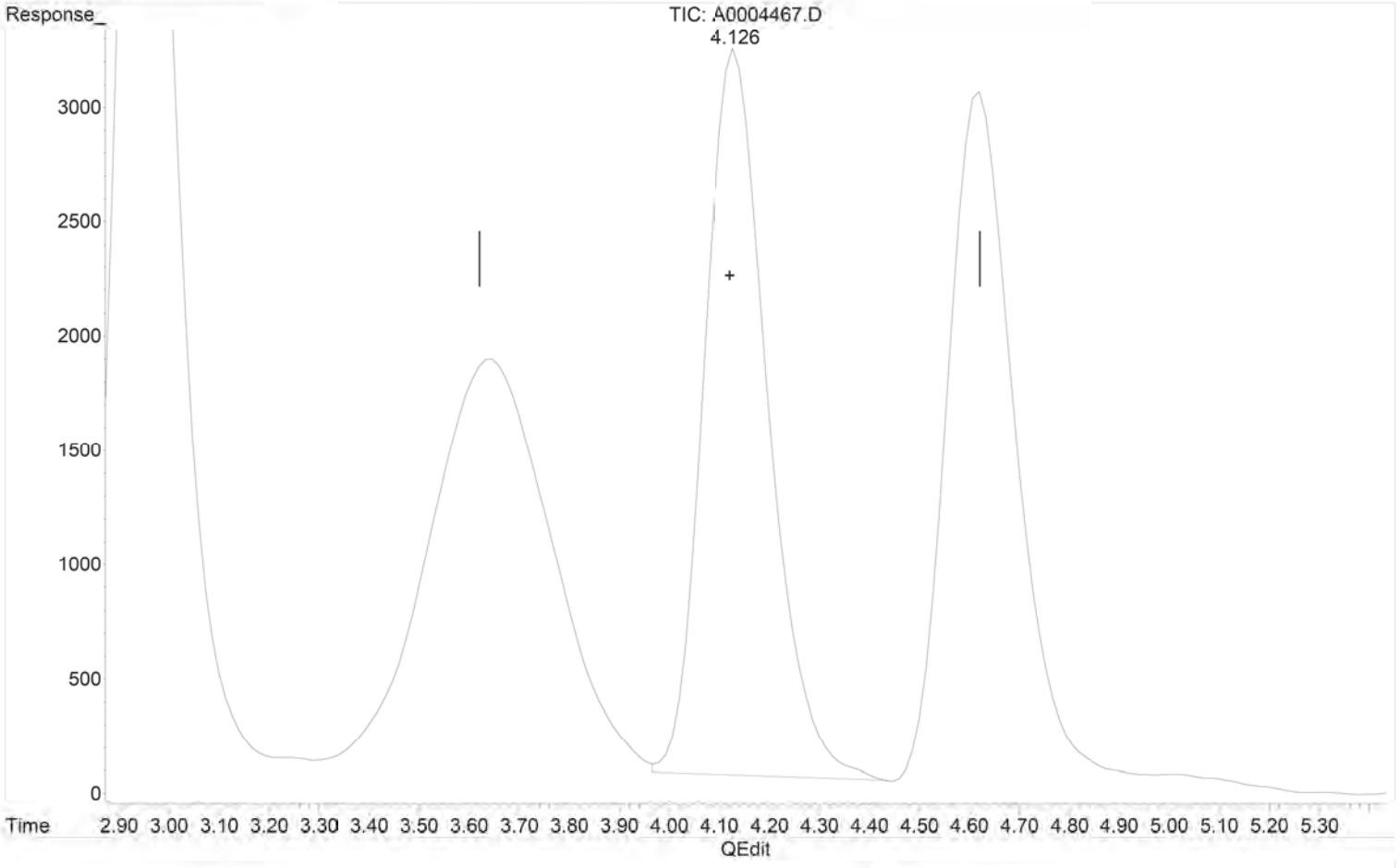
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.132min 5.051 ppm

response 279806

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

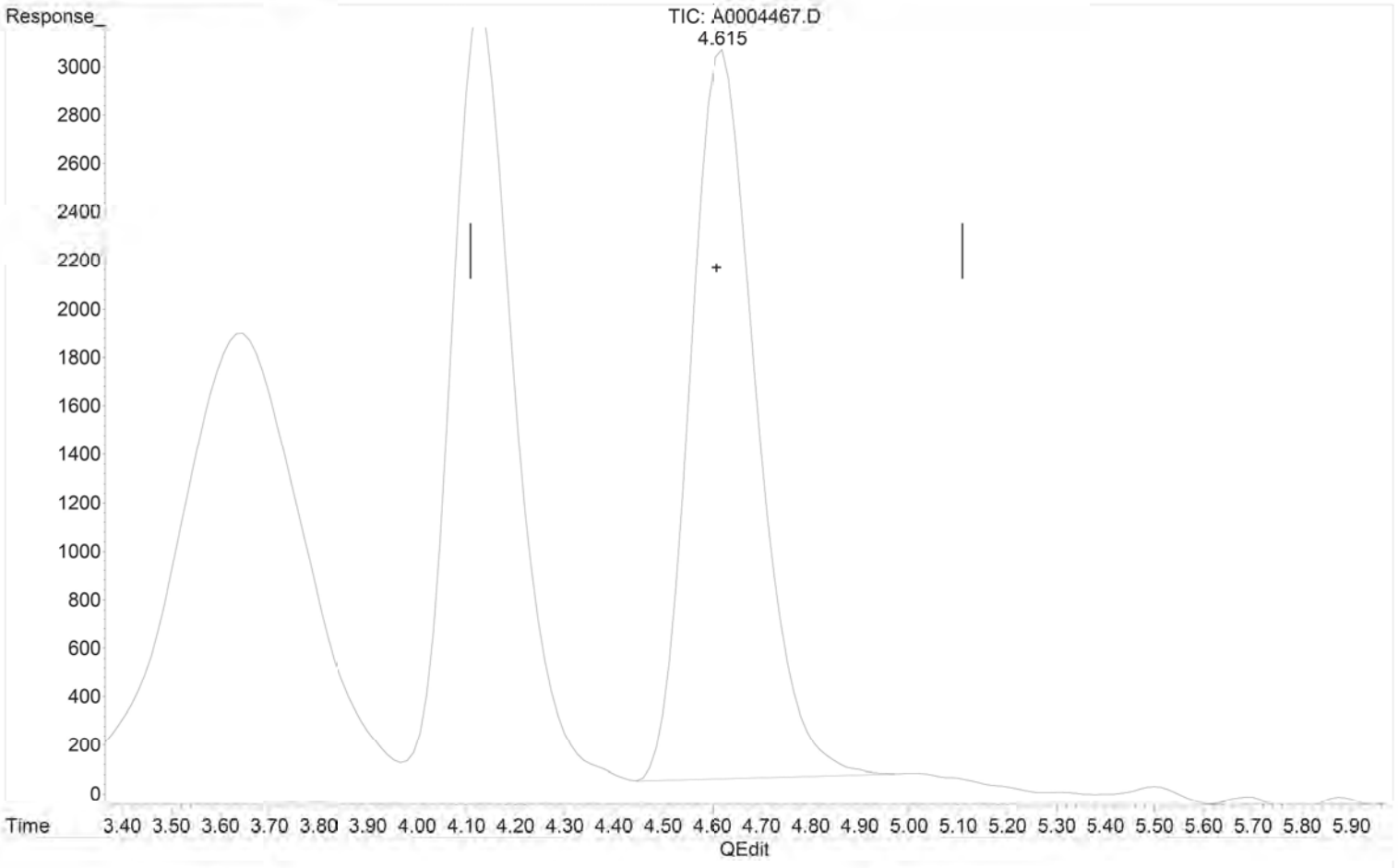
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.615min 5.028 ppm m
response 280536

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:23:24 2020

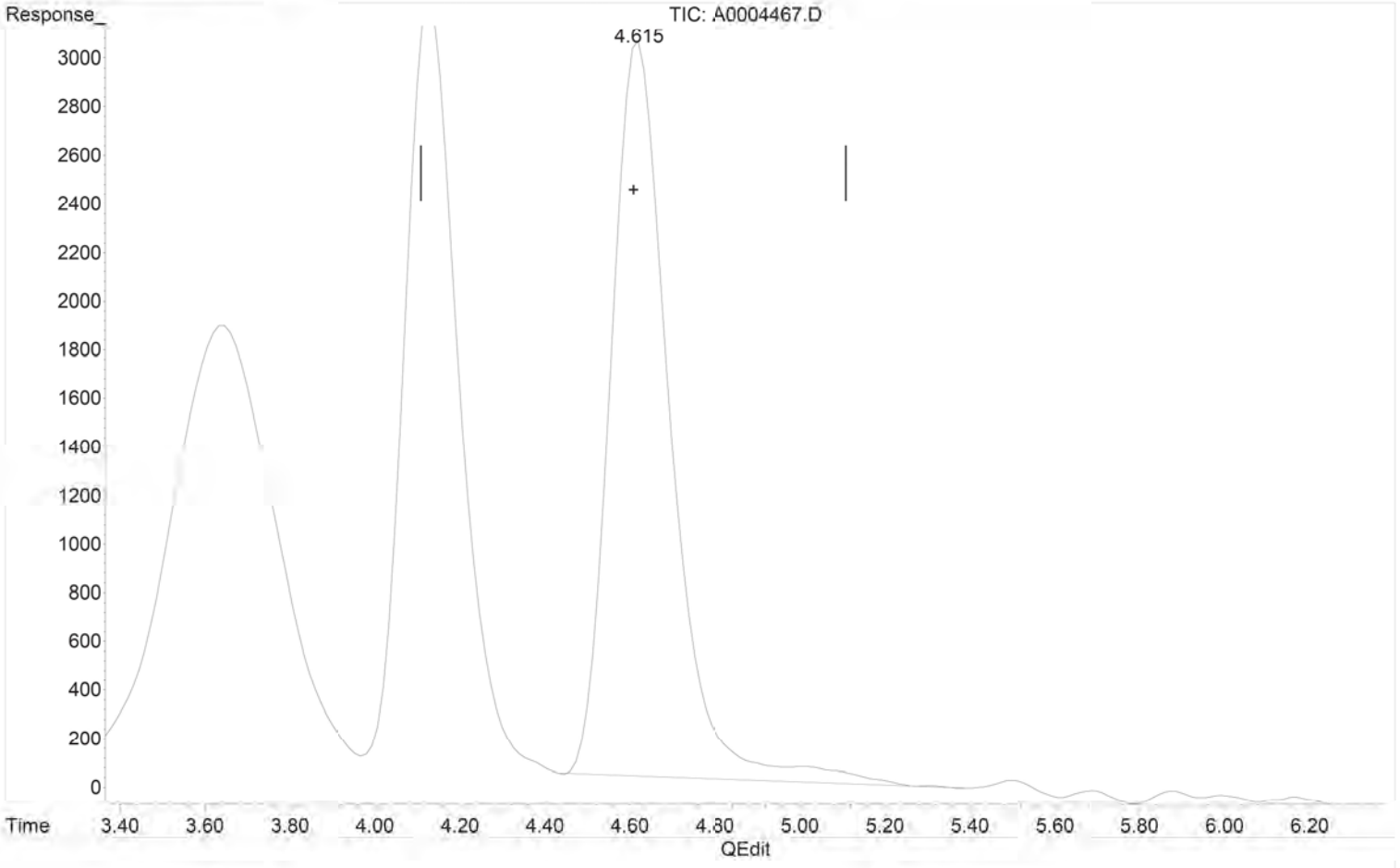
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.622min 5.292 ppm

response 295308

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

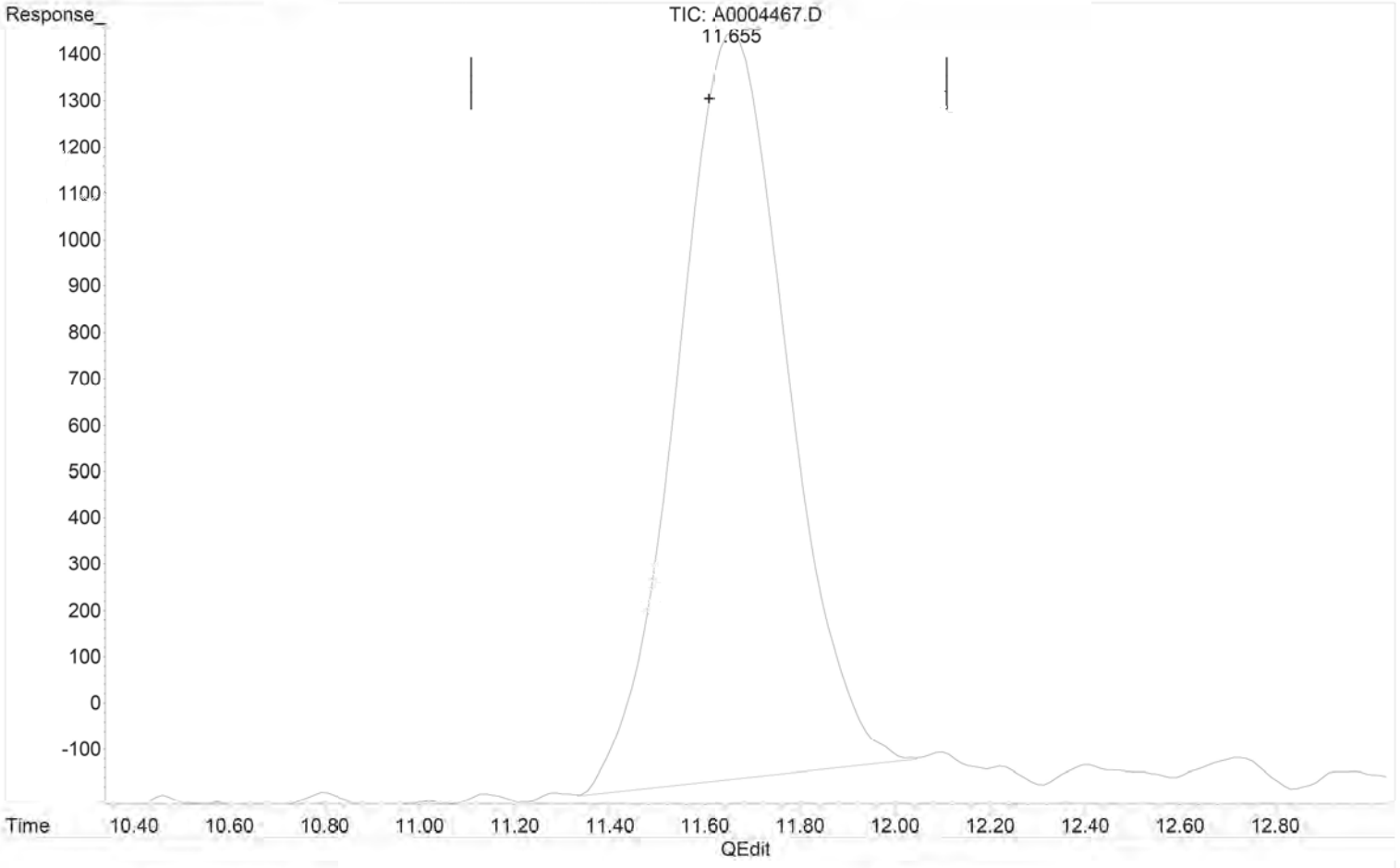
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.655min 4.717 ppm m
response 259122

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time

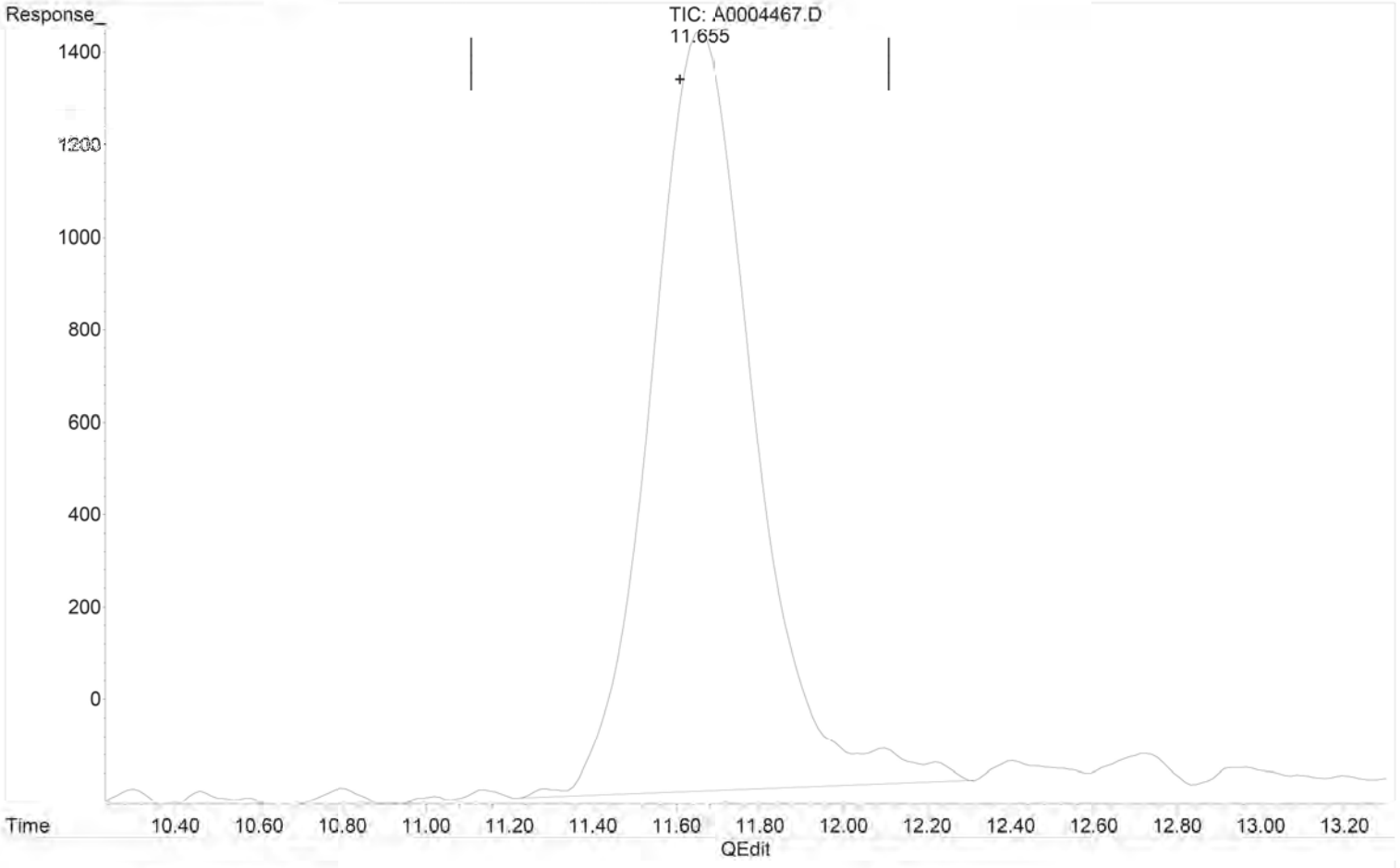
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.661min 5.138 ppm
response 282253

Manual Integration:
Before

03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:23:28 2020

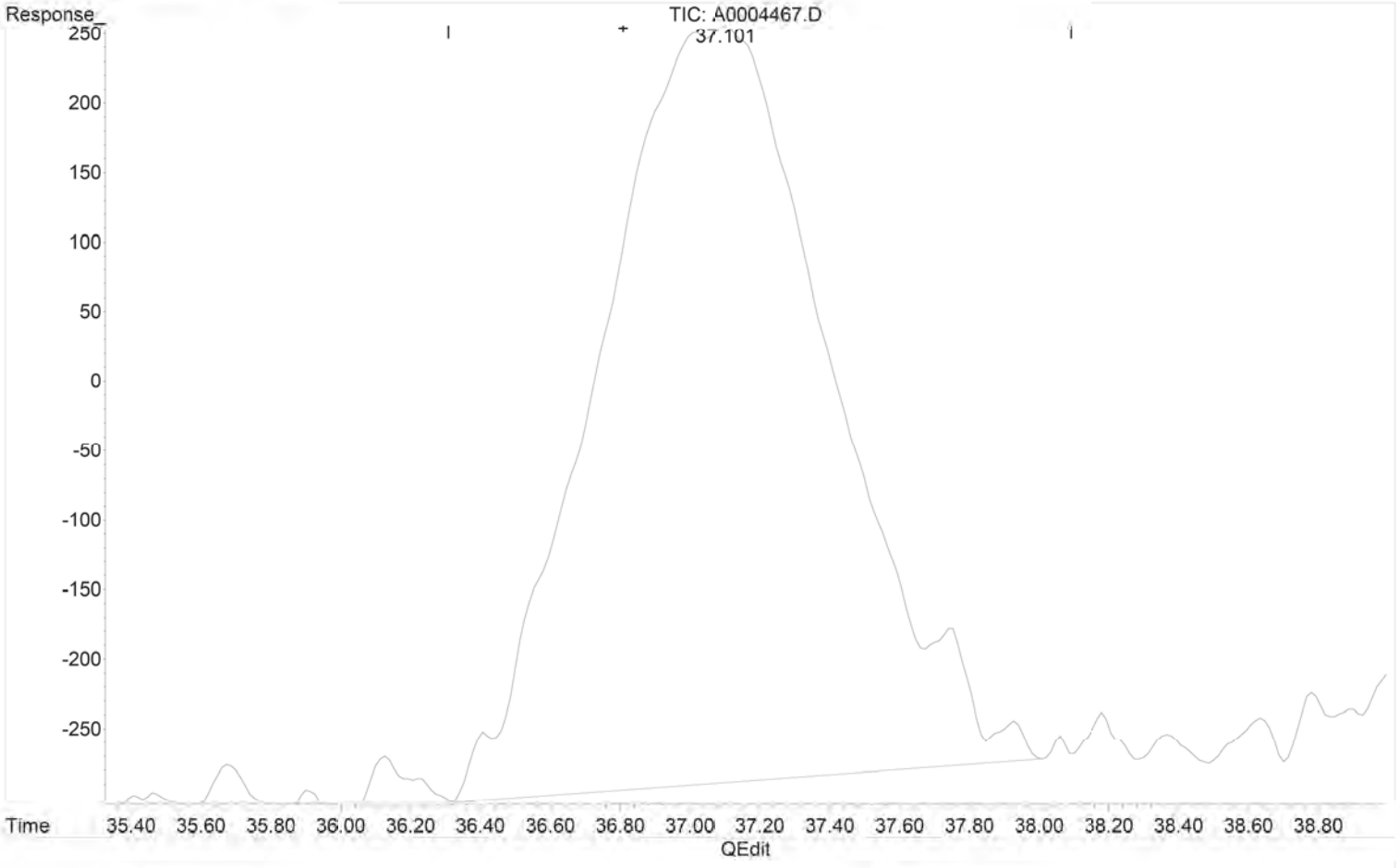
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.101min 4.834 ppm m

response 254345

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:23:53 2020

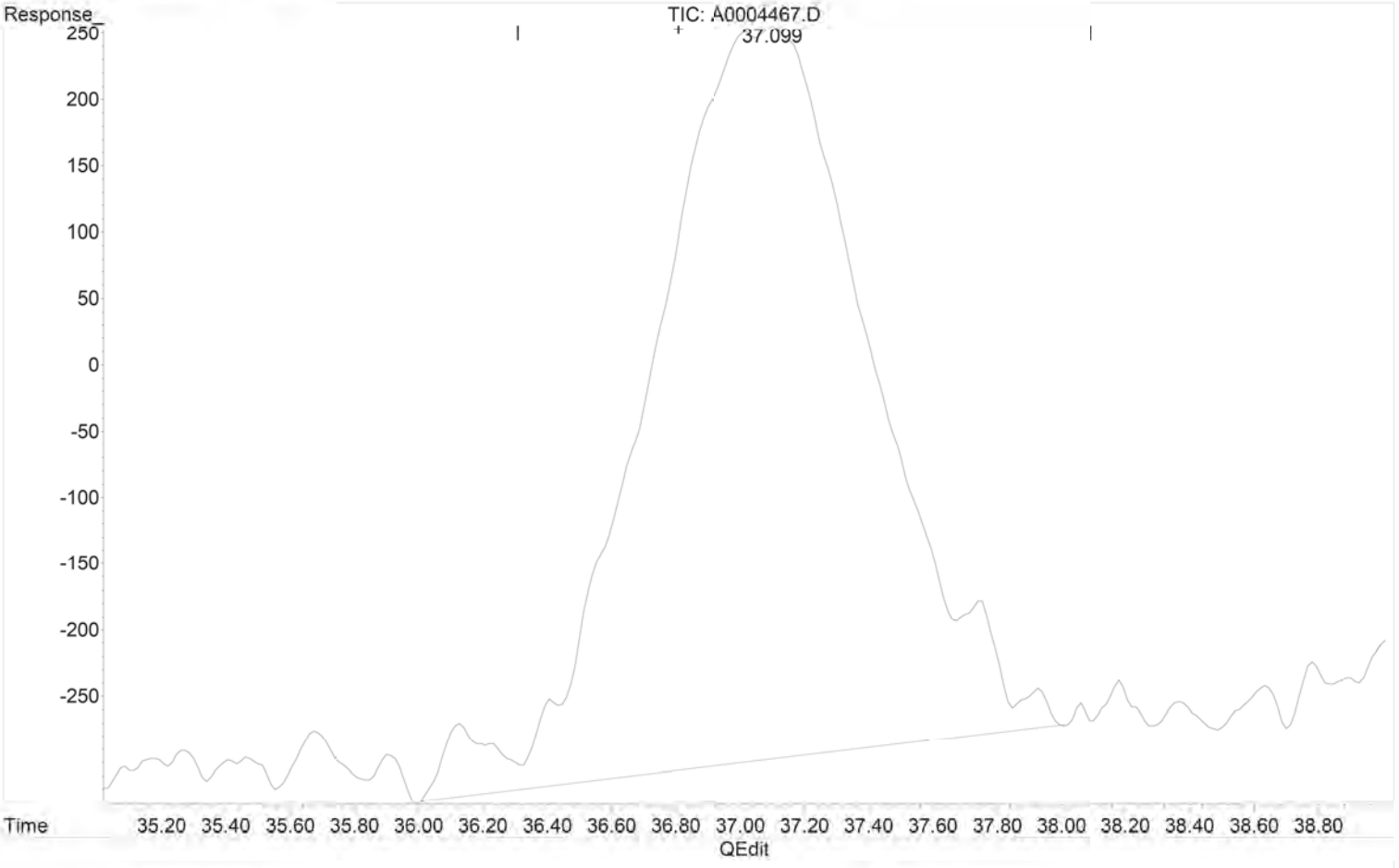
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

37.103min 5.106 ppm

response 268658

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : ~~30-Dec-2000, 02:48:14~~ 12-Mar-2020, 14:42
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.946	460497	5.032	ppm	m
2) T	Pyruvic acid	3.639	293242	0.503	ppm	m
3) T	Lactic Acid	4.126	275770	4.978	ppm	m
4) T	Acetic Acid	4.615	280536	5.028	ppm	m
5) T	Propionic Acid	11.655	259122	4.717	ppm	m
6) T	Butyric Acid	37.101	254345	4.834	ppm	m

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

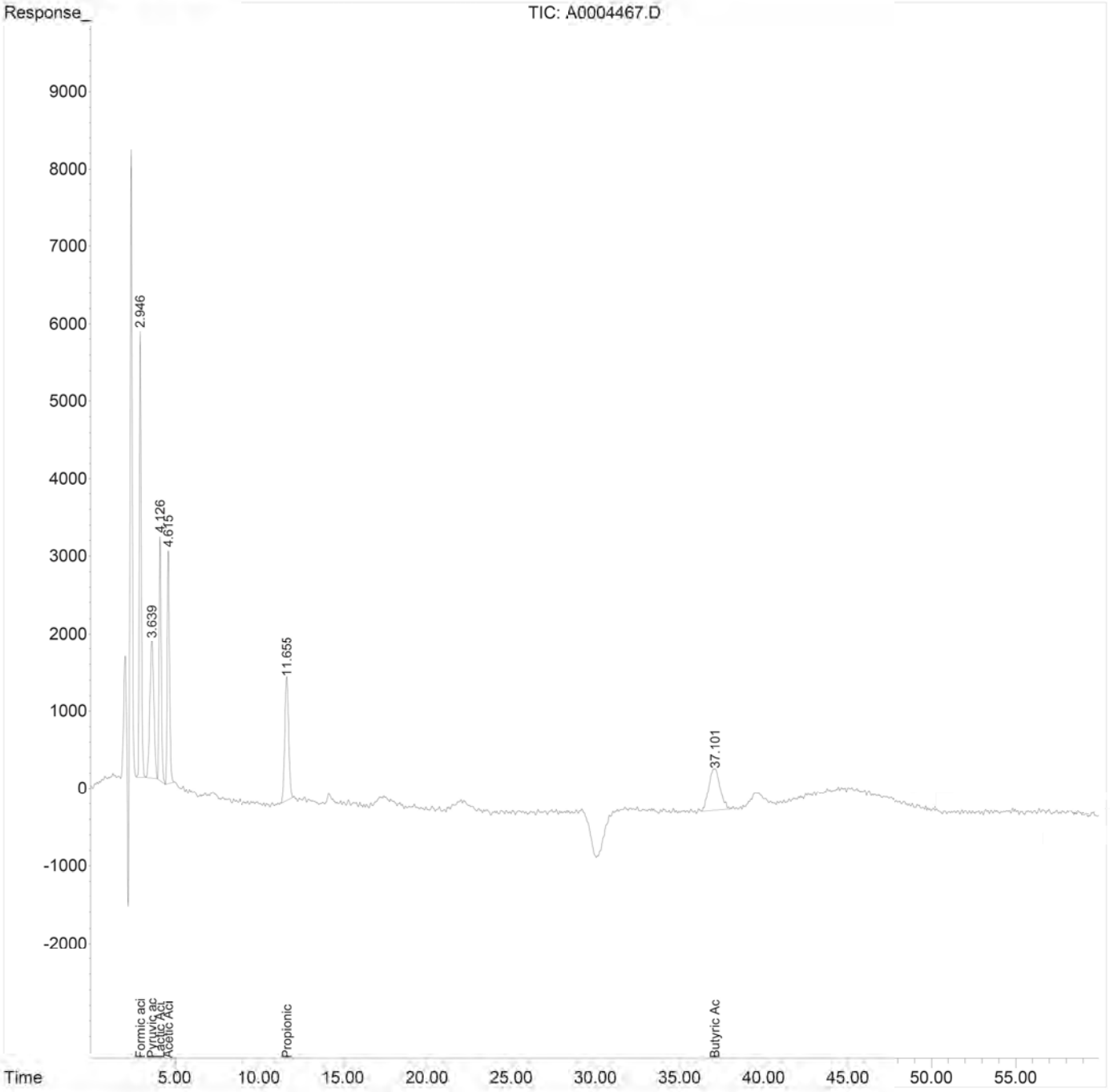
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004467.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 02:48:14
Operator : A.Felser
Sample : STD 3
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:20 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



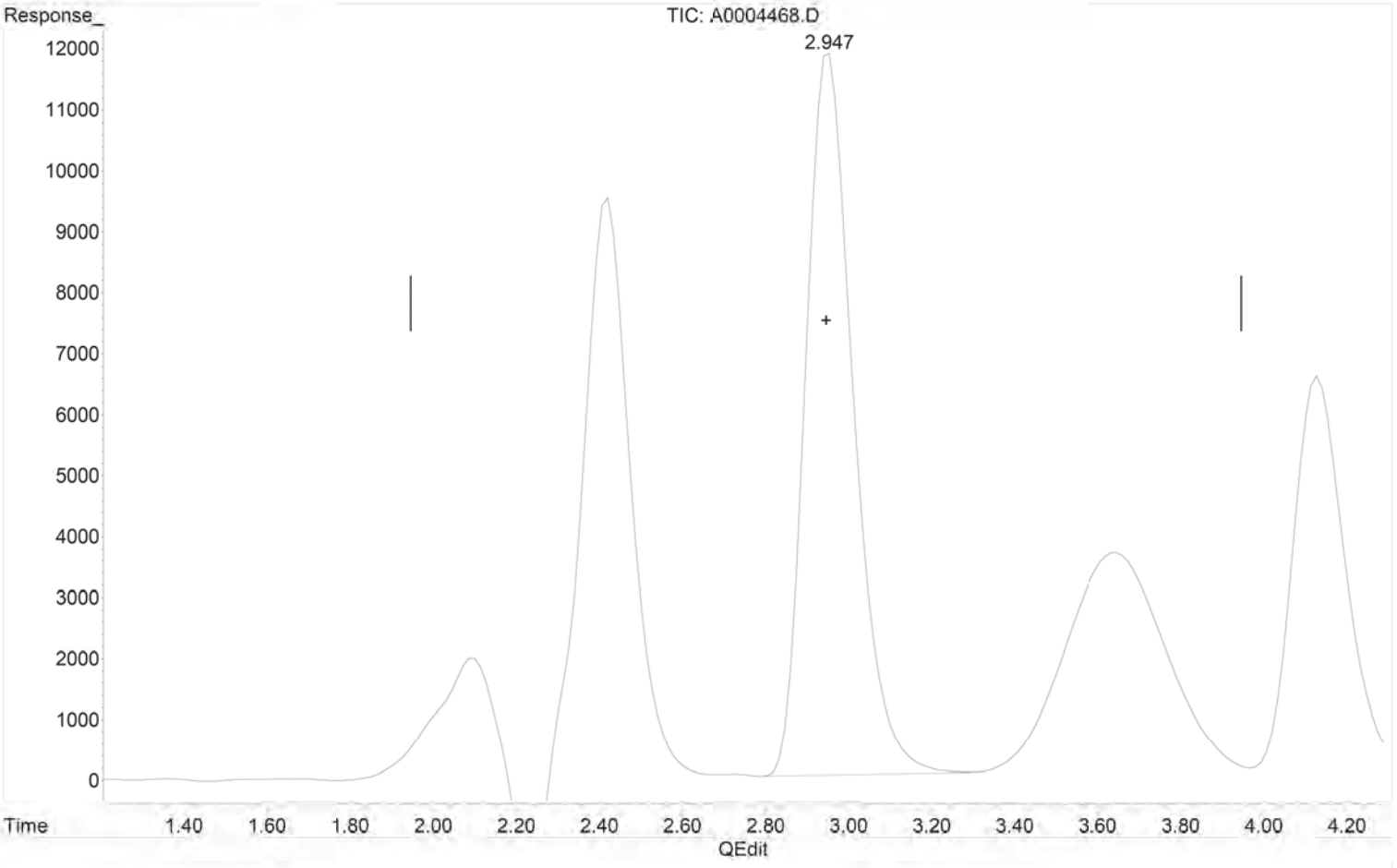
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.947min 10.368 ppm m

response 948710

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

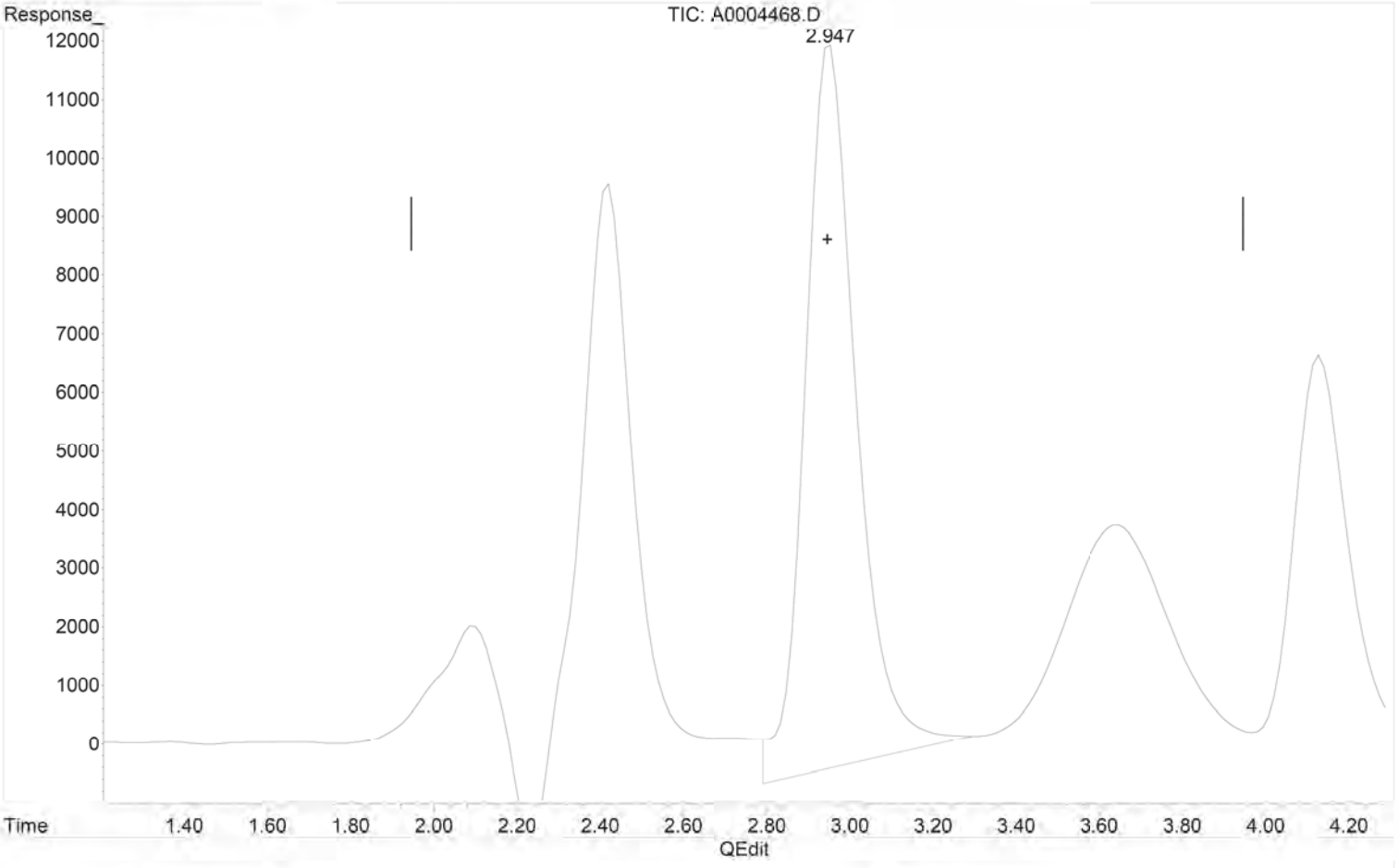
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.954min 11.593 ppm

response 1060848

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

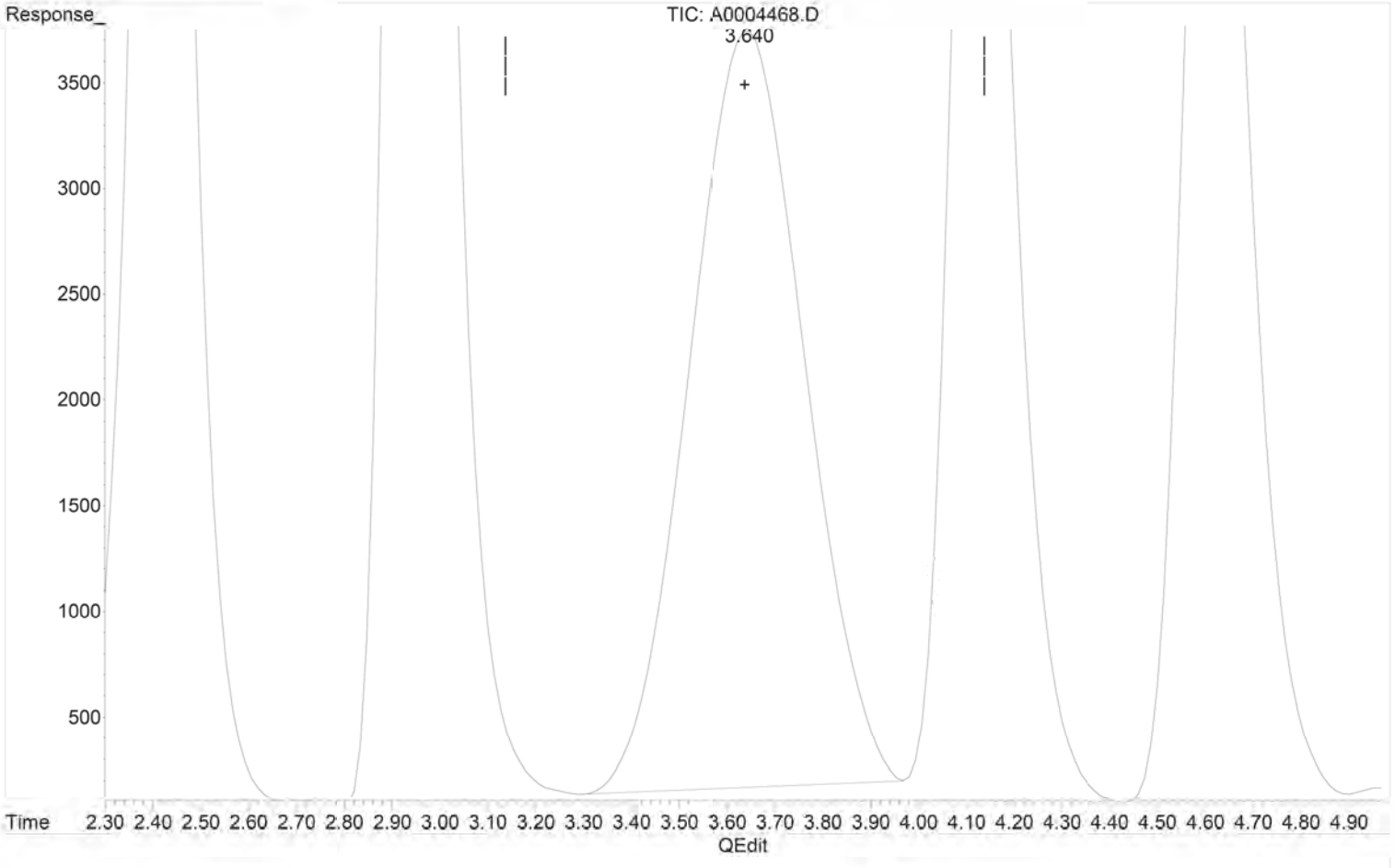
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.640min 1.020 ppm m
response 594304

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time

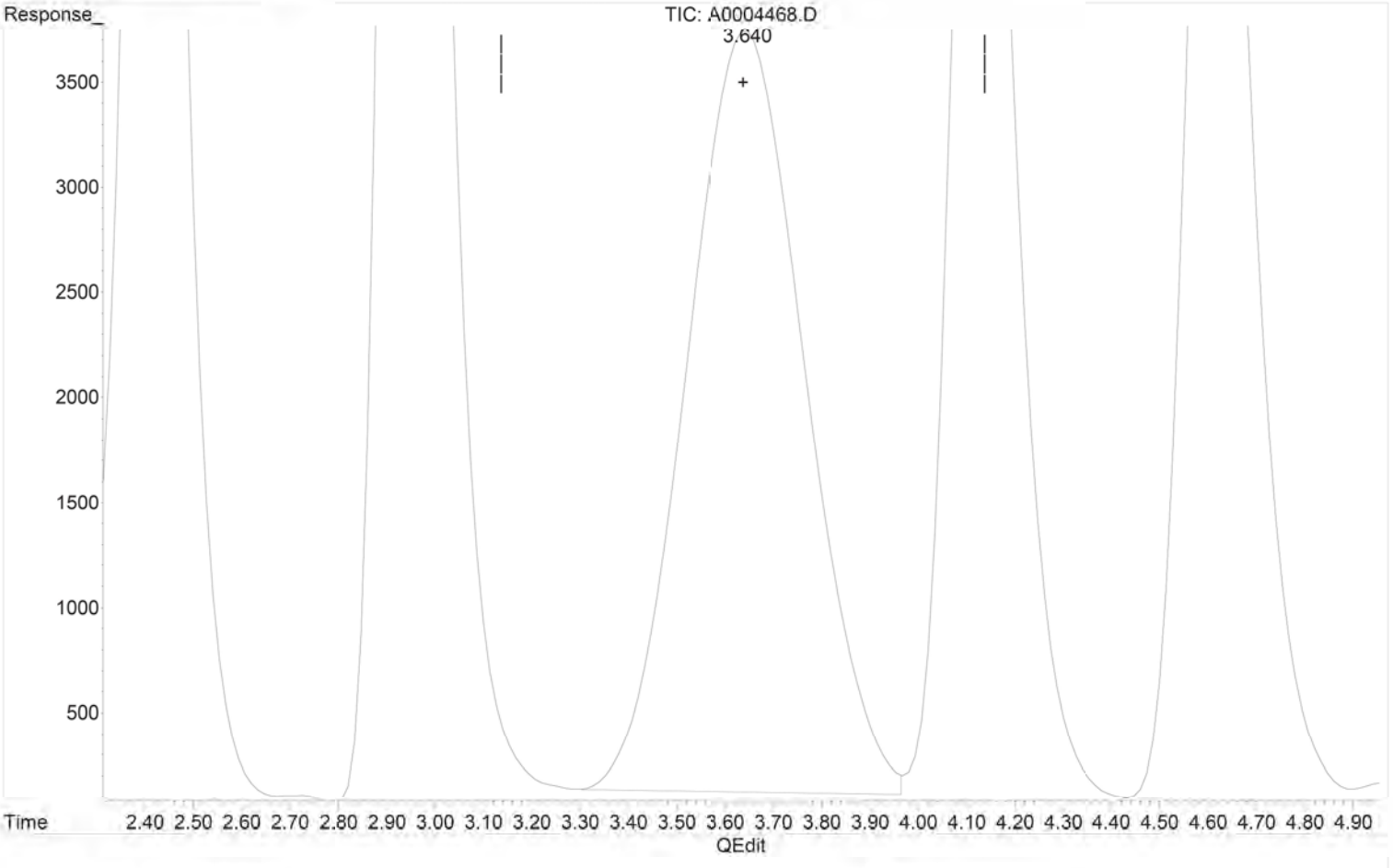
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.646min 1.048 ppm

response 611122

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

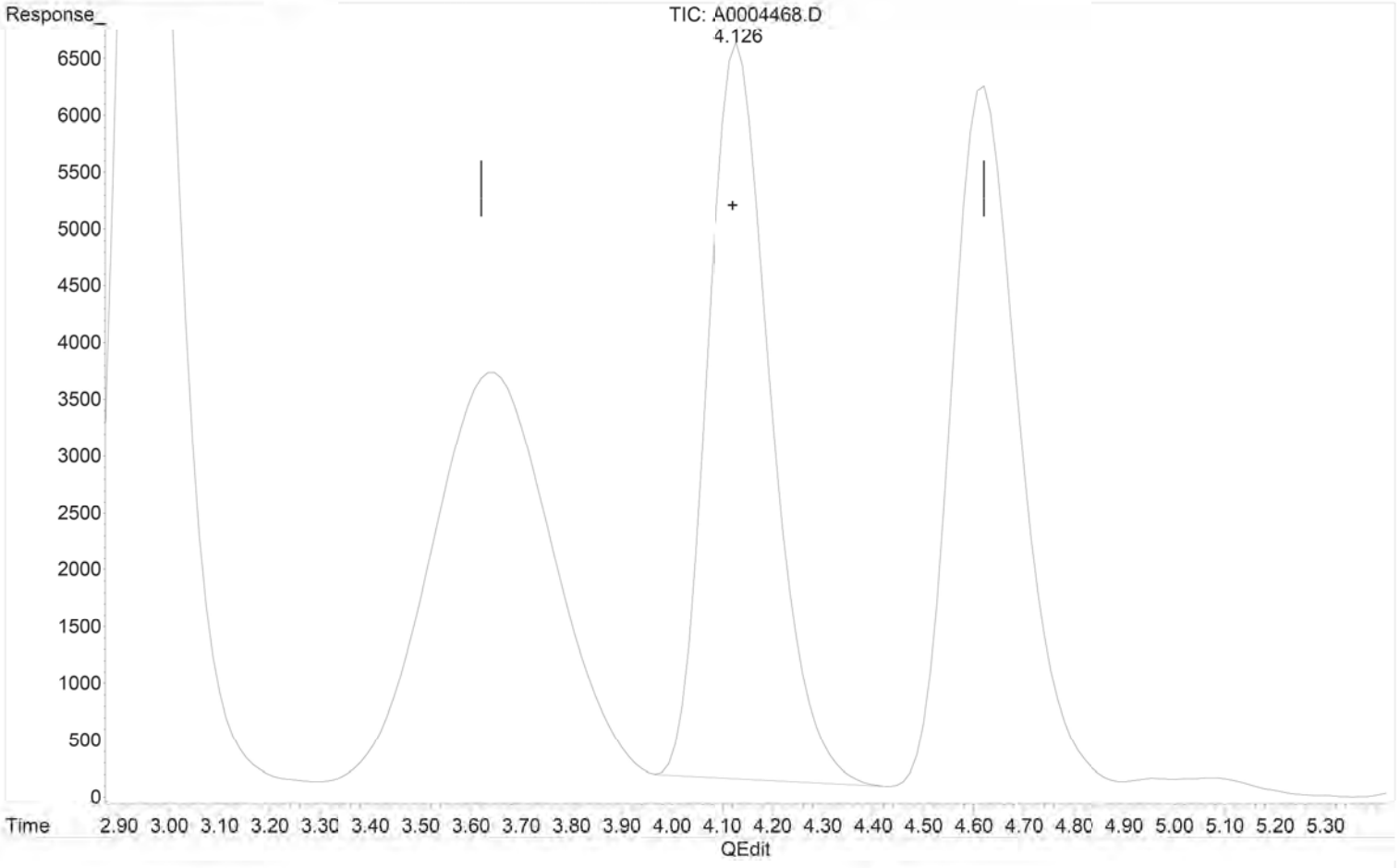
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)
4.126min 10.183 ppm m
response 564128

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time

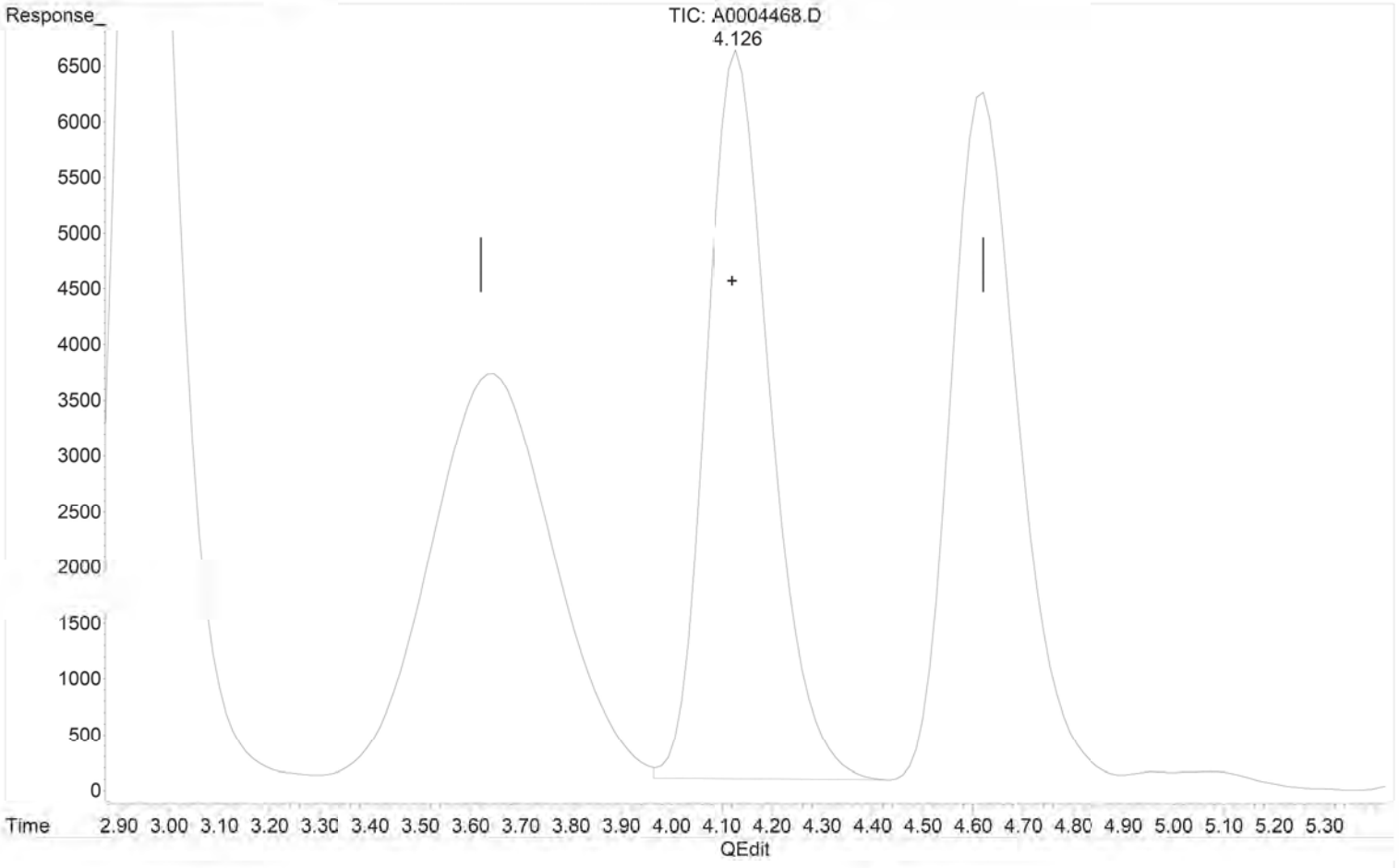
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.132min 10.406 ppm

response 576451

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

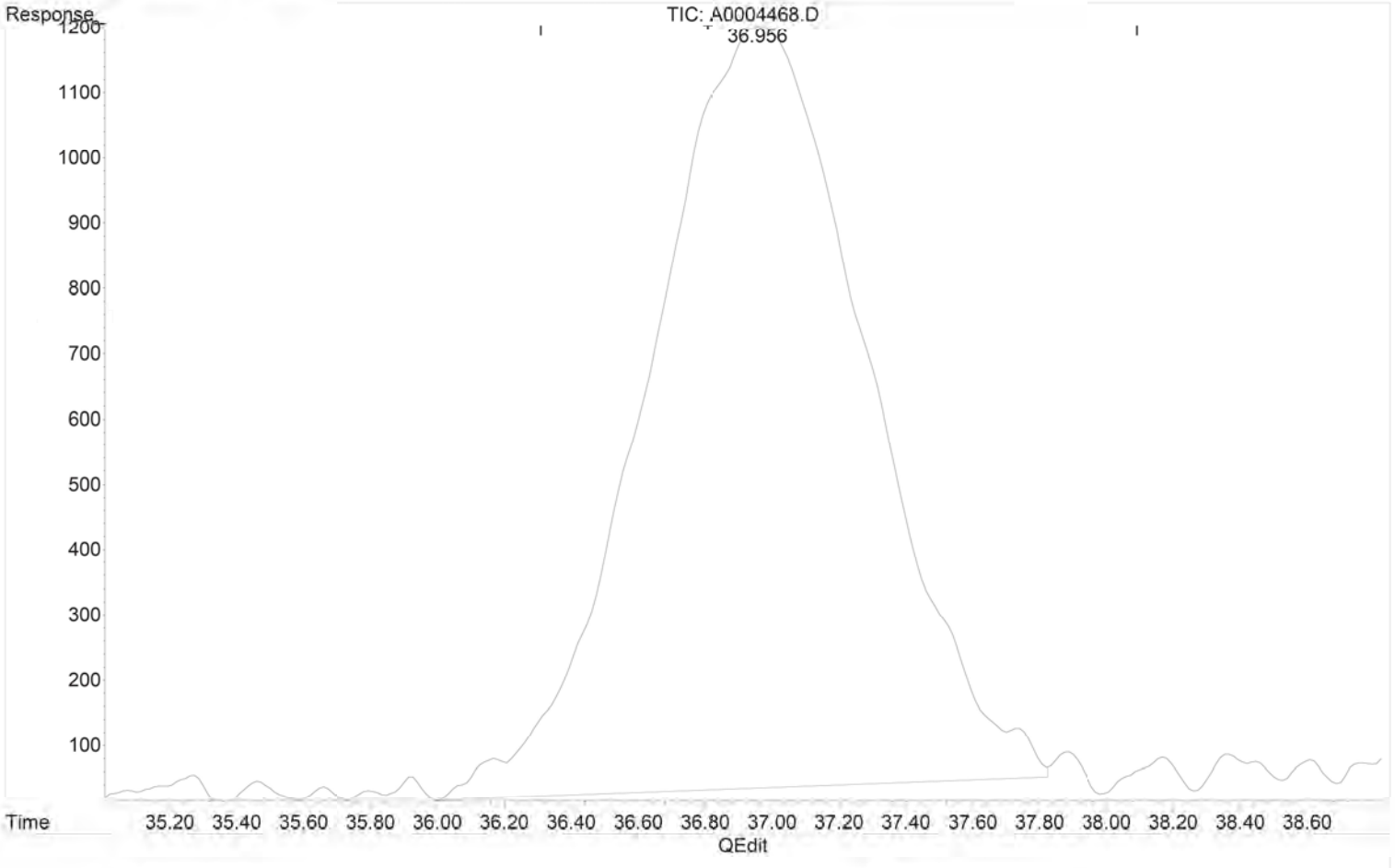
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.956min 10.111 ppm m

response 532016

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

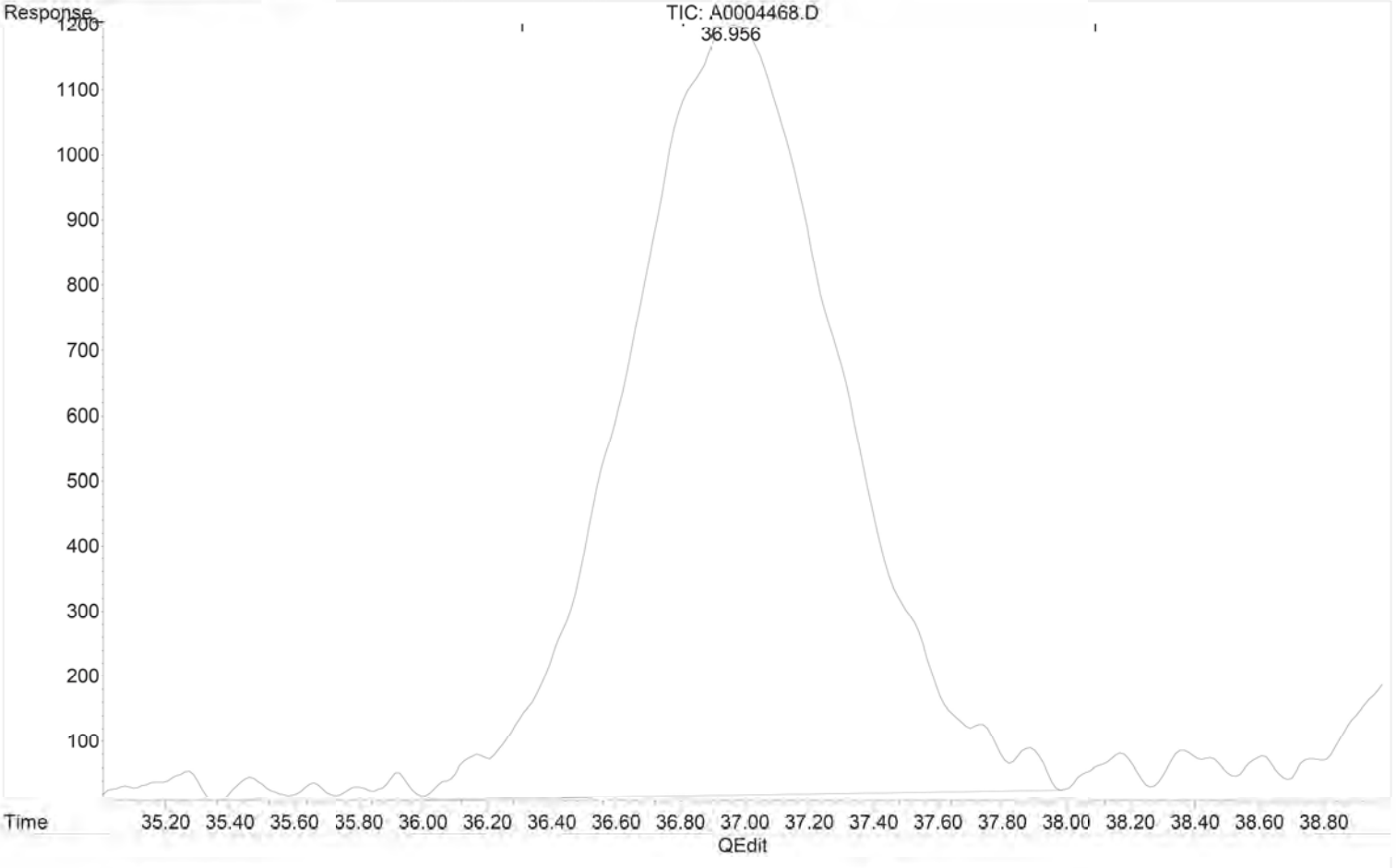
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.967min 10.515 ppm

response 553241

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.947	948710	10.368	ppm	m
2) T	Pyruvic acid	3.640	594304	1.020	ppm	m
3) T	Lactic Acid	4.126	564128	10.183	ppm	m
4) T	Acetic Acid	4.622	573121	10.271	ppm	
5) T	Propionic Acid	11.654	559828	10.190	ppm	
6) T	Butyric Acid	36.956	532016	10.111	ppm	m

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

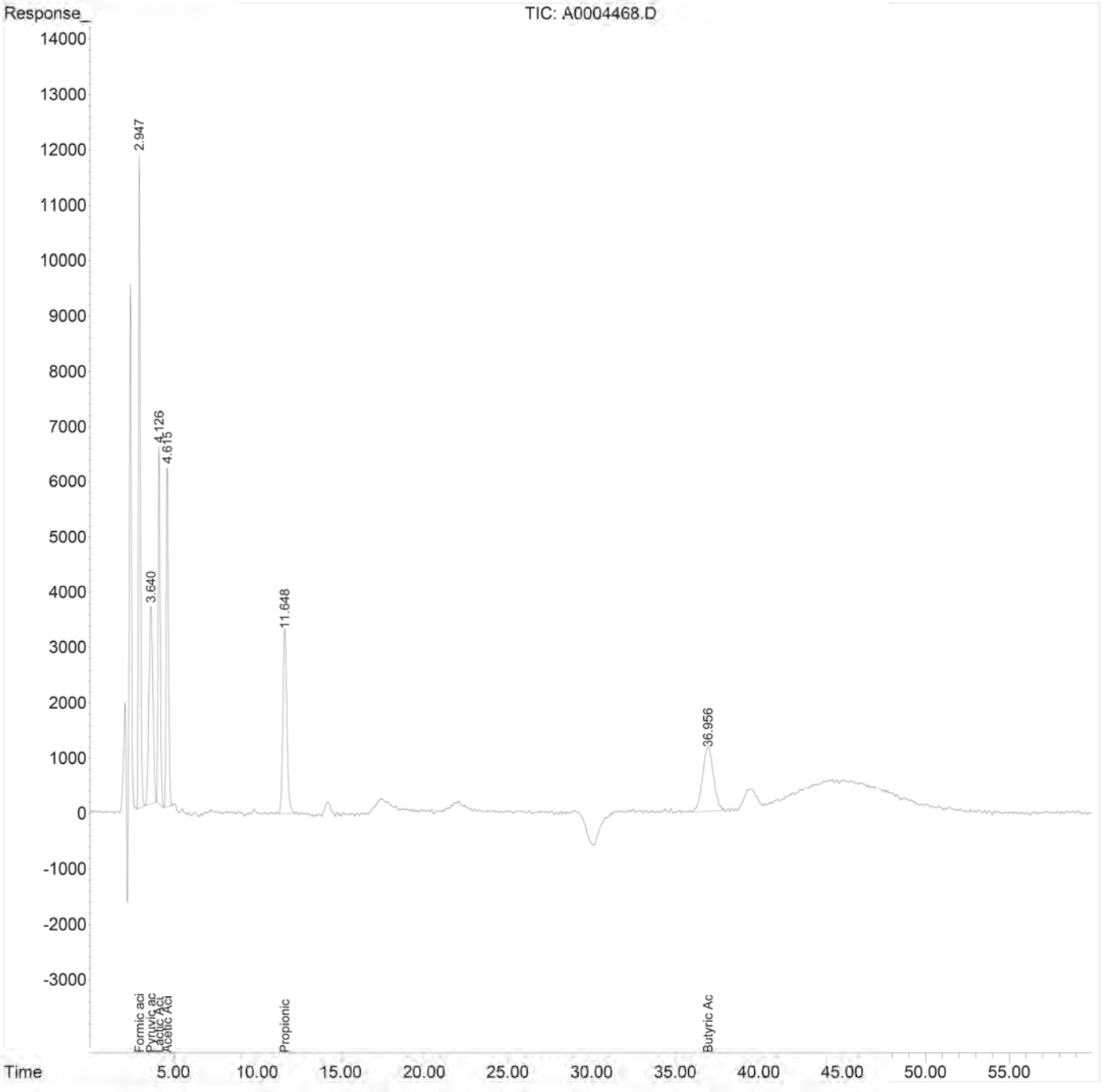
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004468.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 15:48:46
Operator : A.Felser
Sample : STD 4
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:22 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



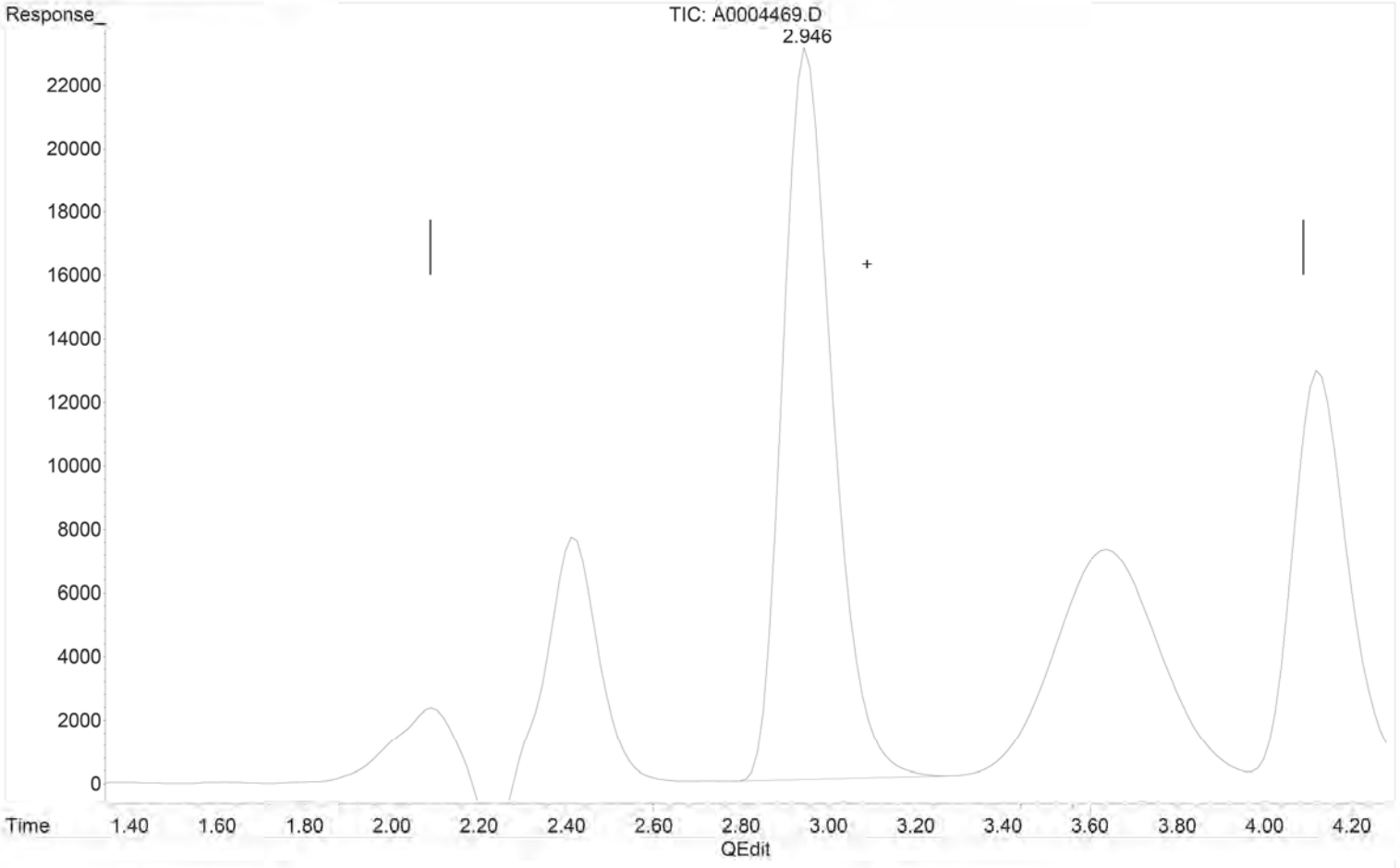
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.946min 19.154 ppm m

response 1830133

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

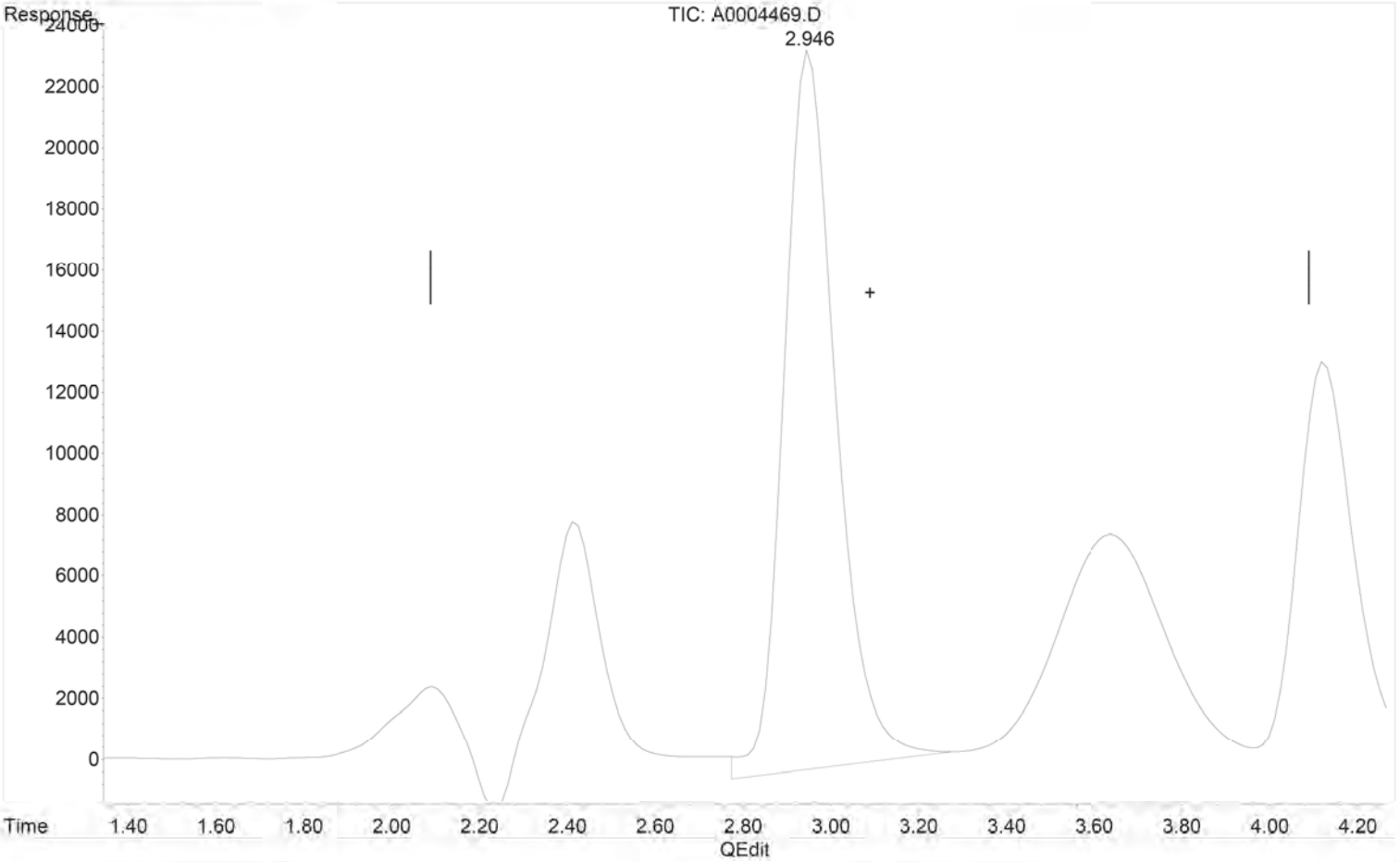
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.953min 20.256 ppm

response 1935353

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

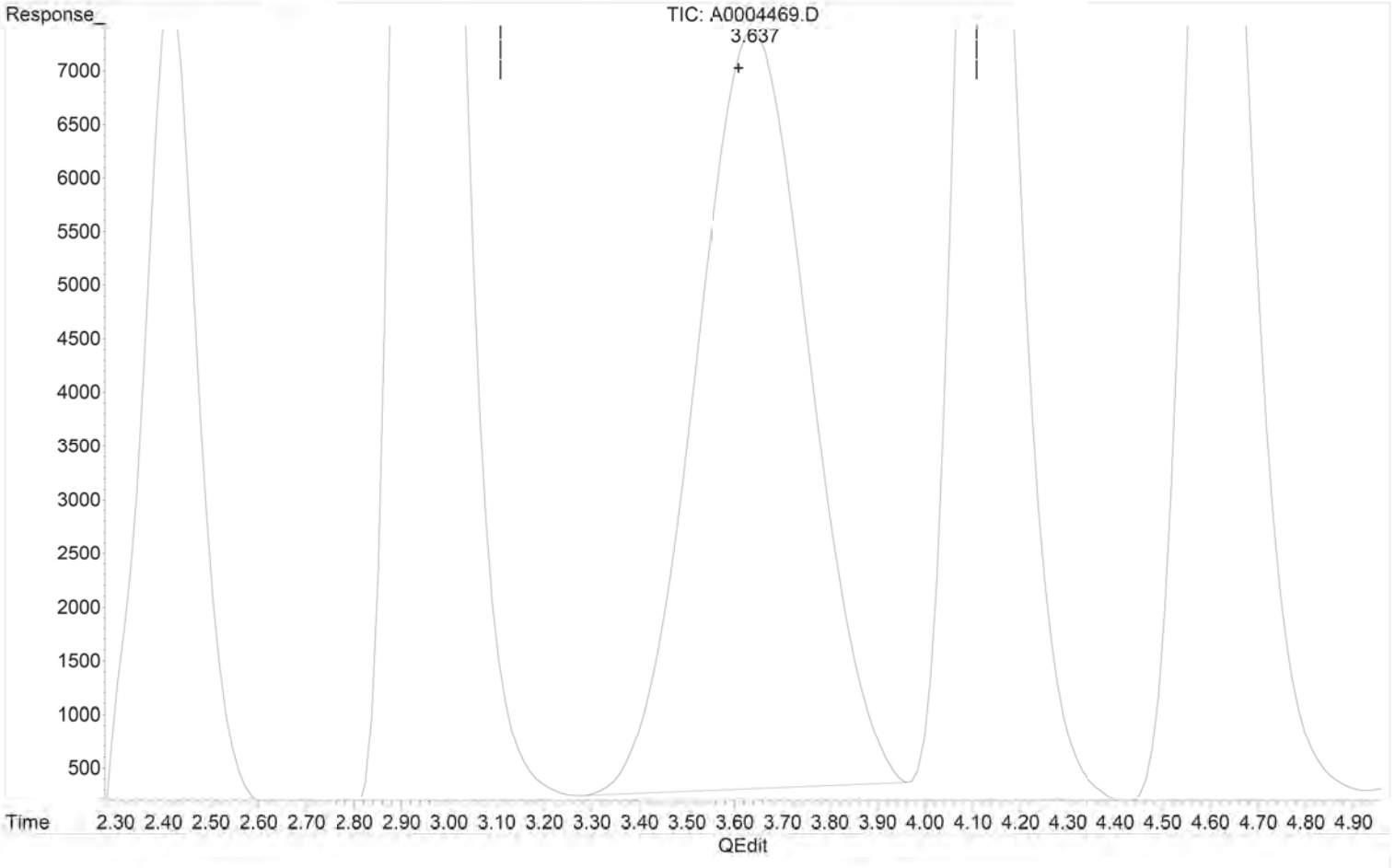
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.637min 2.190 ppm m
response 1165741

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:16:25 2020

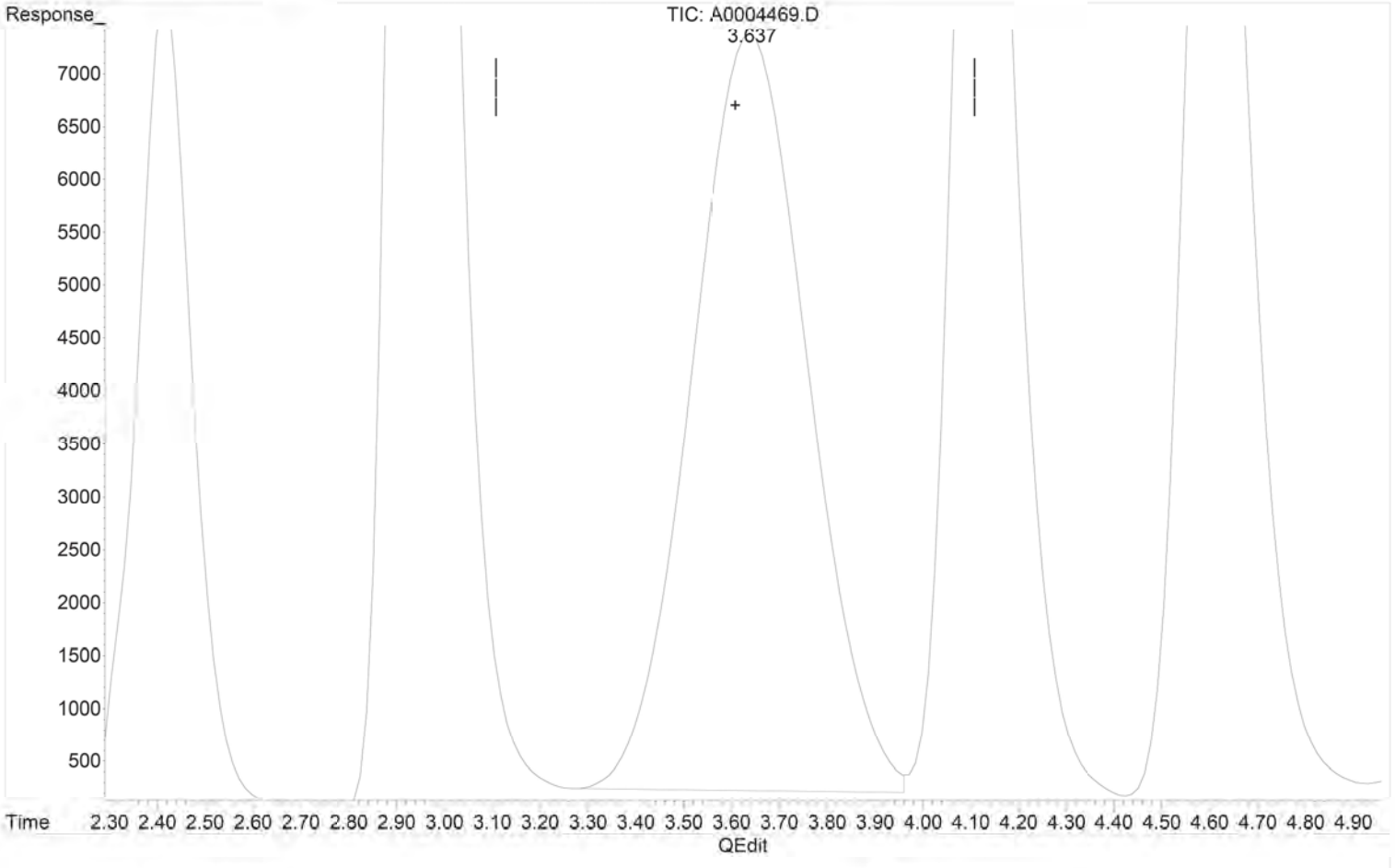
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.642min 2.250 ppm

response 1197650

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

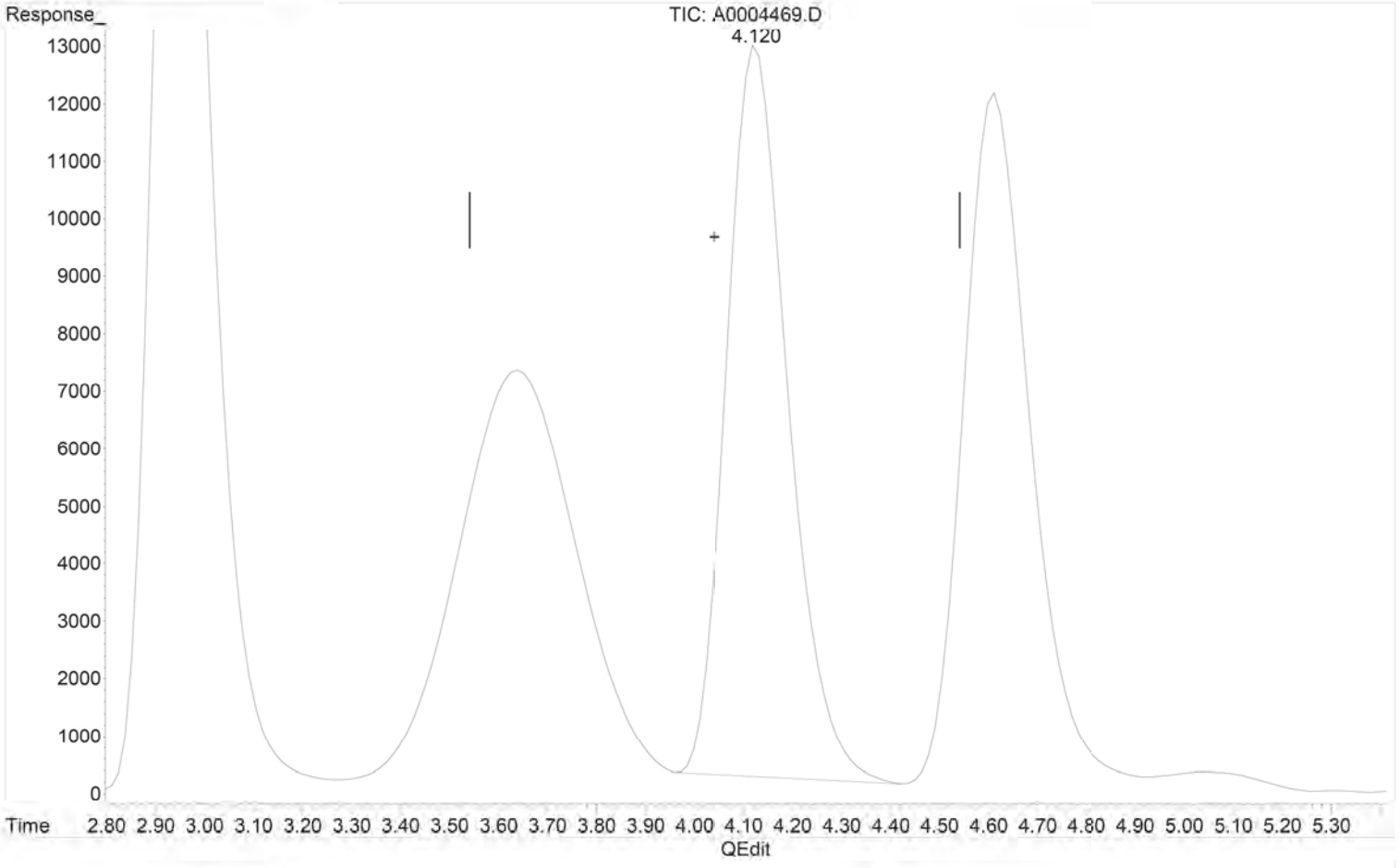
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.120min 21.482 ppm m

response 1107931

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

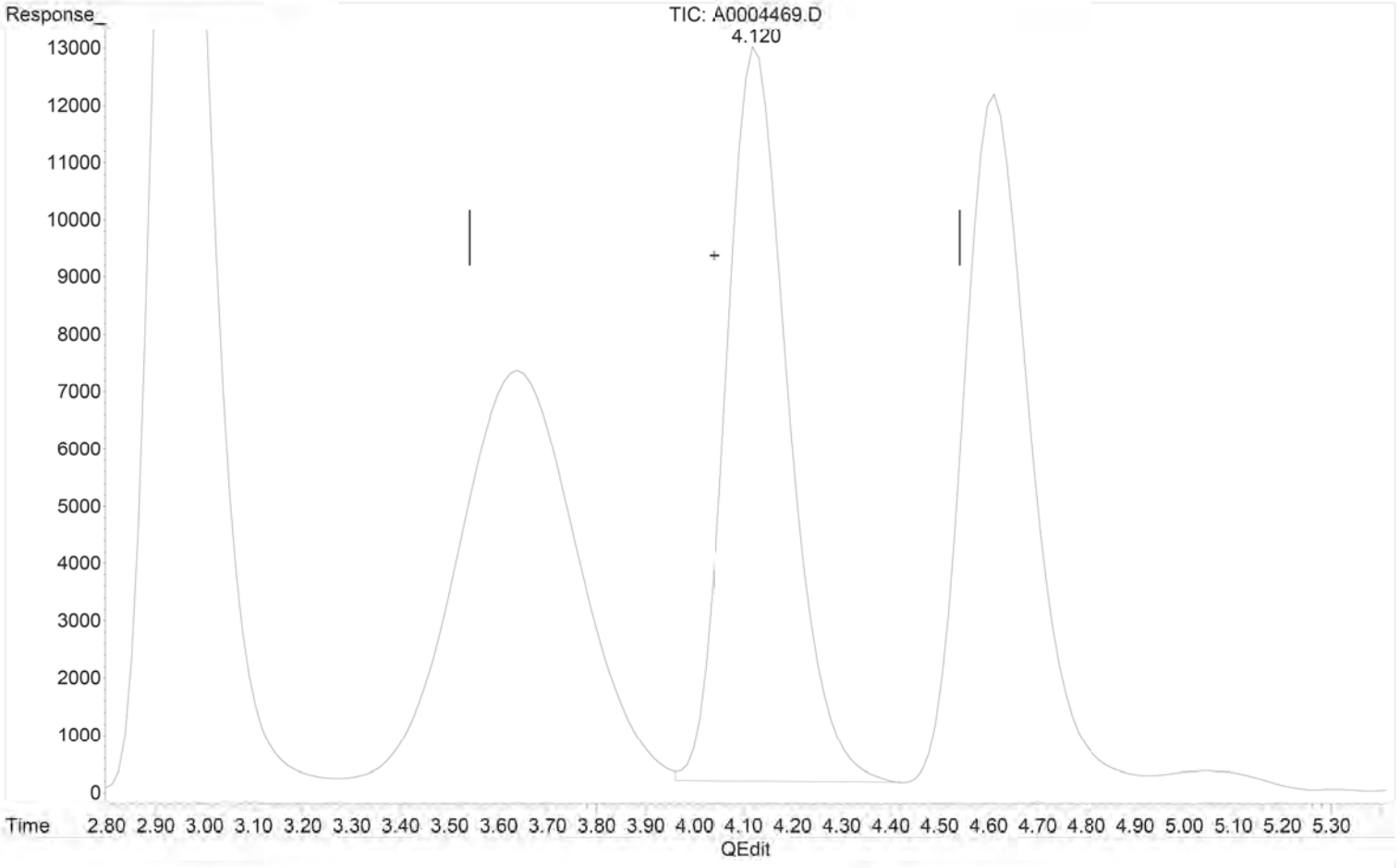
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.127min 21.898 ppm

response 1129421

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

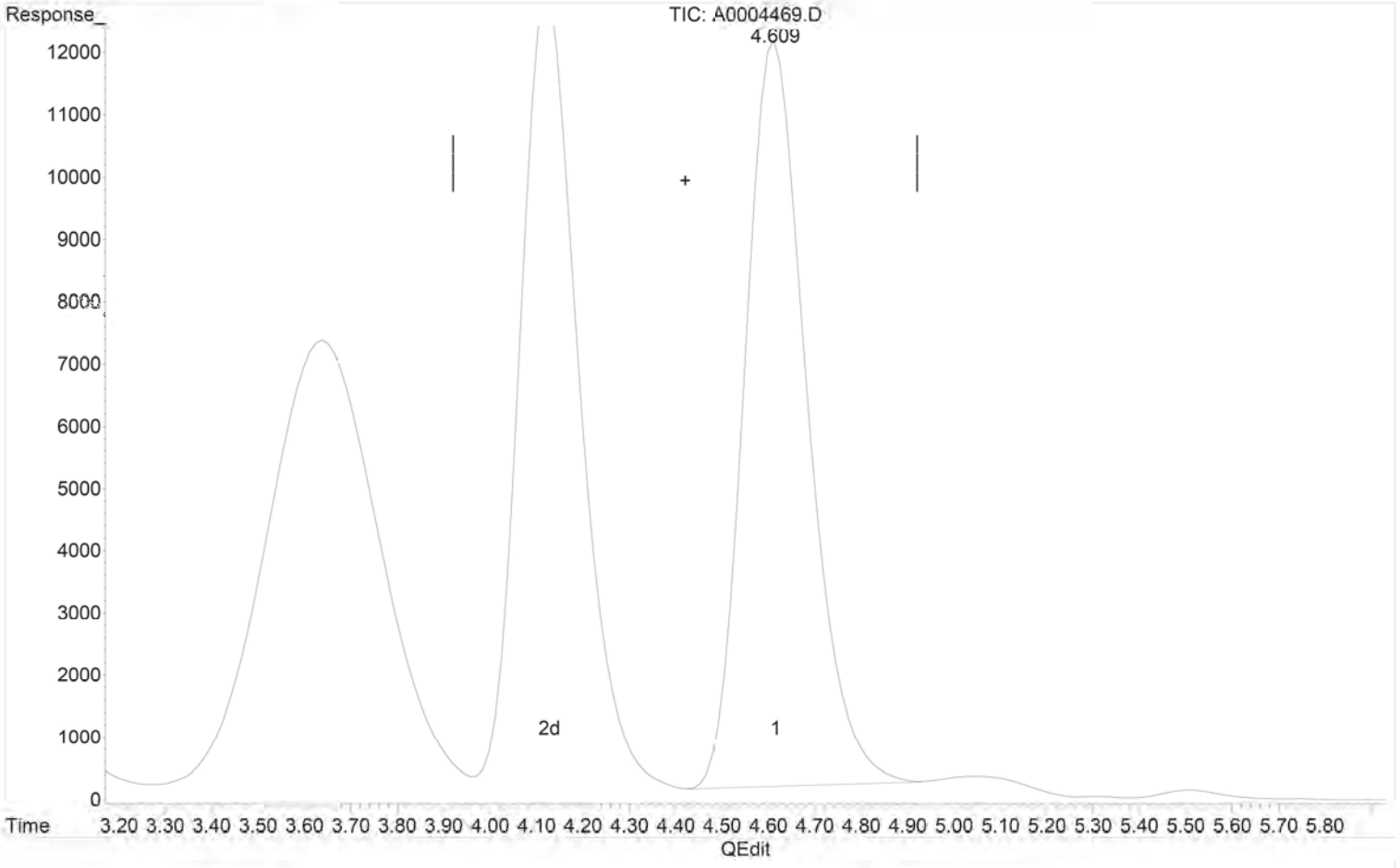
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.609min 19.276 ppm m
response 1115994

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:16:51 2020

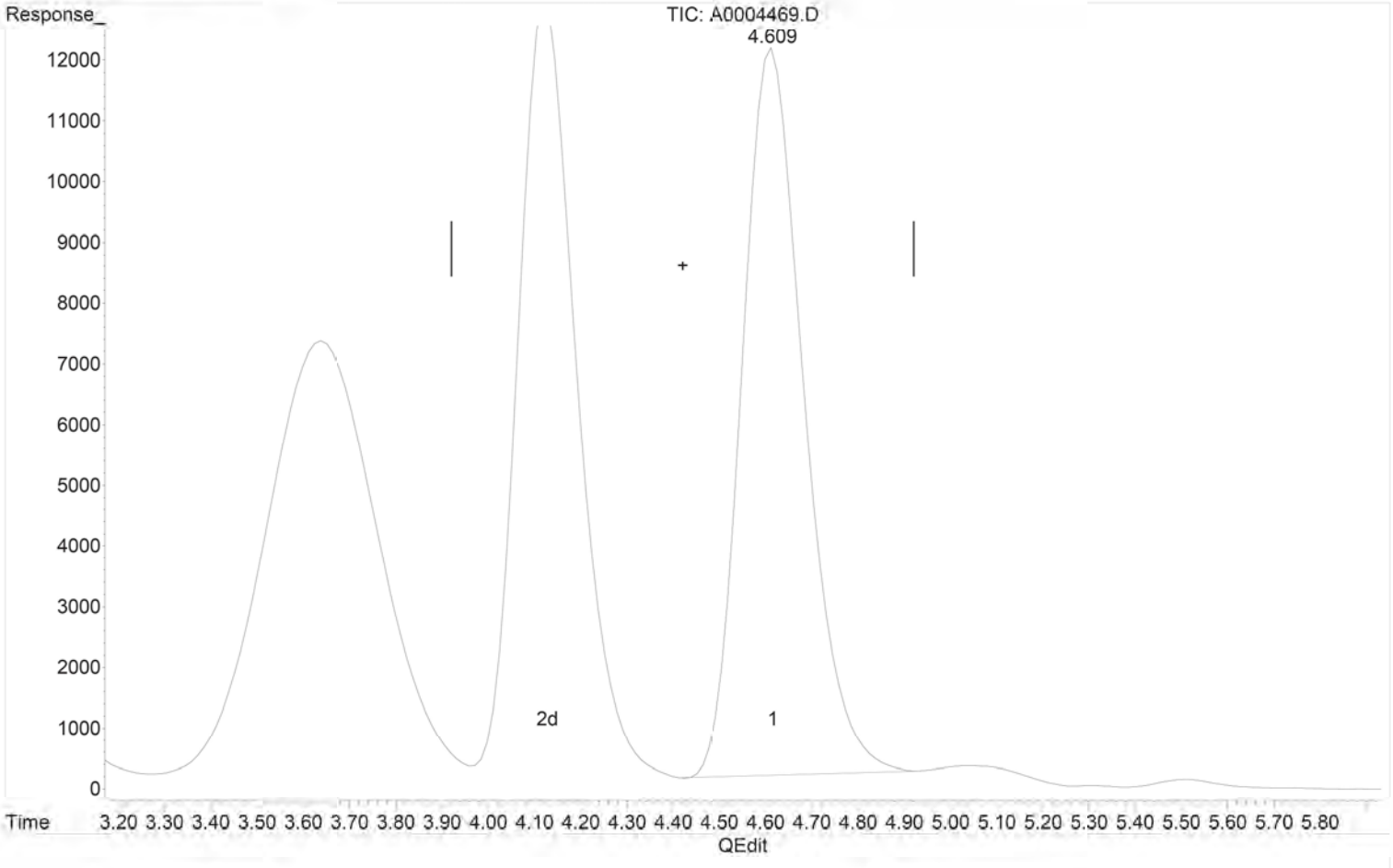
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.615min 19.234 ppm

response 1113595

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

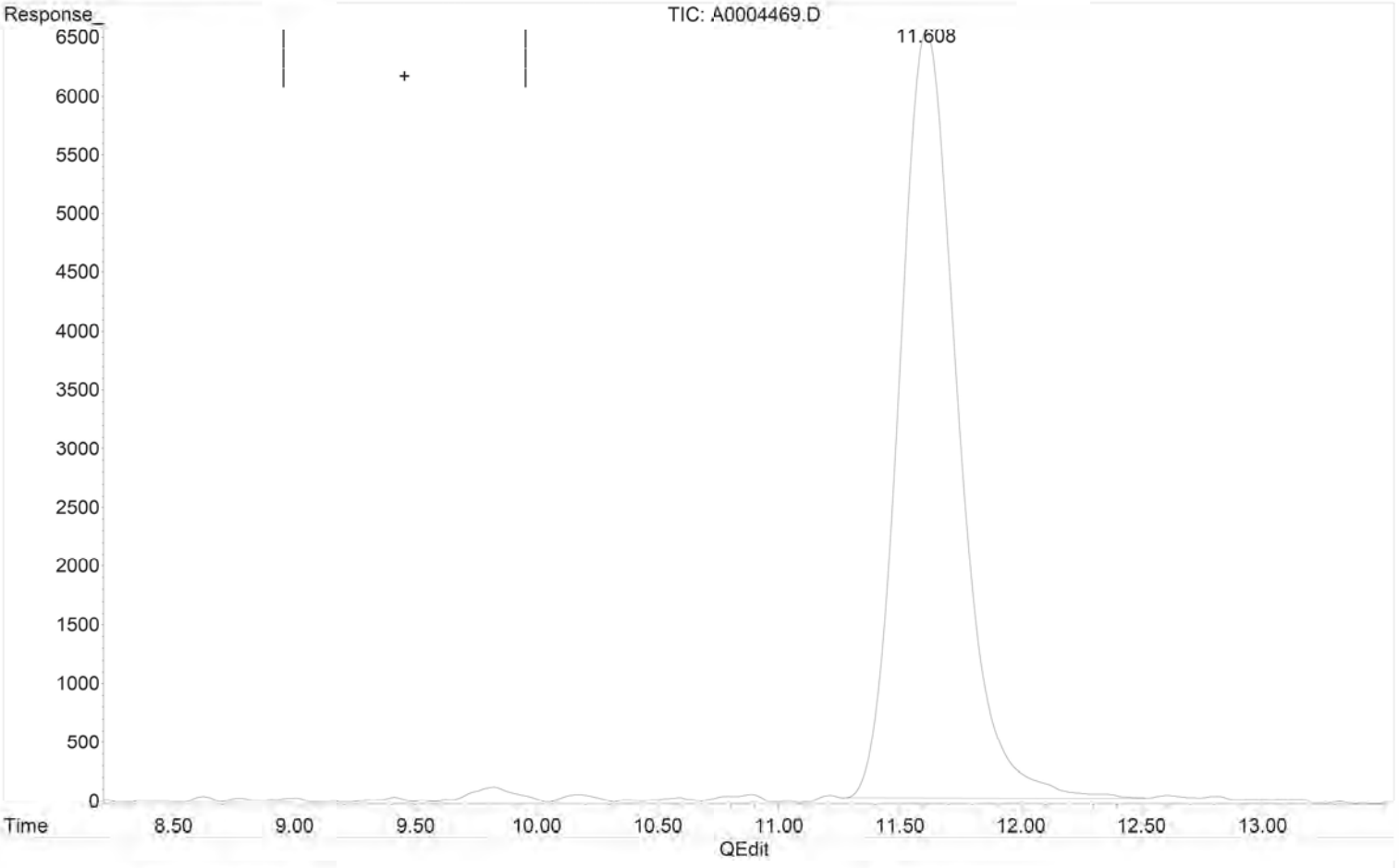
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
11.608min 19.595 ppm m
response 1098741

Manual Integration:
After
Peak not found.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:17:21 2020

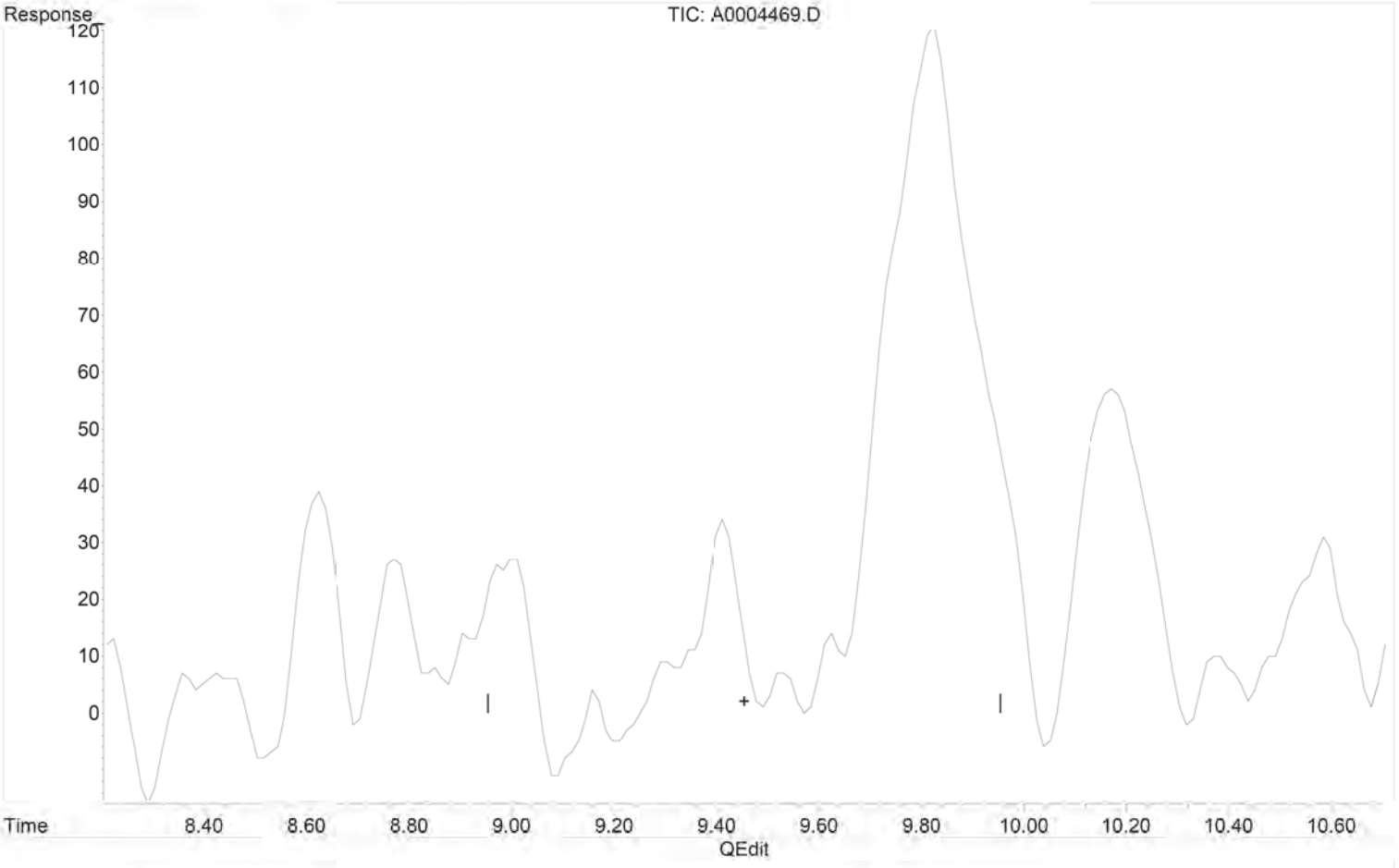
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(5) Propionic Acid (T)
9.454min 0.000 ppm
response 0

Manual Integration:
Before

03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:16:55 2020

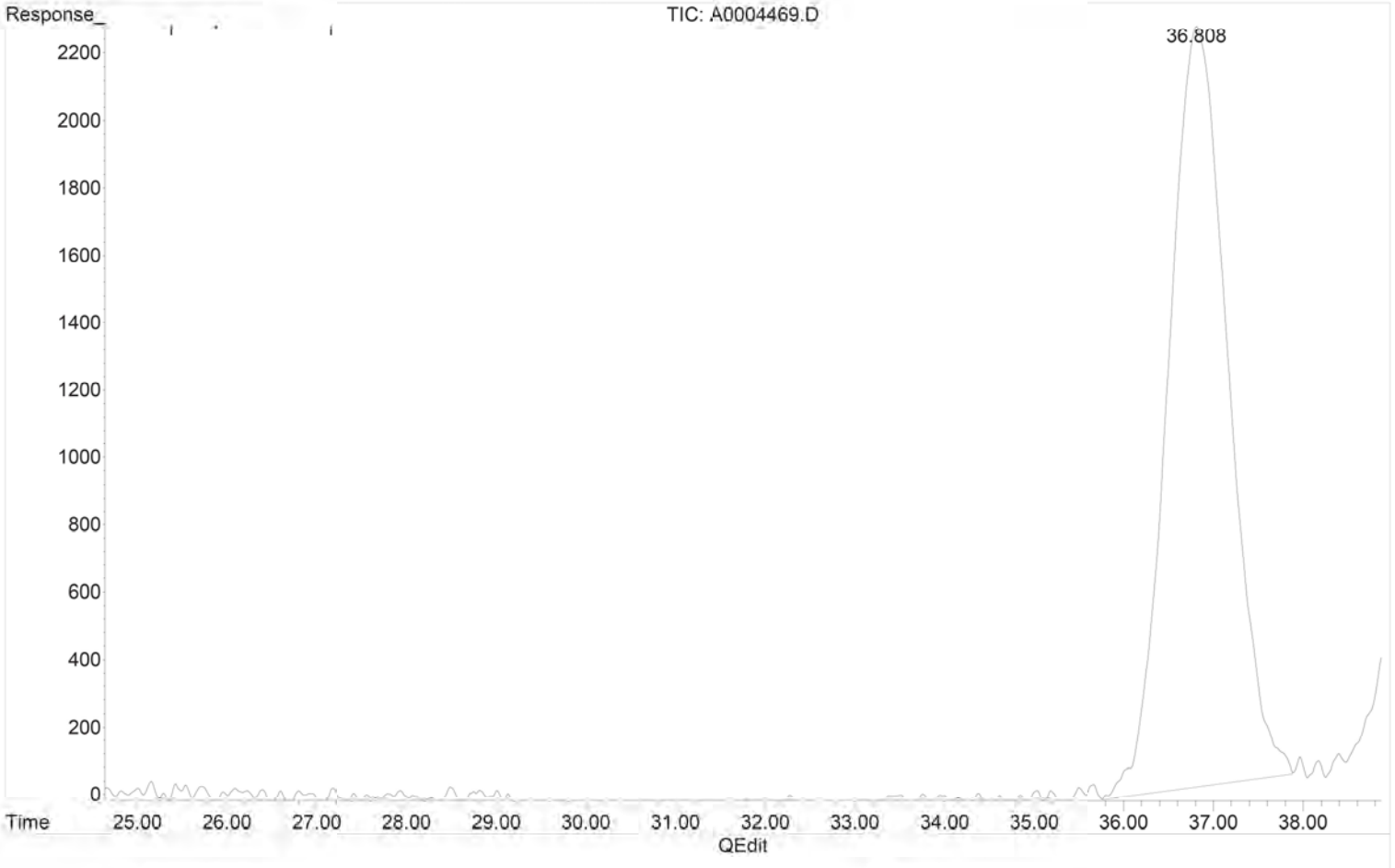
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.808min 19.370 ppm m

response 1052332

Manual Integration:

After

Peak not found.

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:17:46 2020

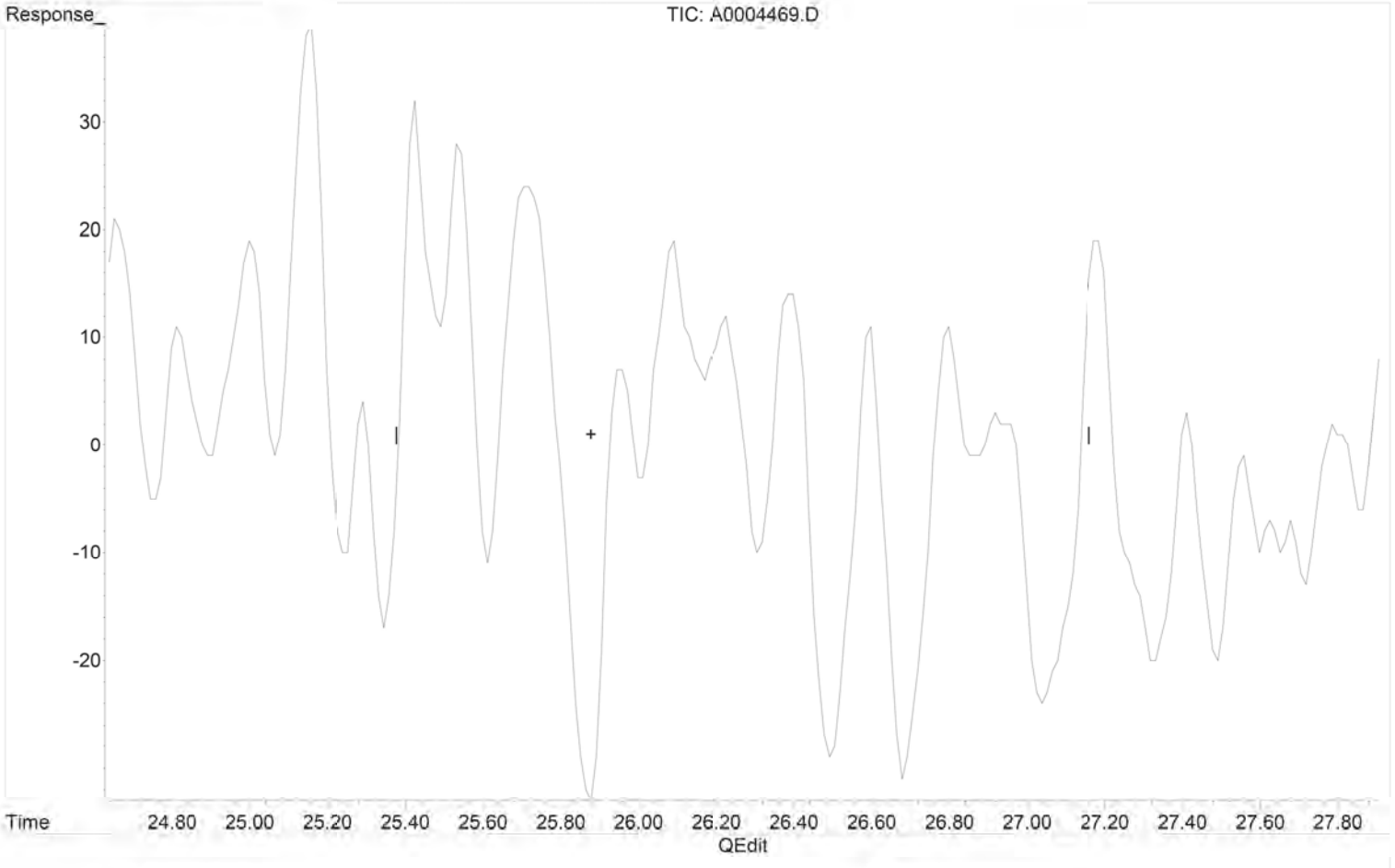
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

25.877min 0.000 ppm

response 0

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : ~~30-Dec-2000, 17:48:02~~ 12-Mar-2020, 16:48
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.946	1830133	19.154	ppm	m
2) T	Pyruvic acid	3.637	1165741	2.190	ppm	m
3) T	Lactic Acid	4.120	1107931	21.482	ppm	m
4) T	Acetic Acid	4.609	1115994	19.276	ppm	m
5) T	Propionic Acid	11.608f	1098741	19.595	ppm	m
6) T	Butyric Acid	36.808f	1052332	19.370	ppm	m

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

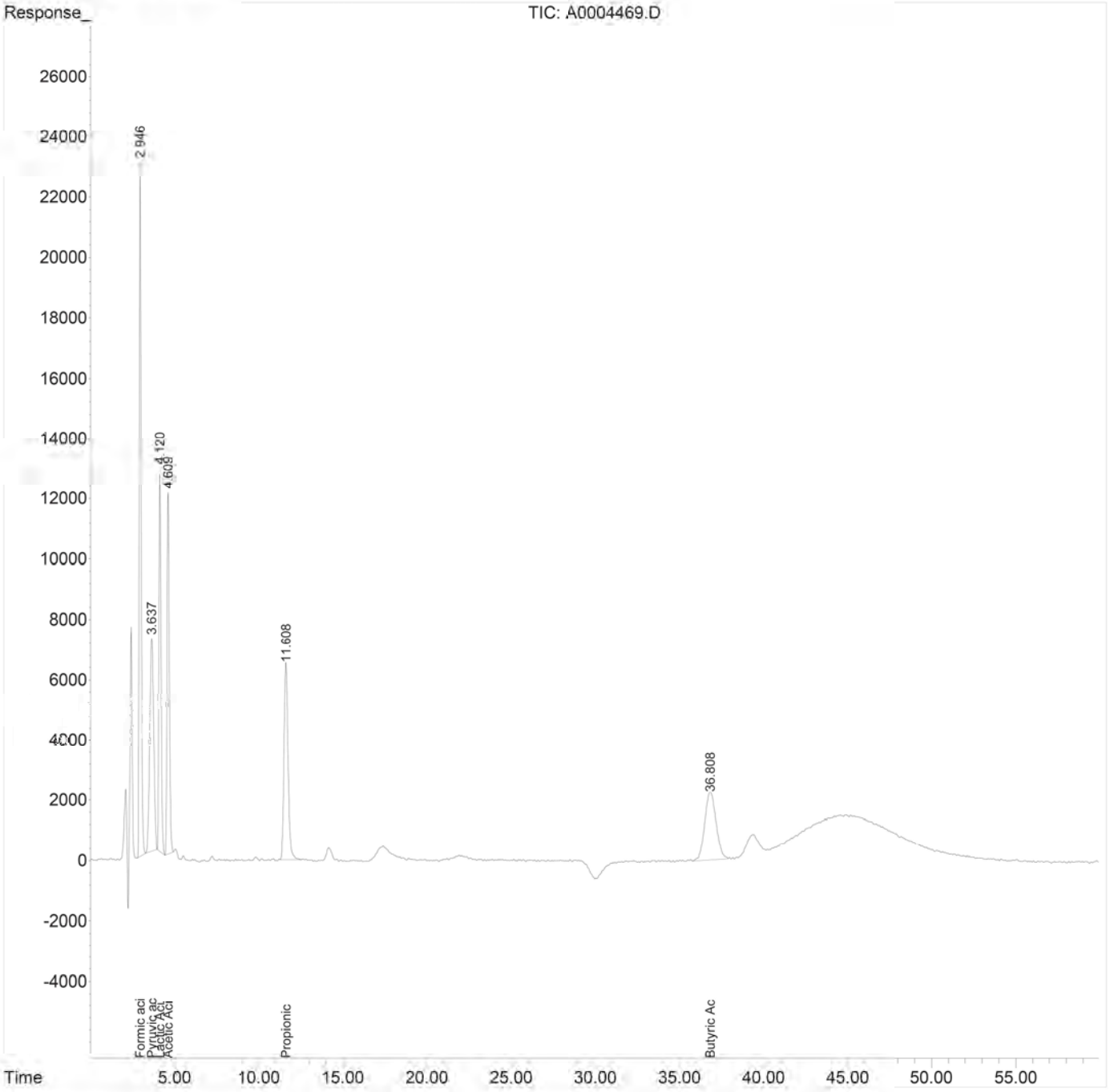
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004469.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:48:02
Operator : A.Felser
Sample : STD 5
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:15:50 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Thu Mar 12 07:11:04 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



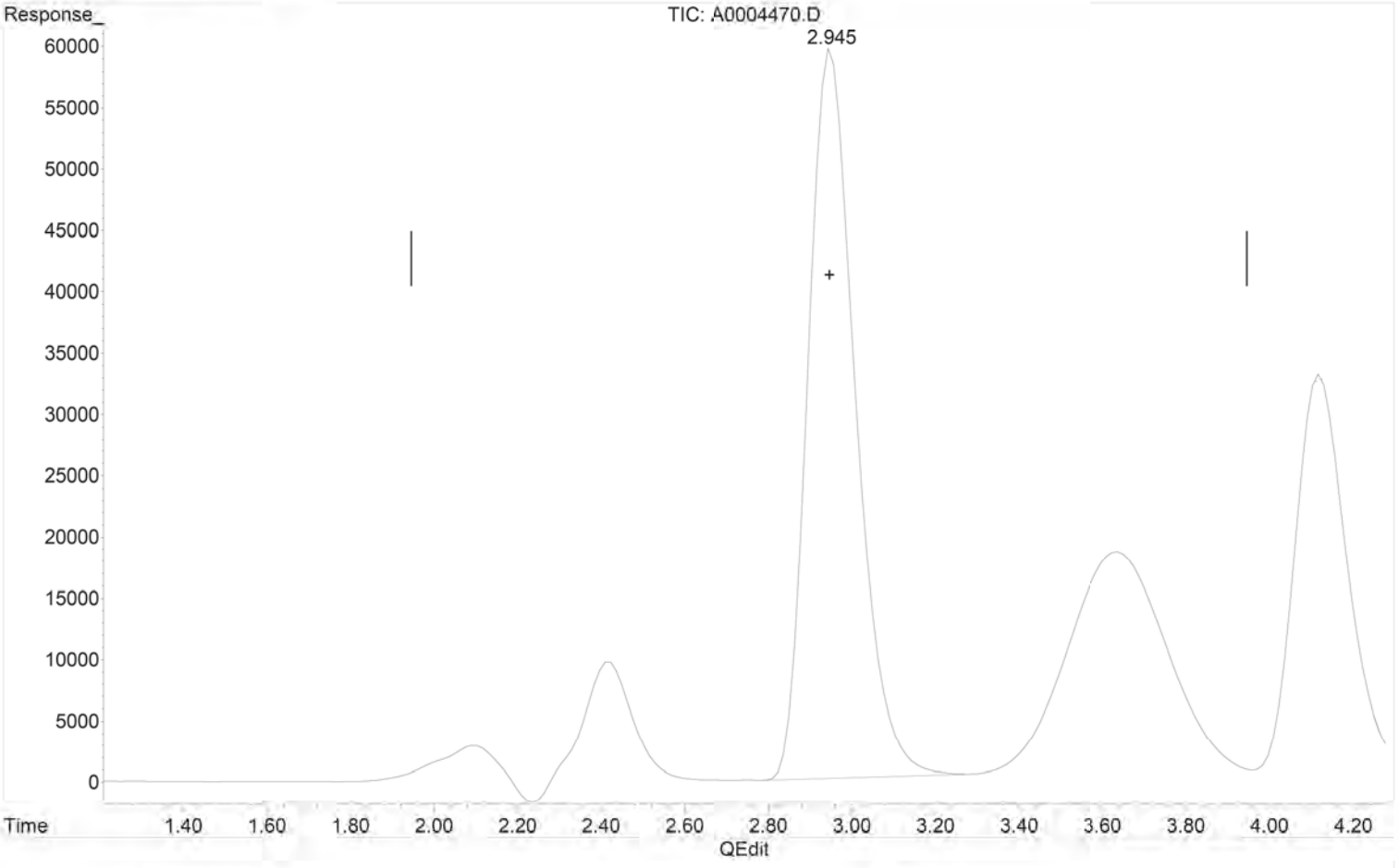
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)
2.945min 51.436 ppm m
response 4706776

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:25:42 2020

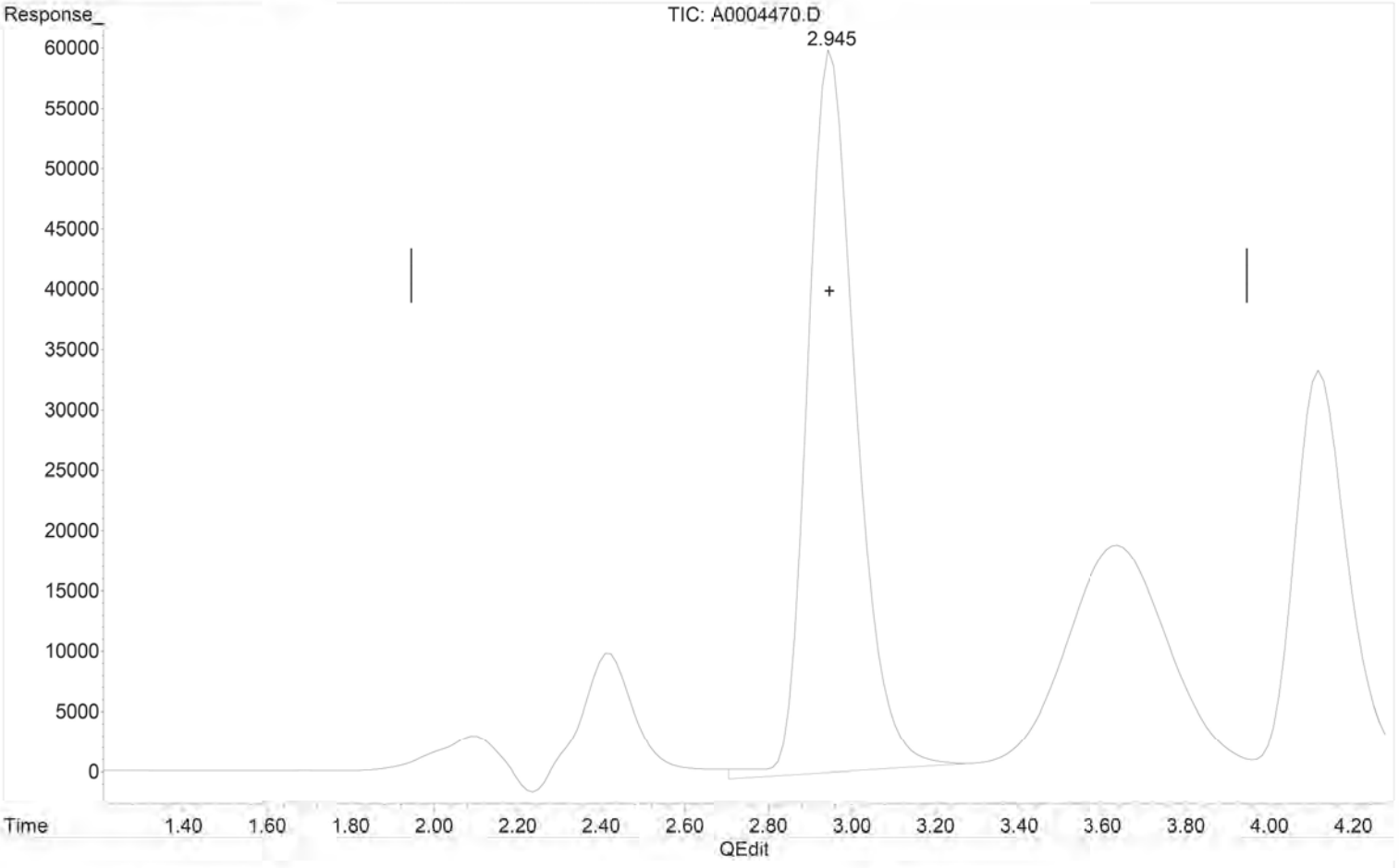
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.952min 52.682 ppm

response 4820746

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:25:34 2020

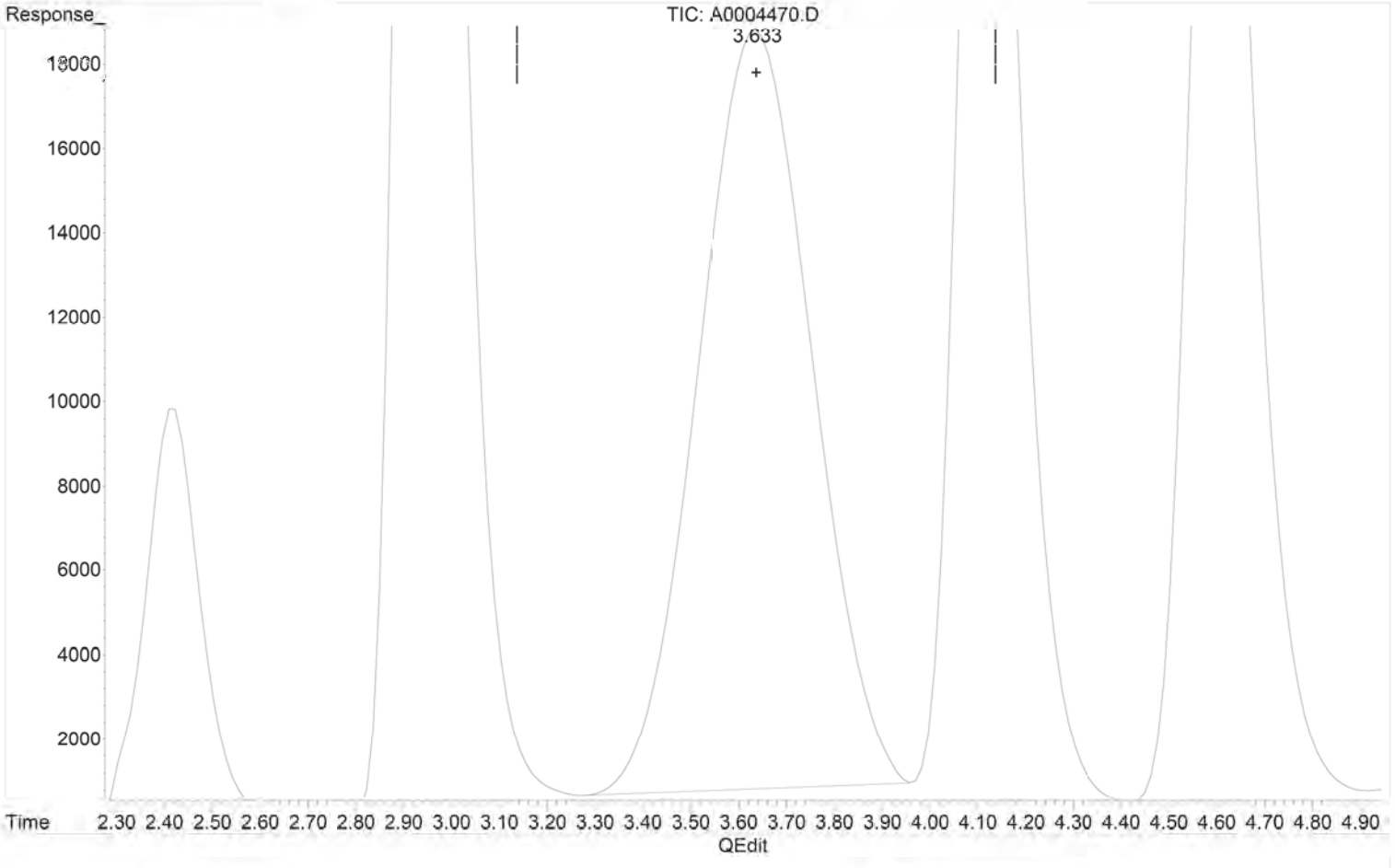
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.633min 5.066 ppm m

response 2952886

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

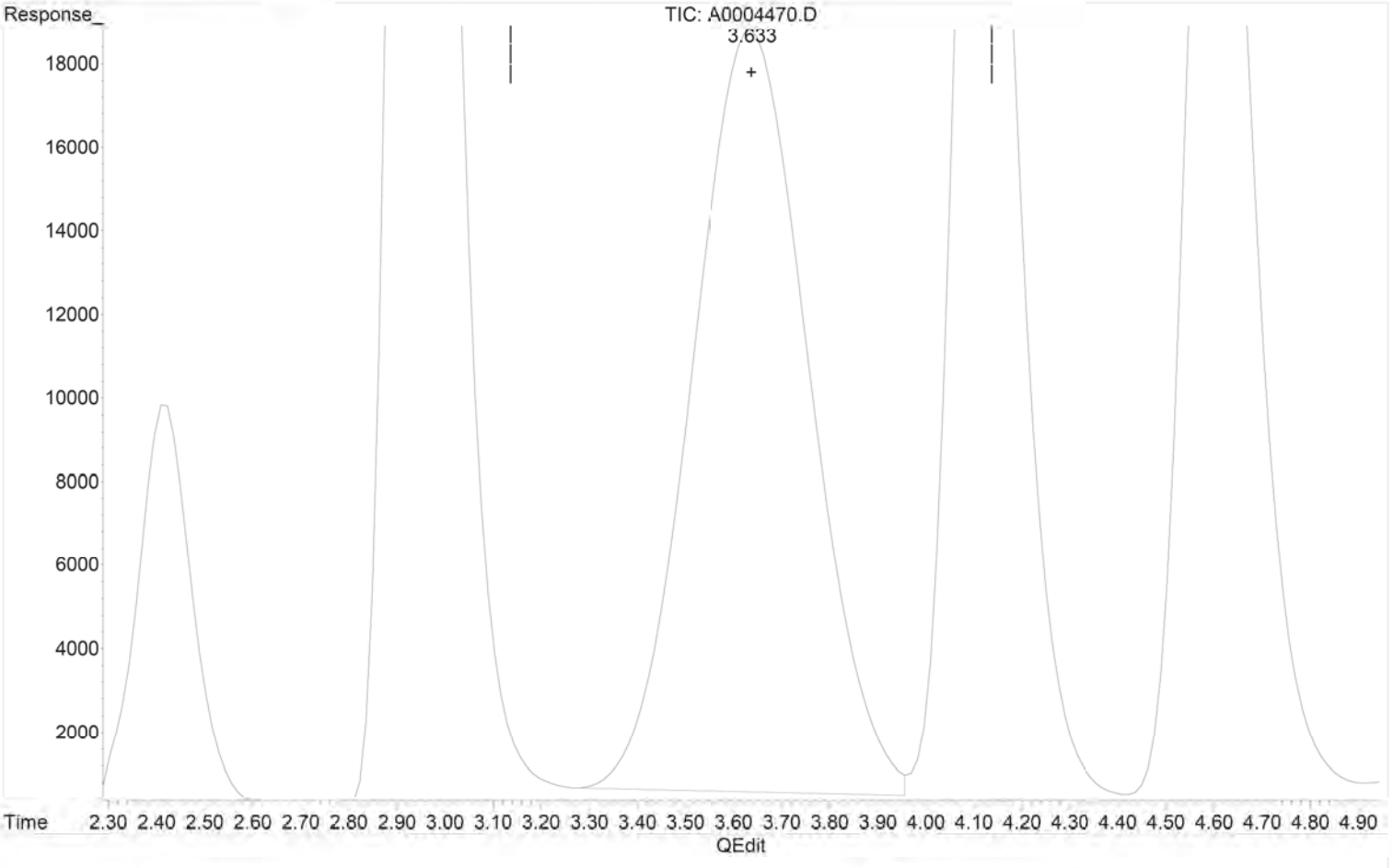
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.639min 5.230 ppm

response 3048306

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

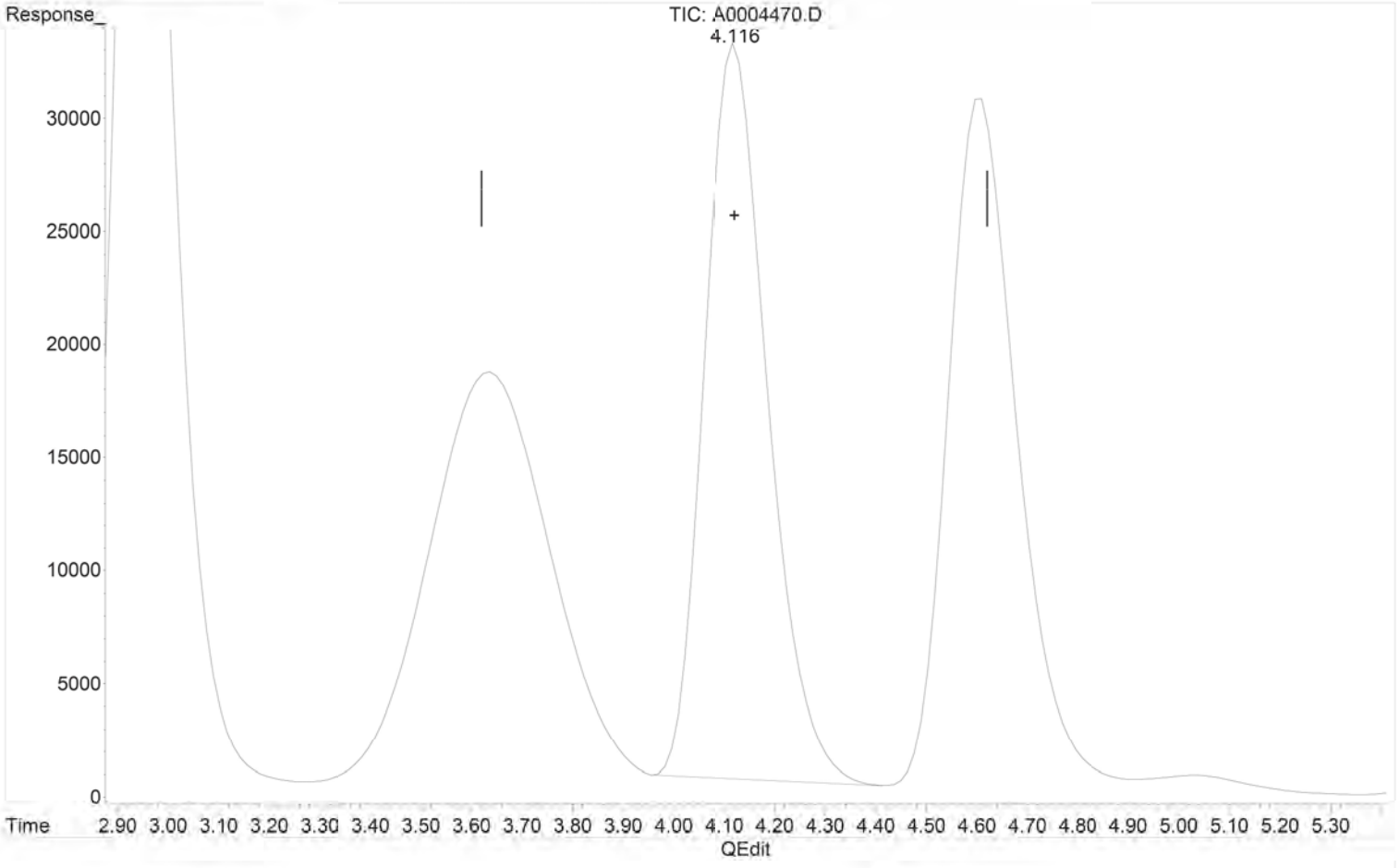
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.116min 50.780 ppm m

response 2813056

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:26:03 2020

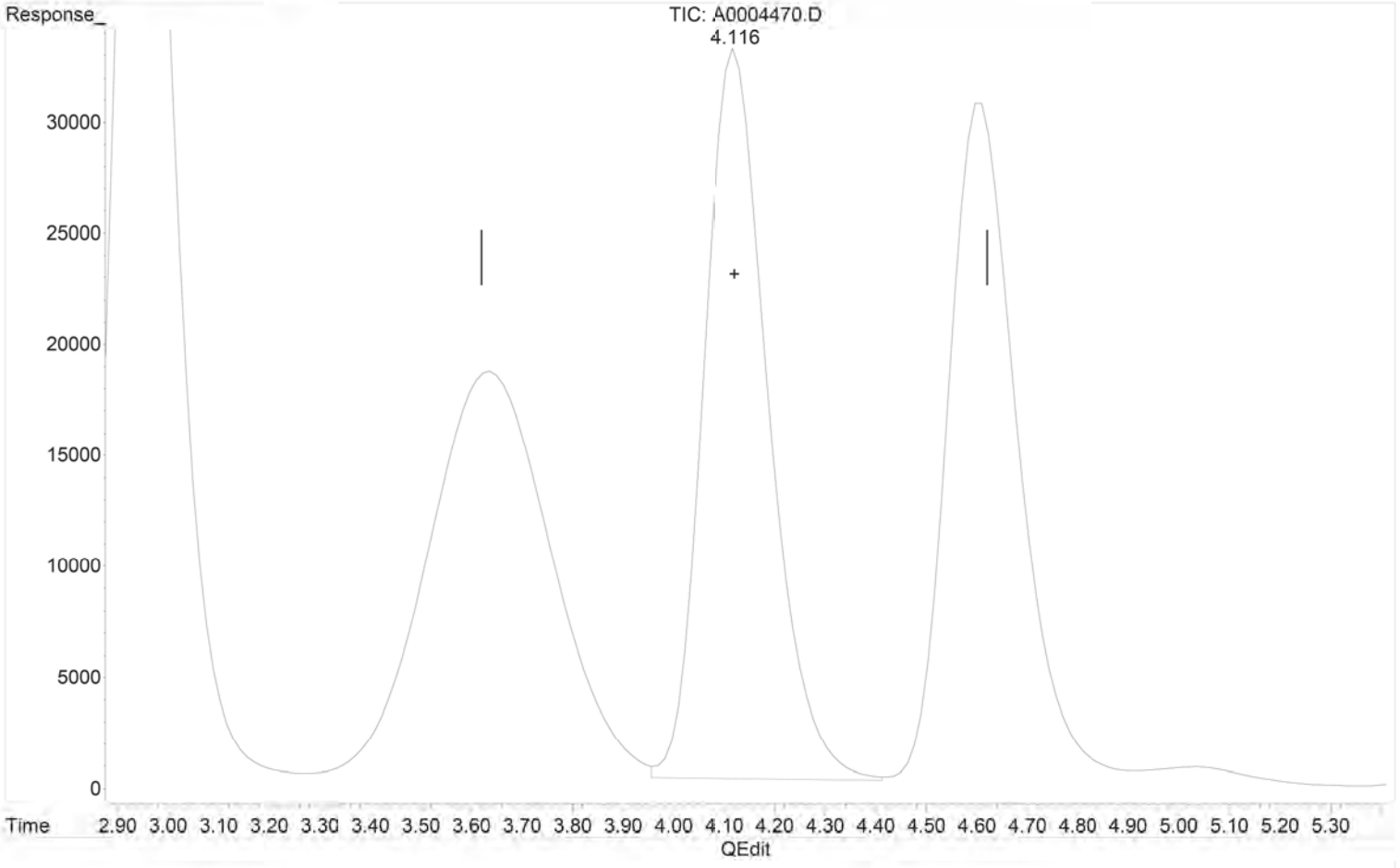
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.123min 52.344 ppm

response 2899673

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:25:56 2020

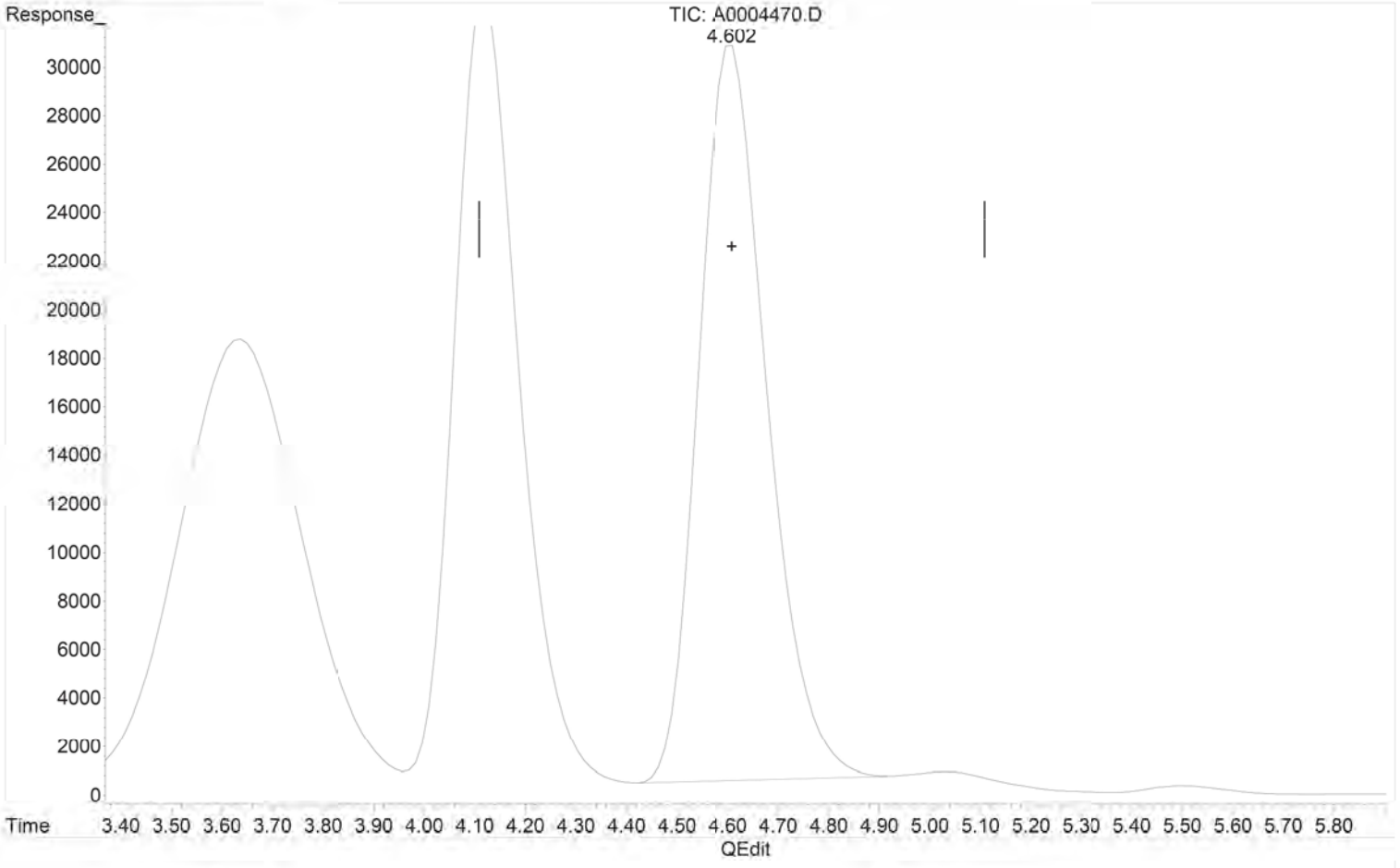
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.602min 50.675 ppm m
response 2827626

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:26:13 2020

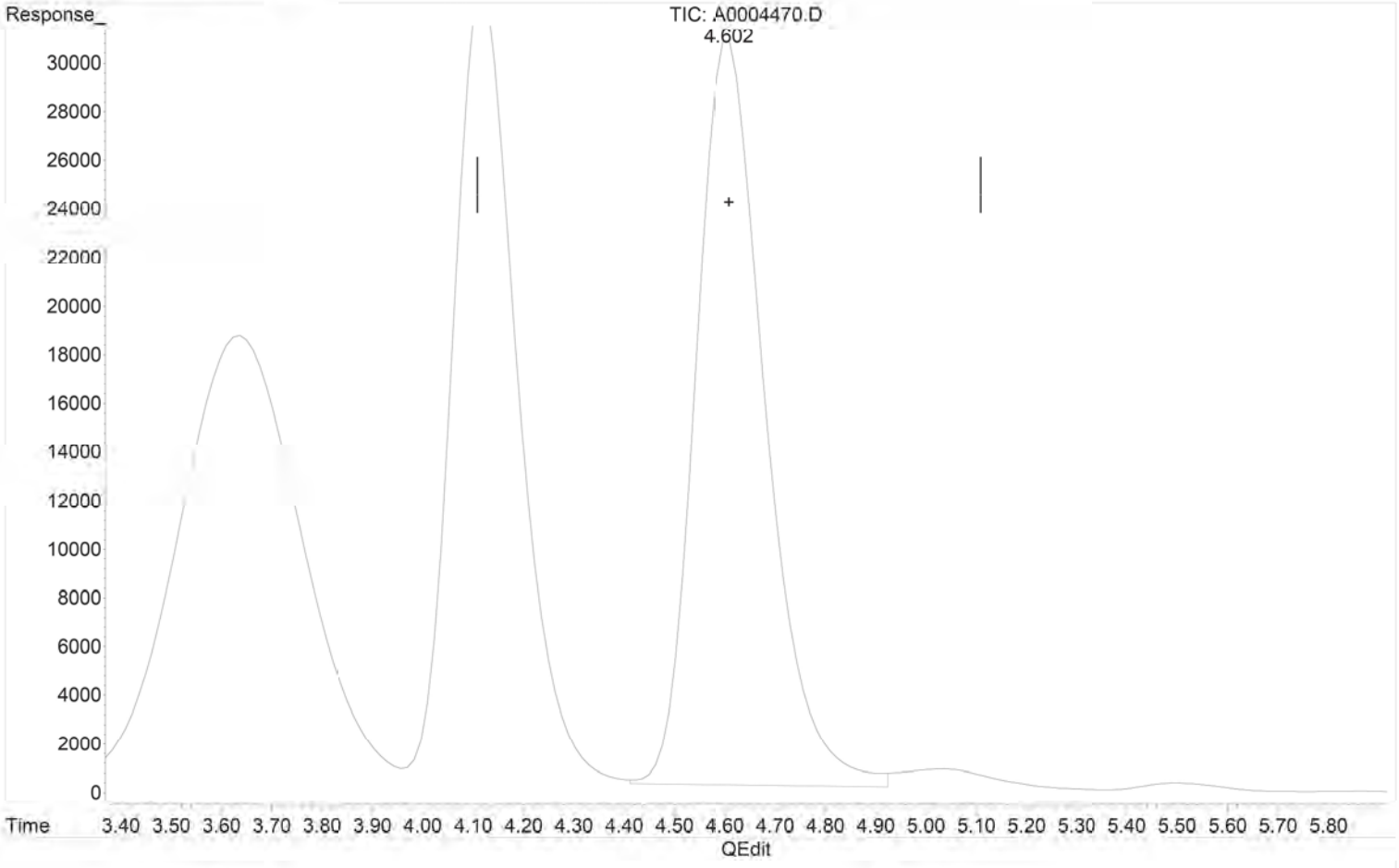
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.610min 52.537 ppm

response 2931536

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

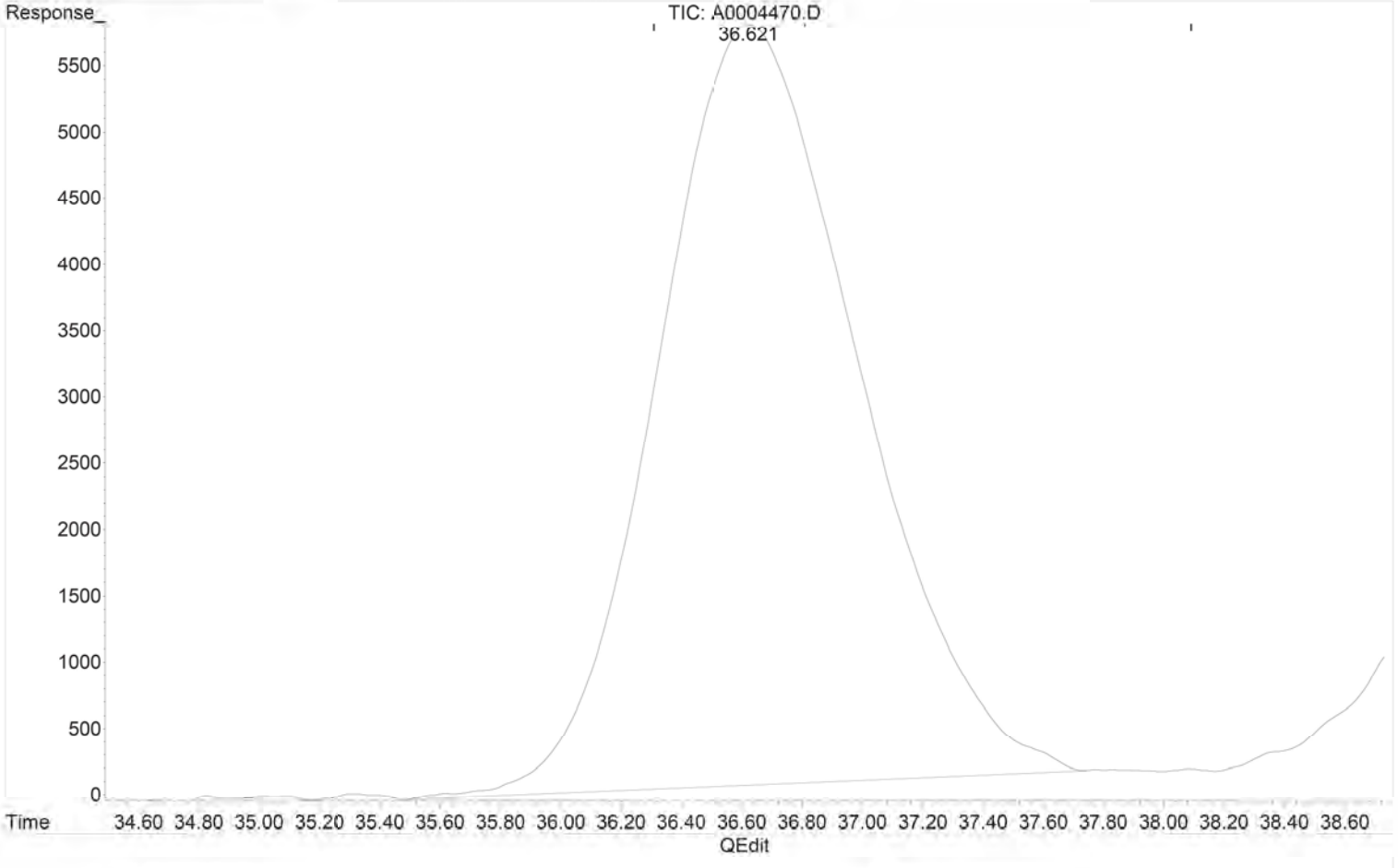
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.621min 50.484 ppm m

response 2656312

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

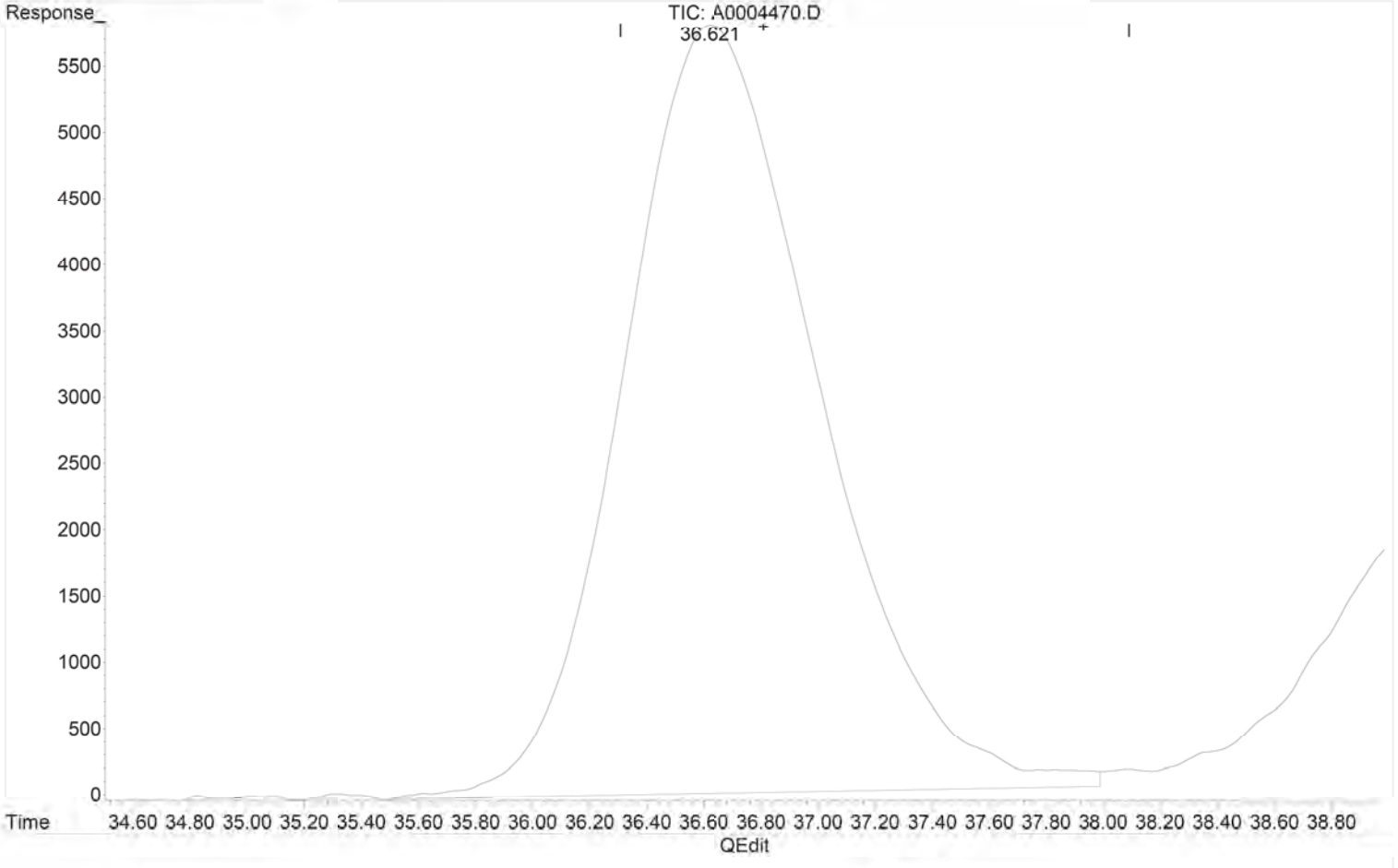
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.628min 52.351 ppm

response 2754505

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:26:20 2020

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : ~~30-Dec-2000, 17:47:58~~ 12-Mar-2020, 17:51
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.945	4706776	51.436	ppm	m
2) T	Pyruvic acid	3.633	2952886	5.066	ppm	m
3) T	Lactic Acid	4.116	2813056	50.780	ppm	m
4) T	Acetic Acid	4.602	2827626	50.675	ppm	m
5) T	Propionic Acid	11.574	2794775	50.872	ppm	
6) T	Butyric Acid	36.621	2656312	50.484	ppm	m

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

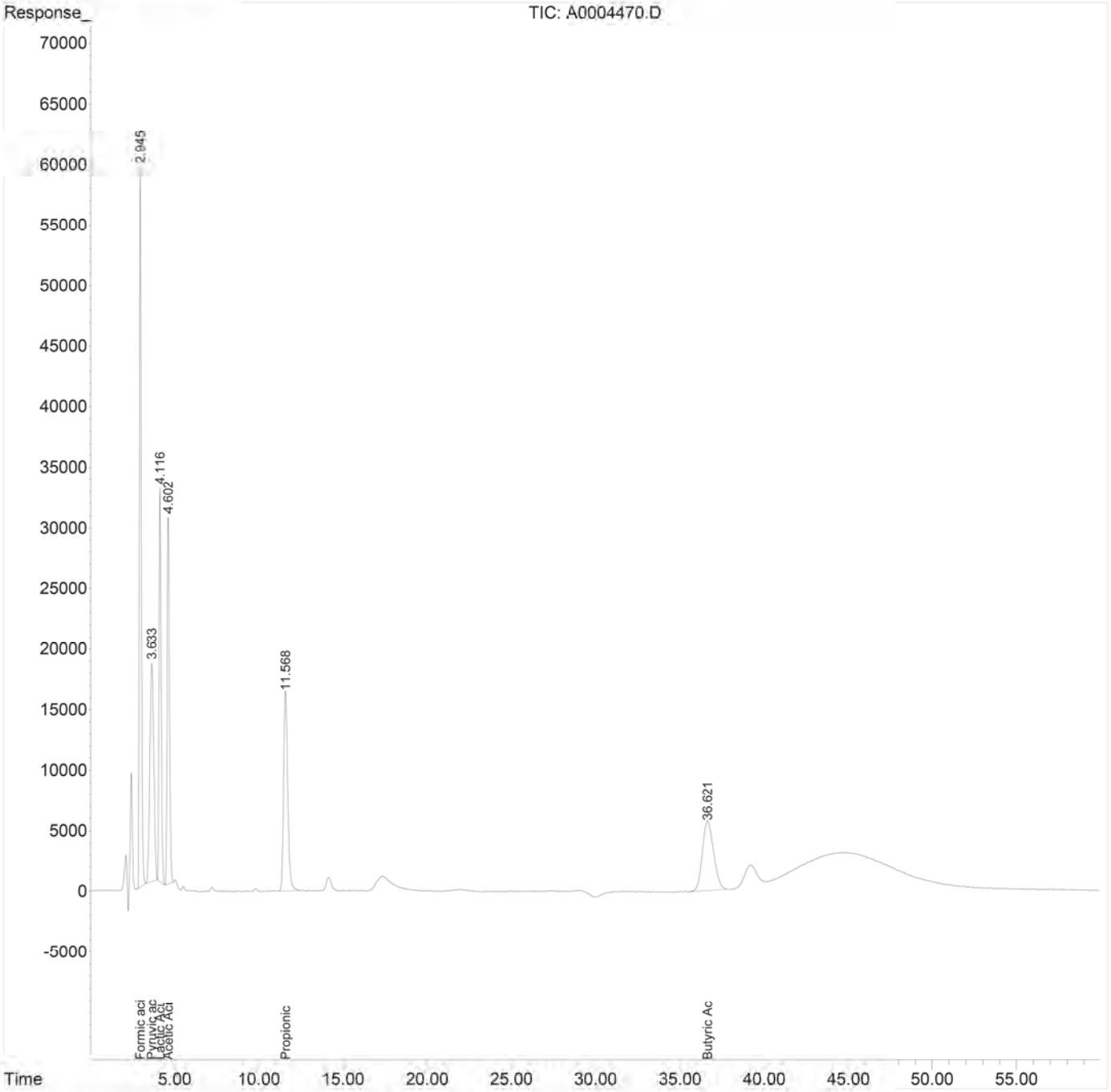
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004470.D
Signal(s) : dad1C.ch
Acq On : 30-Dec-2000, 17:47:58
Operator : A.Felser
Sample : STD 6
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:24 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



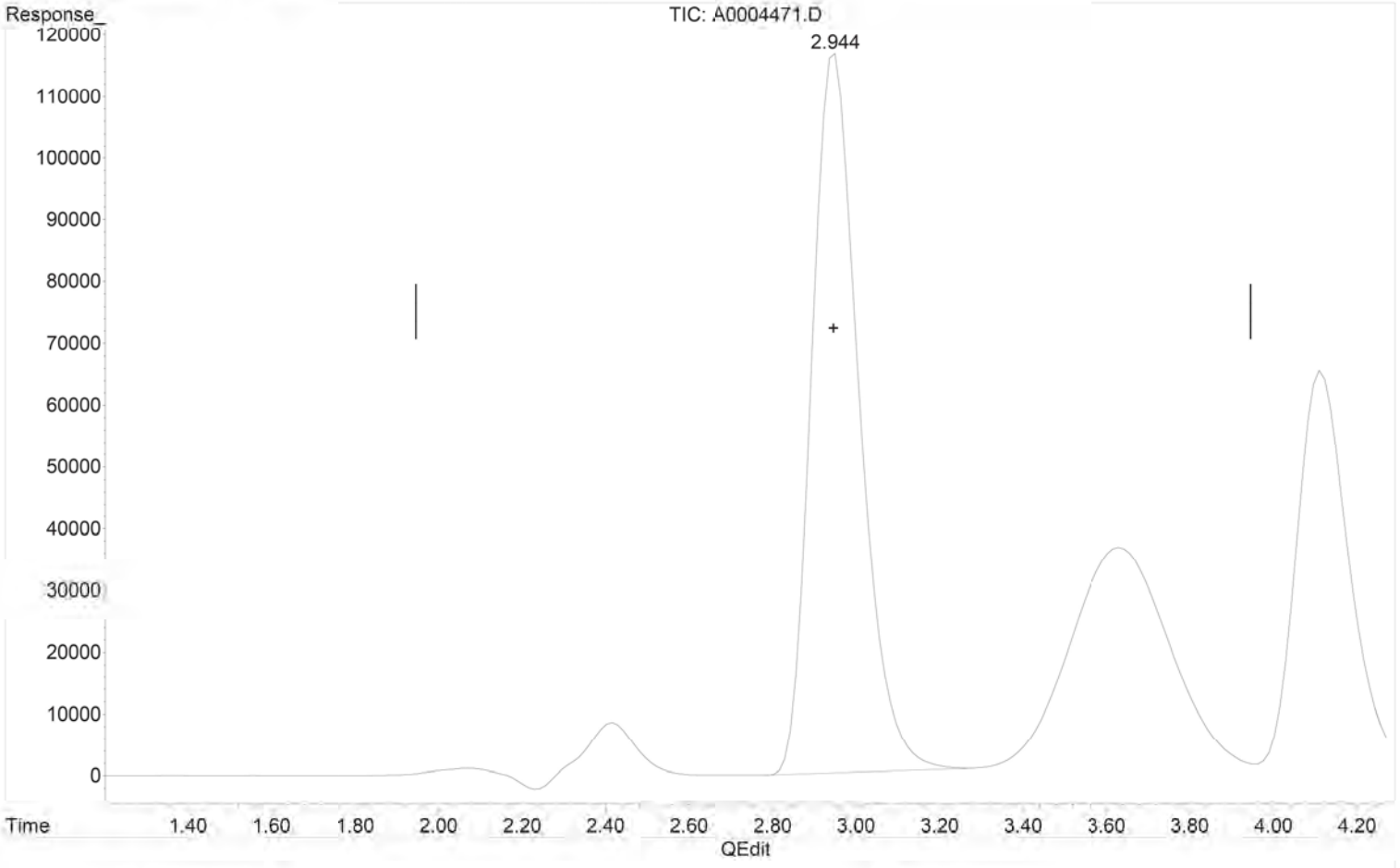
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.944min 101.099 ppm m

response 9251260

Manual Integration:

After

Poor integration,

03/16/20

(+) = Expected Retention Time

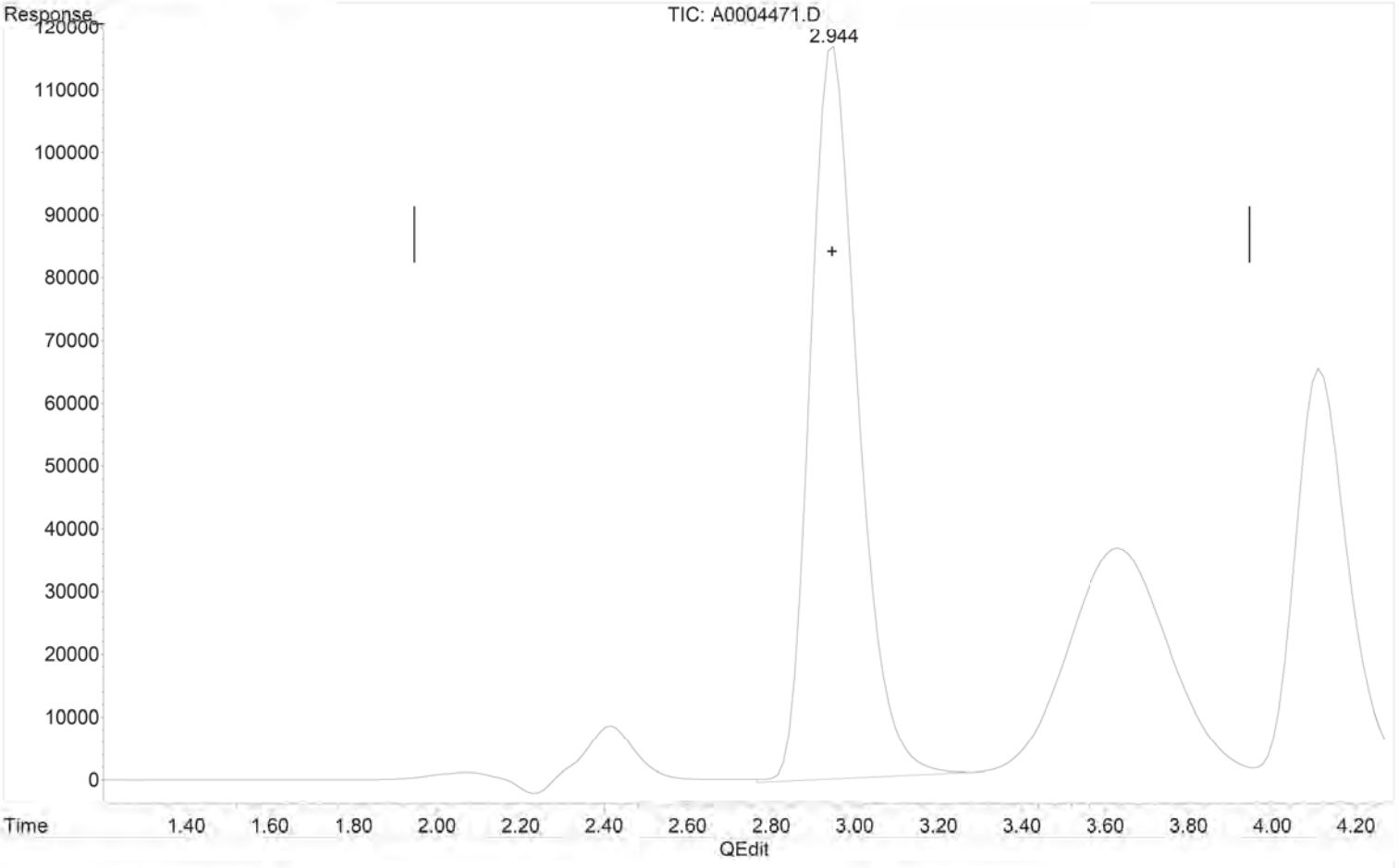
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(1) Formic acid (t)

2.950min 101.826 ppm

response 9317801

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

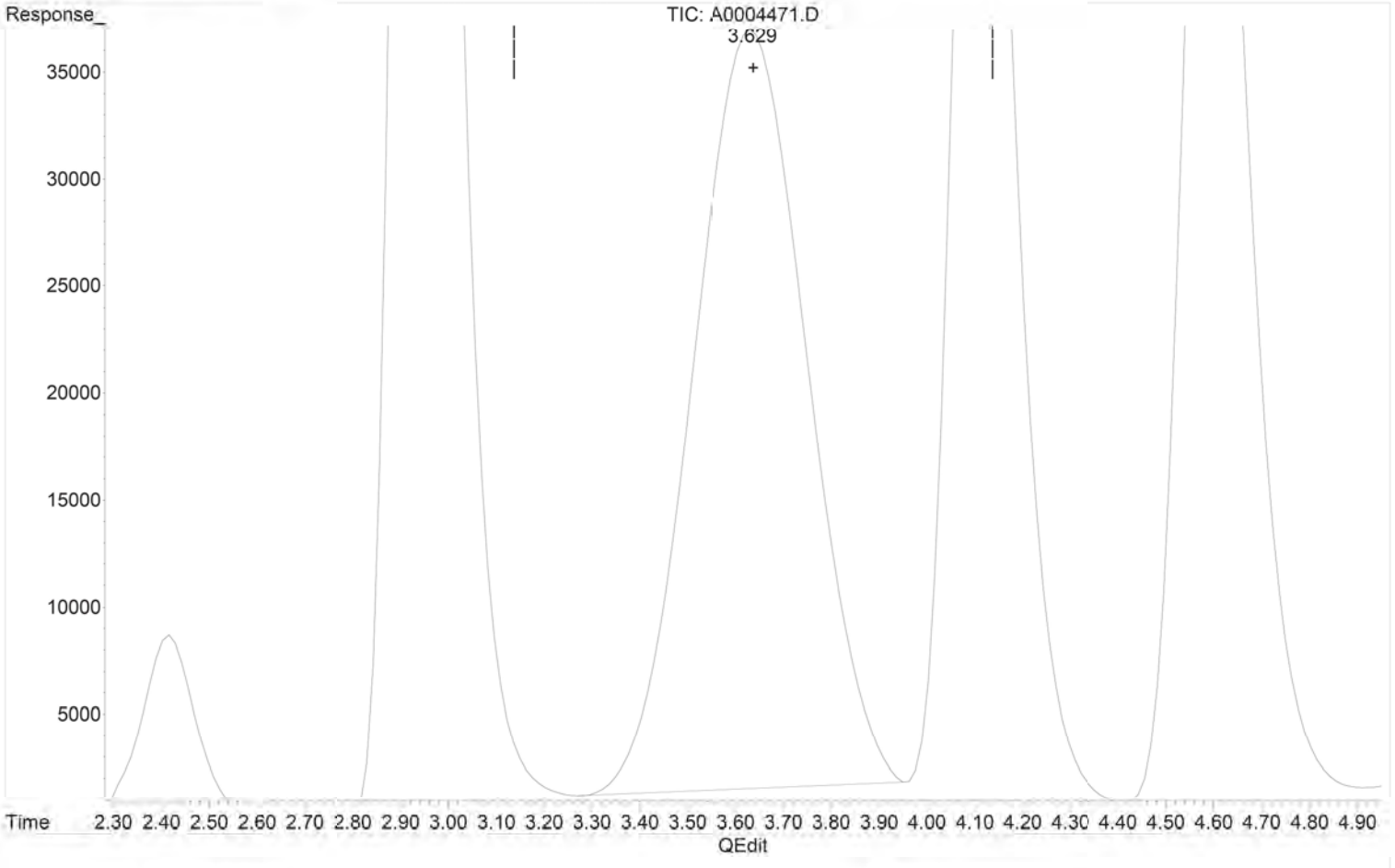
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)
3.629min 9.964 ppm m
response 5807459

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:27:13 2020

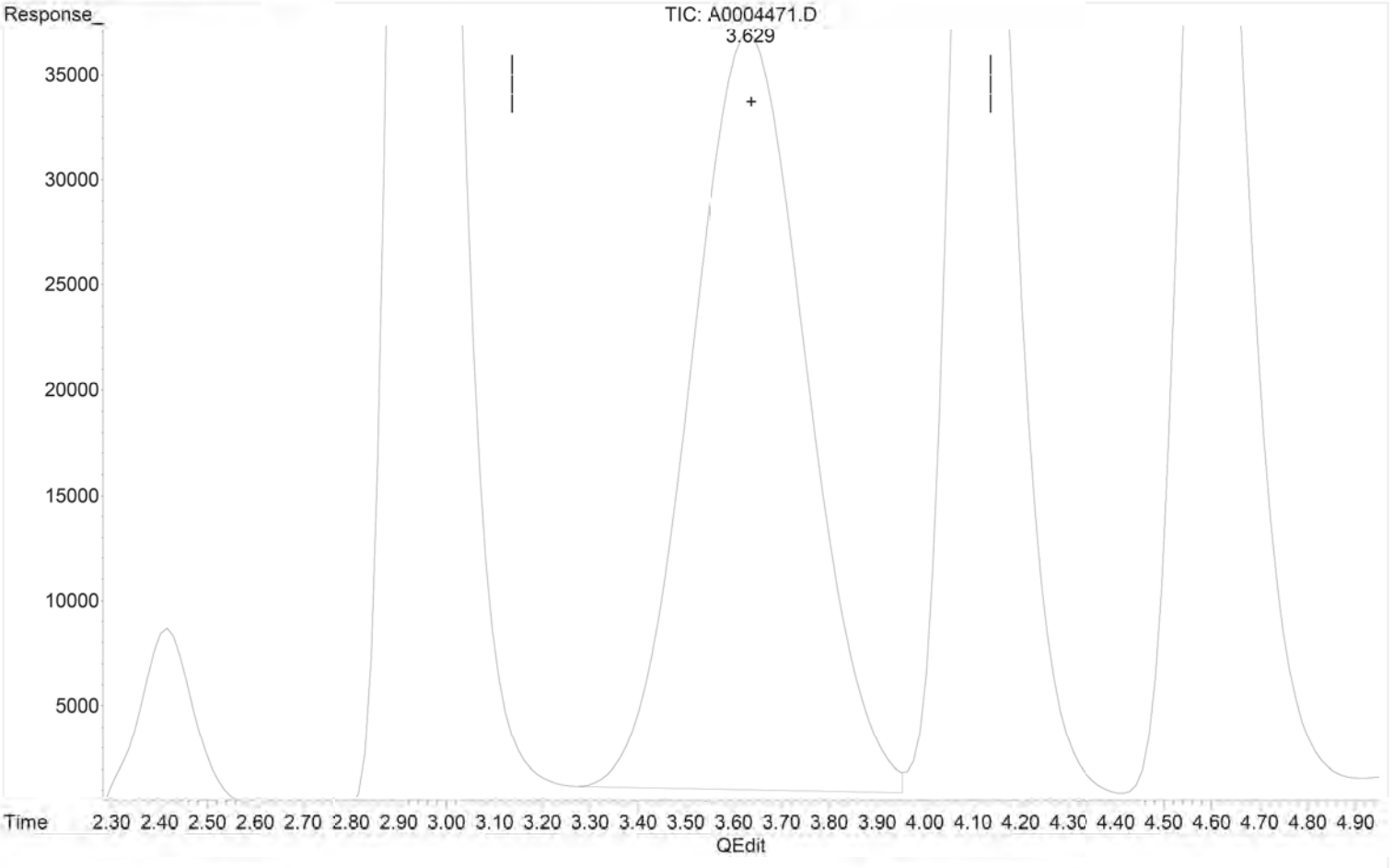
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.635min 10.292 ppm

response 5999073

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:27:04 2020

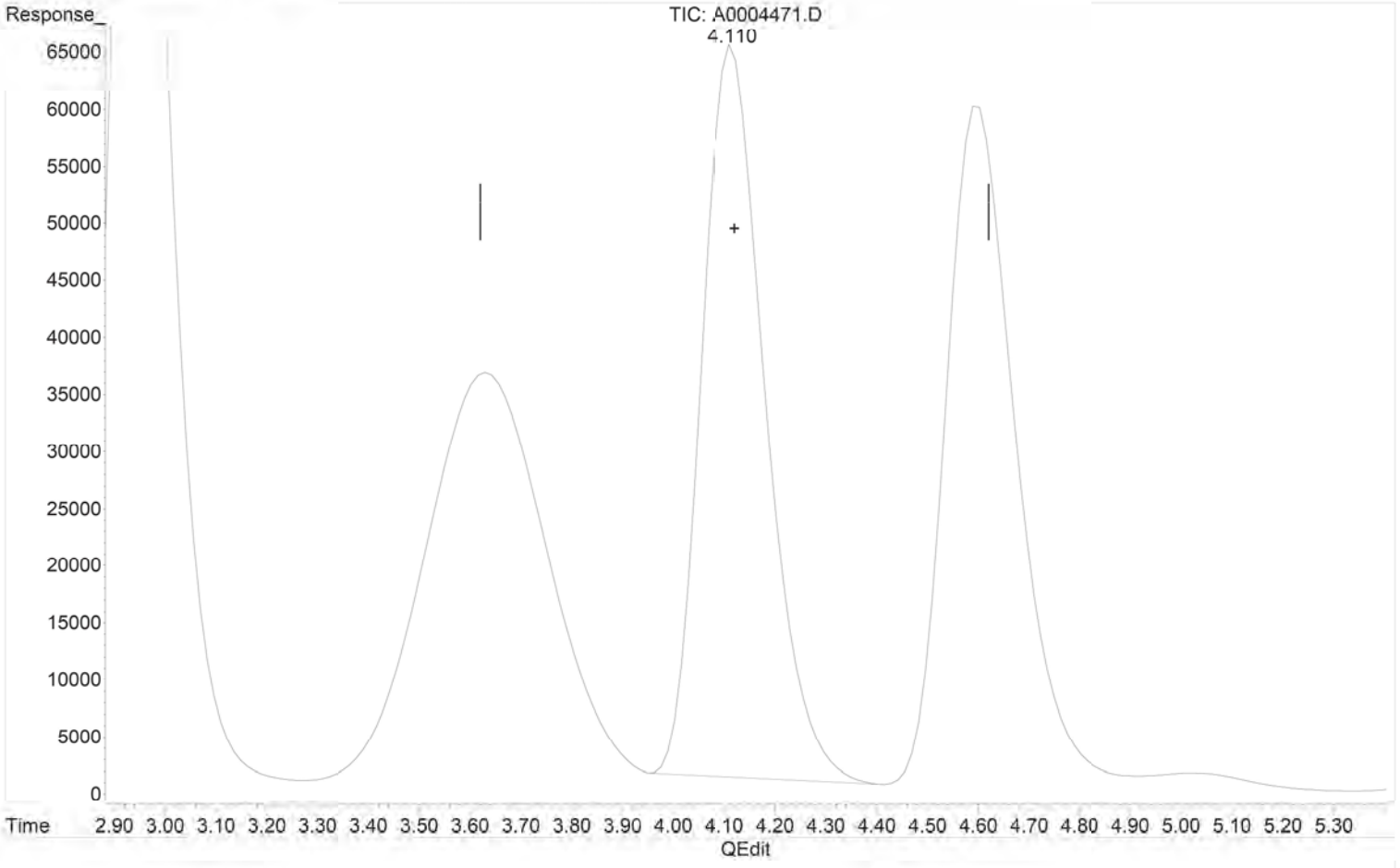
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.110min 100.101 ppm m

response 5545238

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:27:28 2020

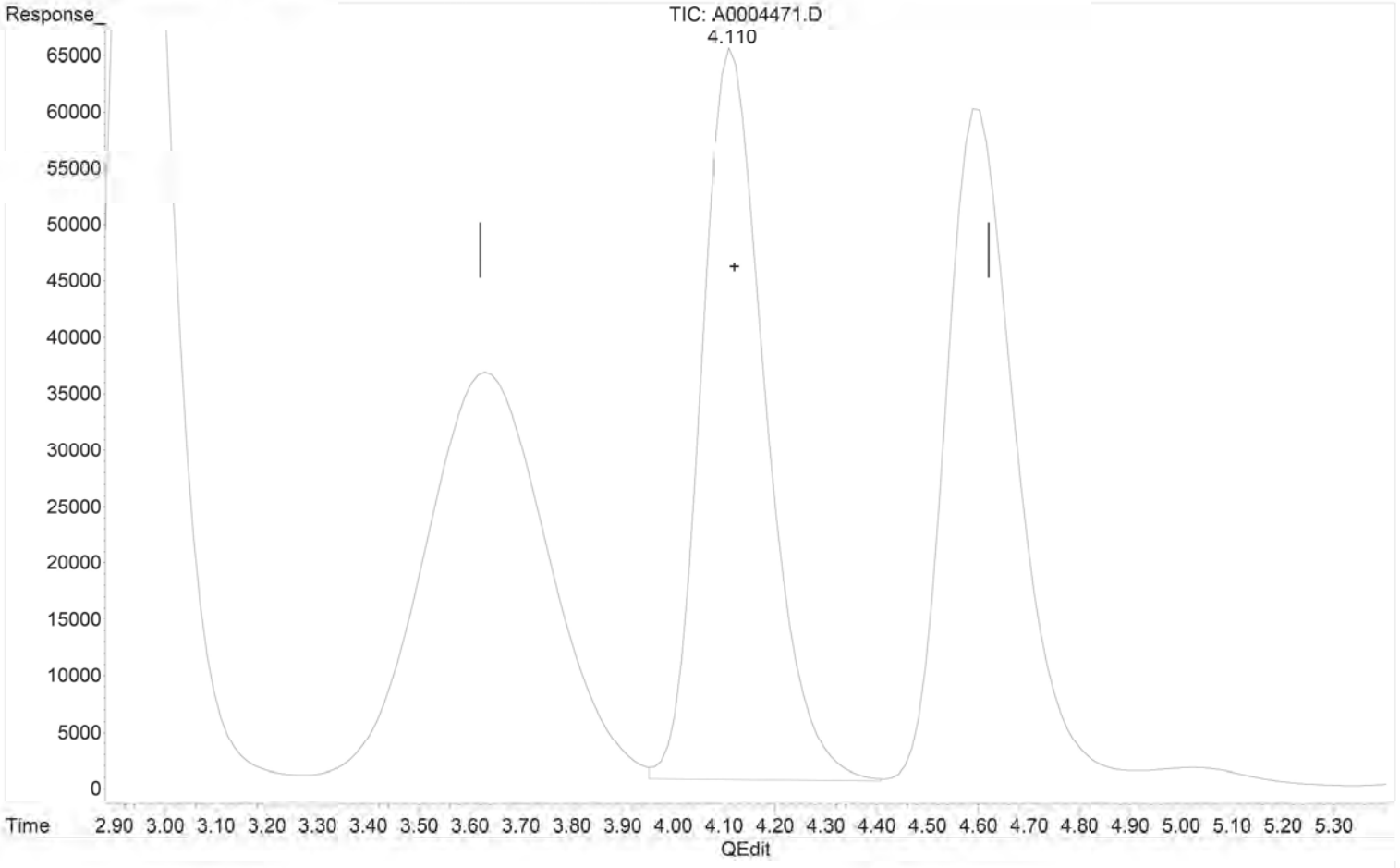
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.117min 102.879 ppm

response 5699157

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

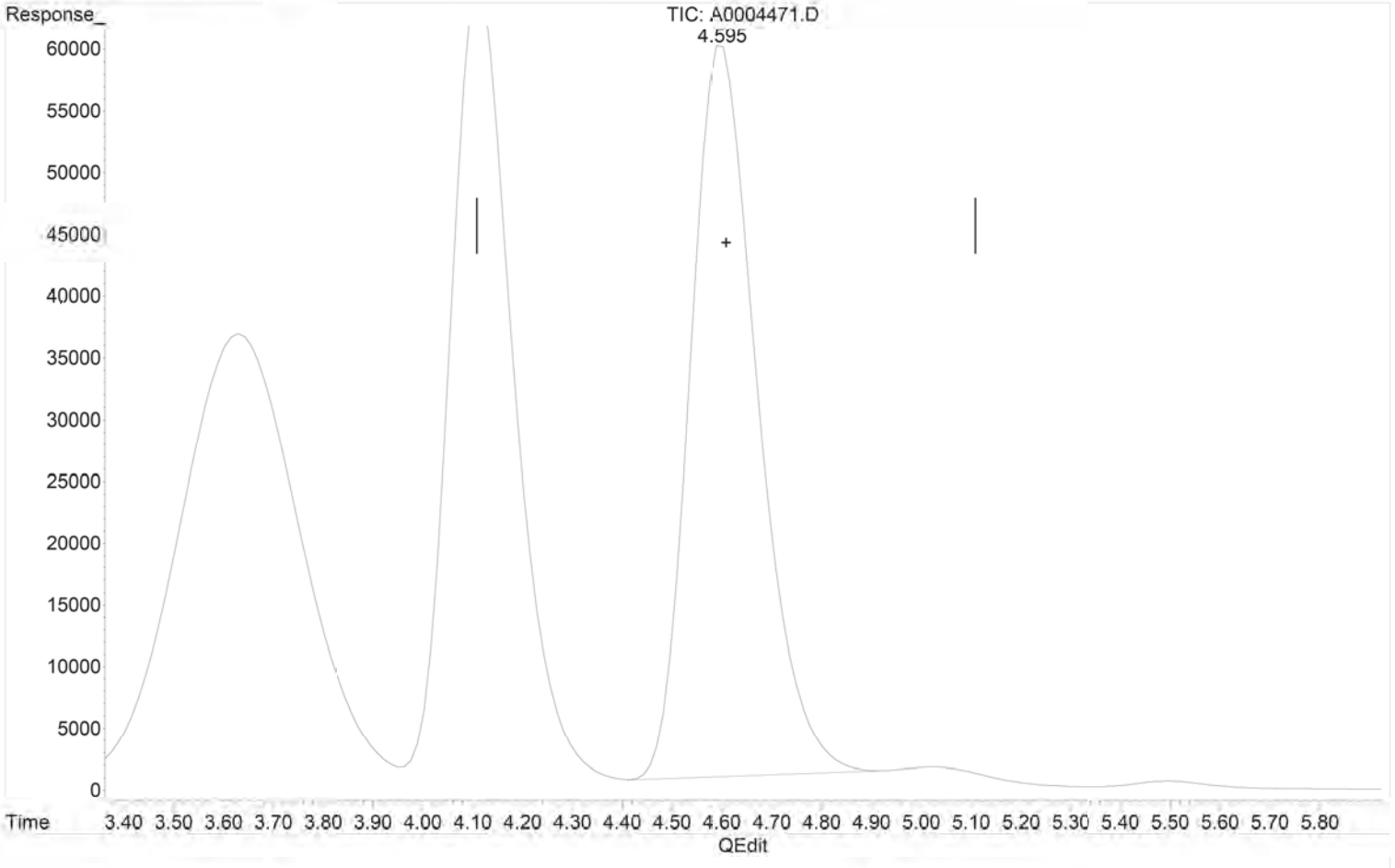
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)
4.595min 99.609 ppm m
response 5558142

Manual Integration:
After
Poor integration.
03/16/20

(+) = Expected Retention Time
MA031220.M Mon Mar 16 09:27:39 2020

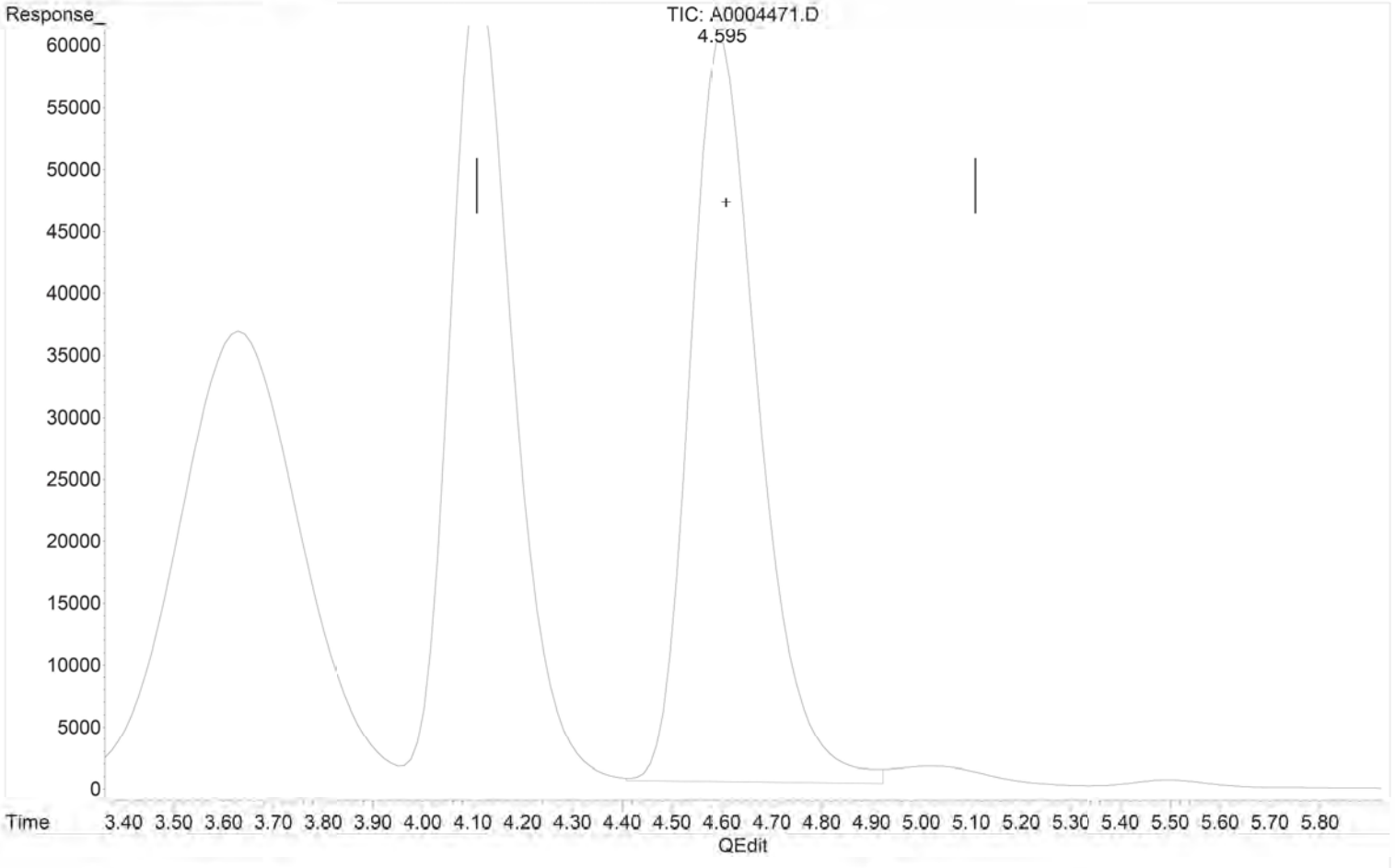
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.602min 103.031 ppm

response 5749108

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

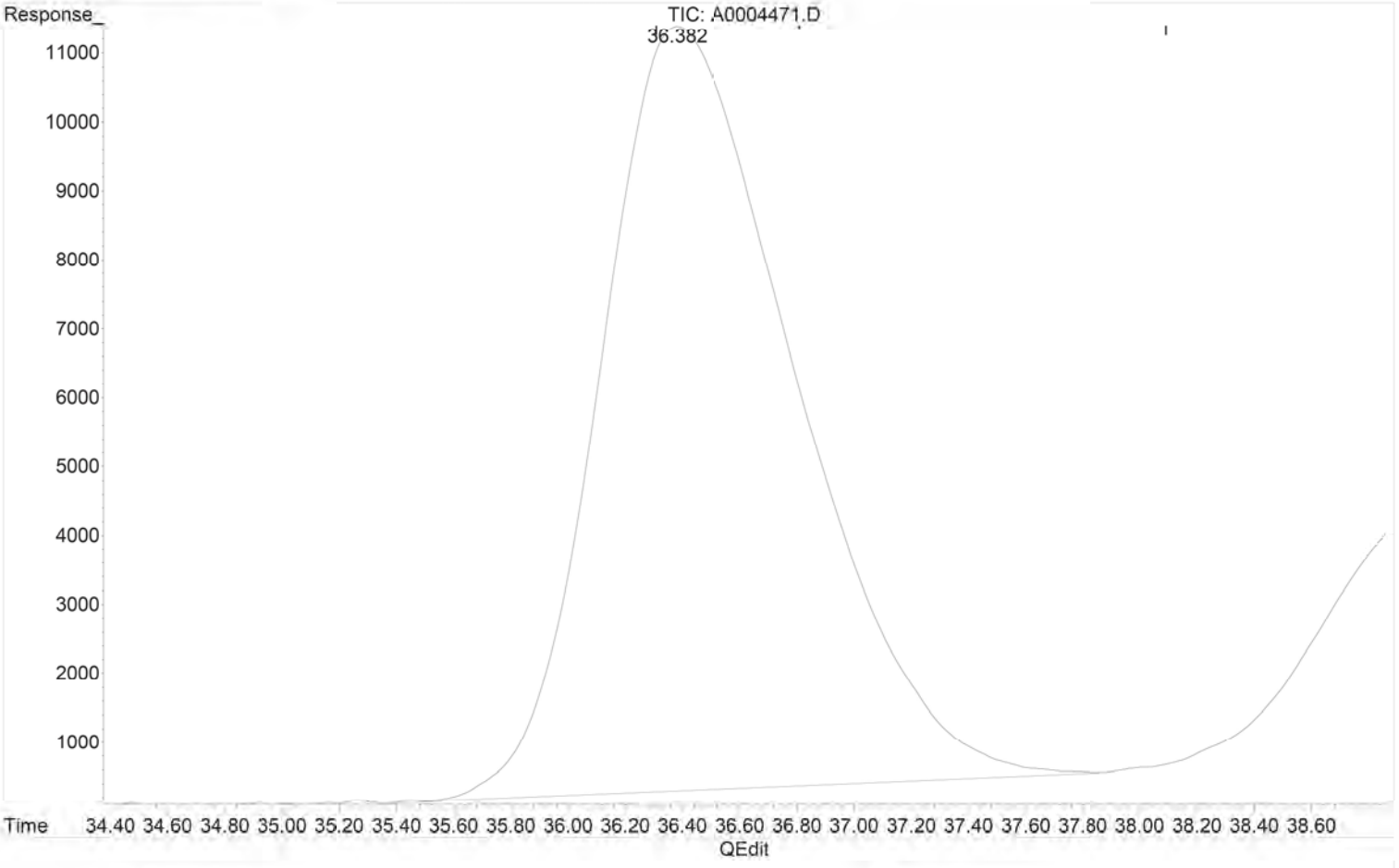
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.382min 99.663 ppm m

response 5243902

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

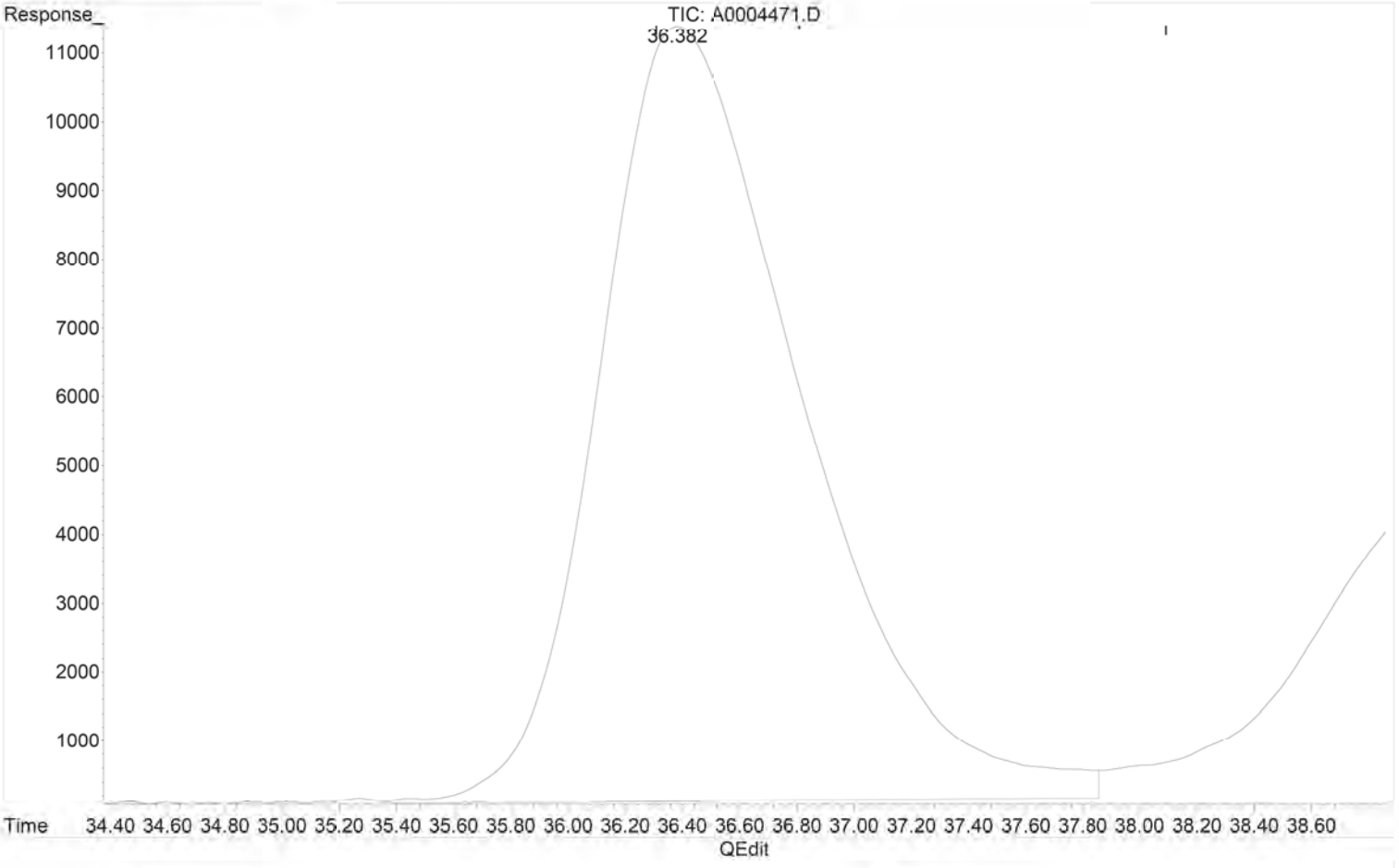
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.387min 105.508 ppm

response 5551464

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) t	Formic acid	2.944	9251260	101.099	ppm	m
2) T	Pyruvic acid	3.629	5807459	9.964	ppm	m
3) T	Lactic Acid	4.110	5545238	100.101	ppm	m
4) T	Acetic Acid	4.595	5558142	99.609	ppm	m
5) T	Propionic Acid	11.528	5536155	100.773	ppm	
6) T	Butyric Acid	36.382	5243902	99.663	ppm	m

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

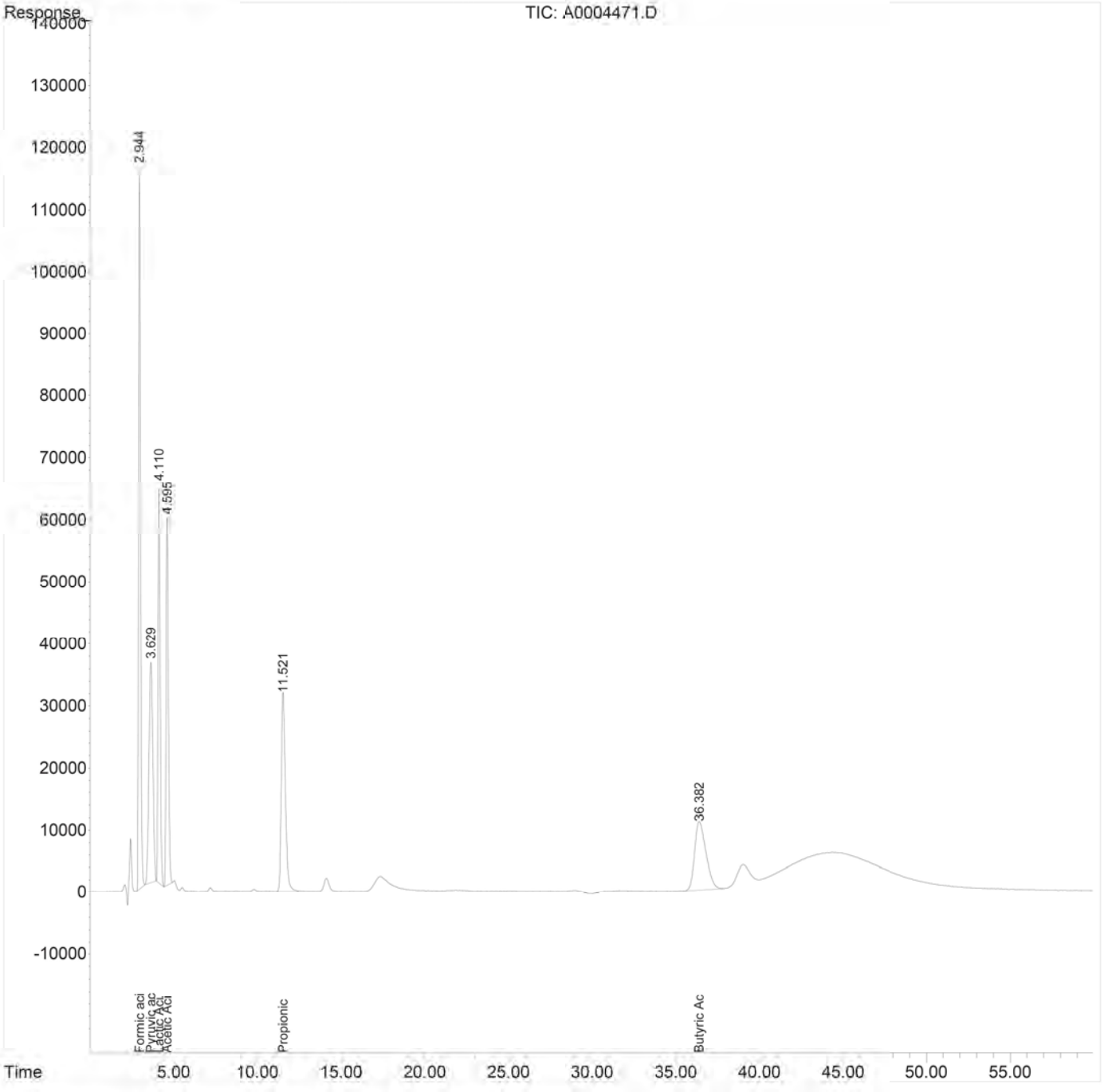
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (QT Reviewed)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004471.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 18:57:42
Operator : A.Felser
Sample : STD 7
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:26 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



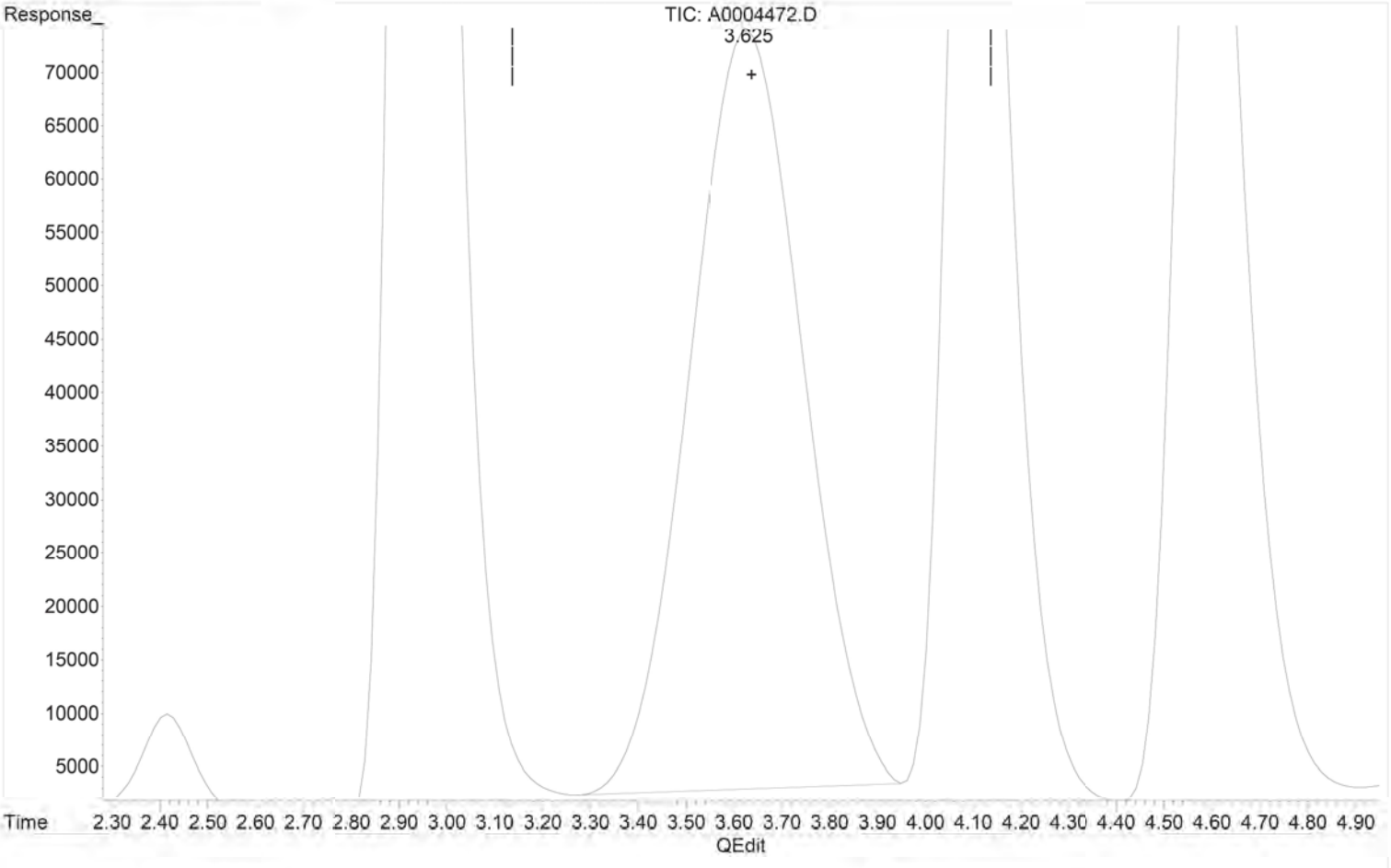
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.625min 19.912 ppm m

response 11605902

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

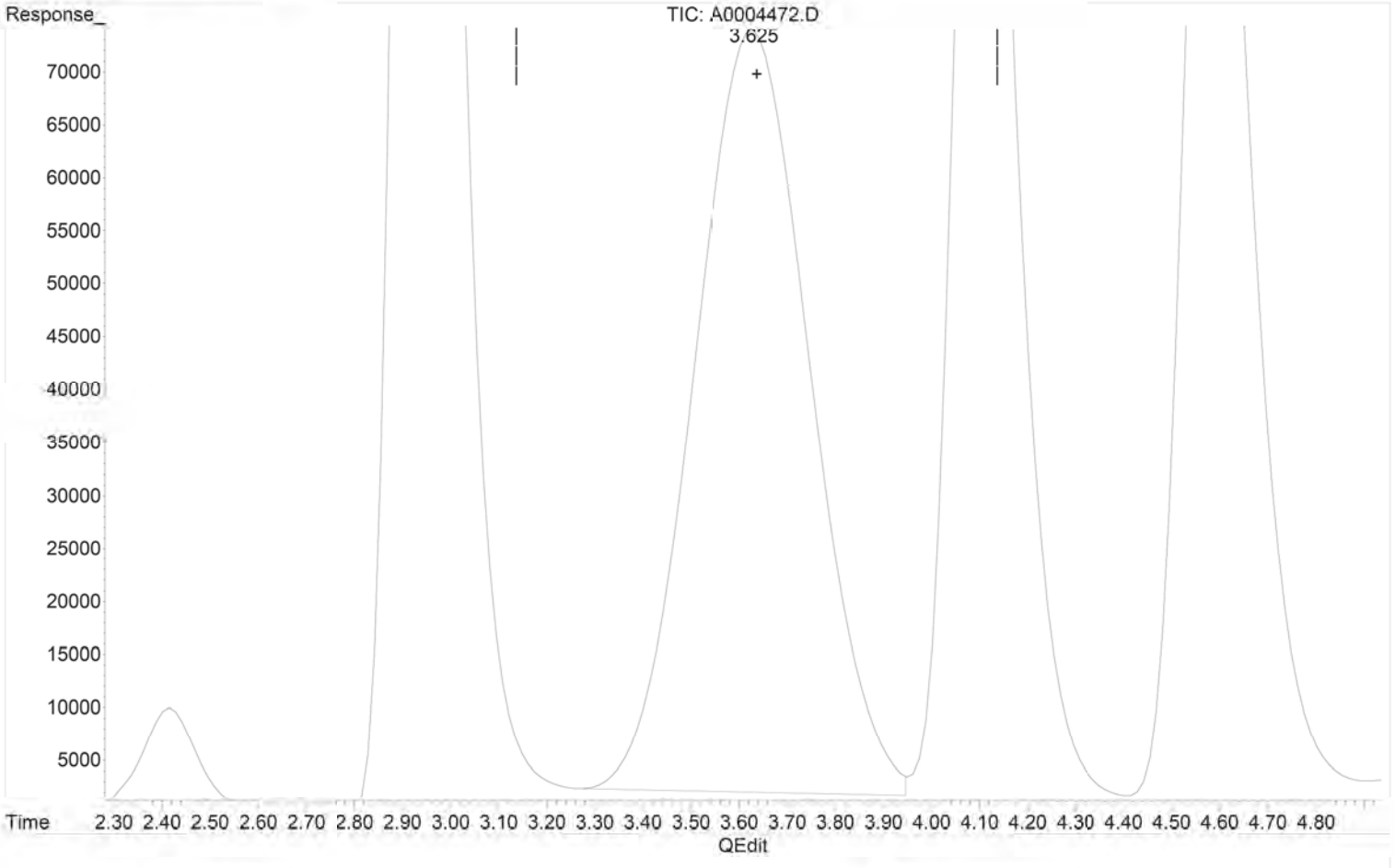
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(2) Pyruvic acid (T)

3.630min 20.492 ppm

response 11944441

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

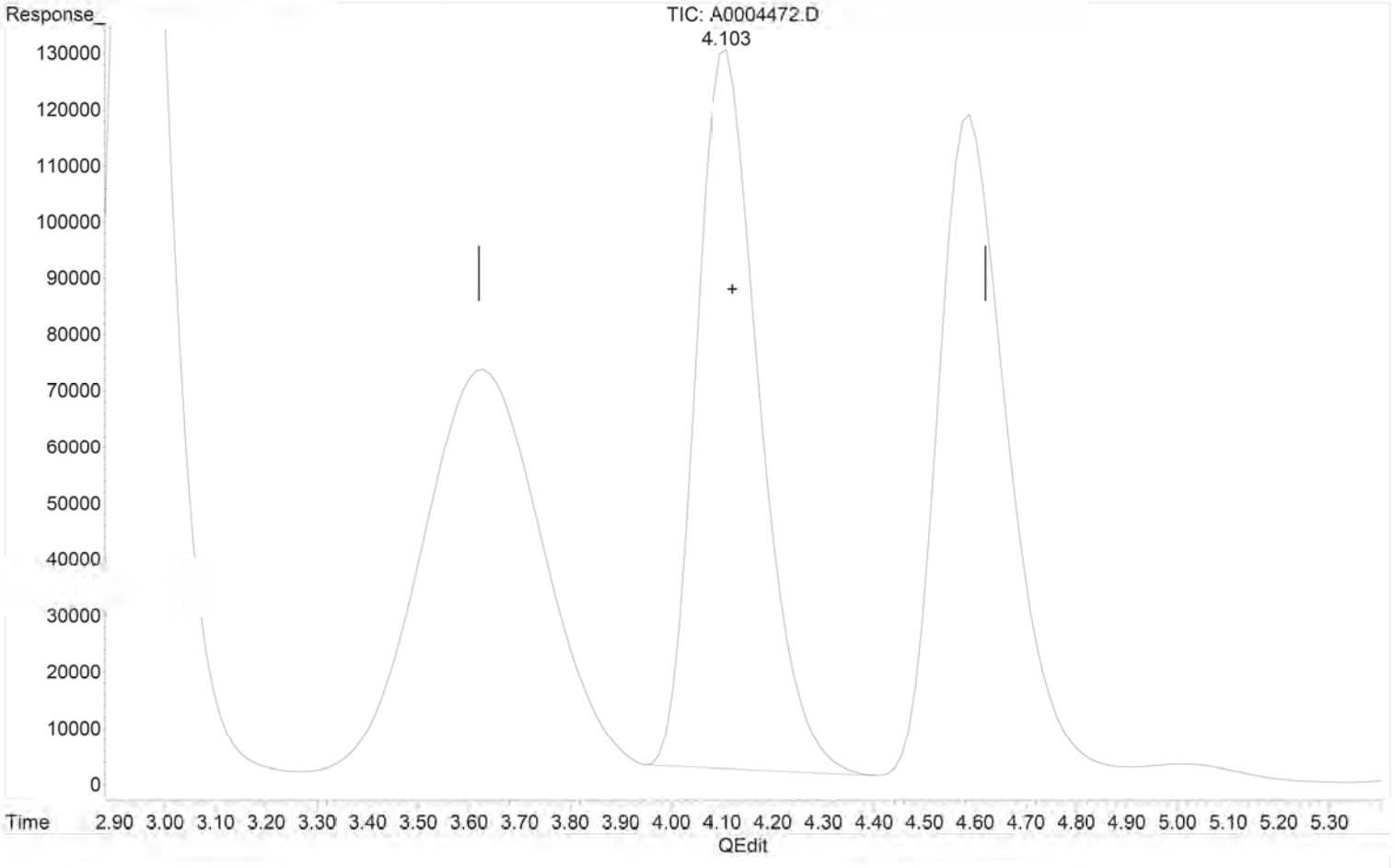
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.103min 199.720 ppm m

response 11063811

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

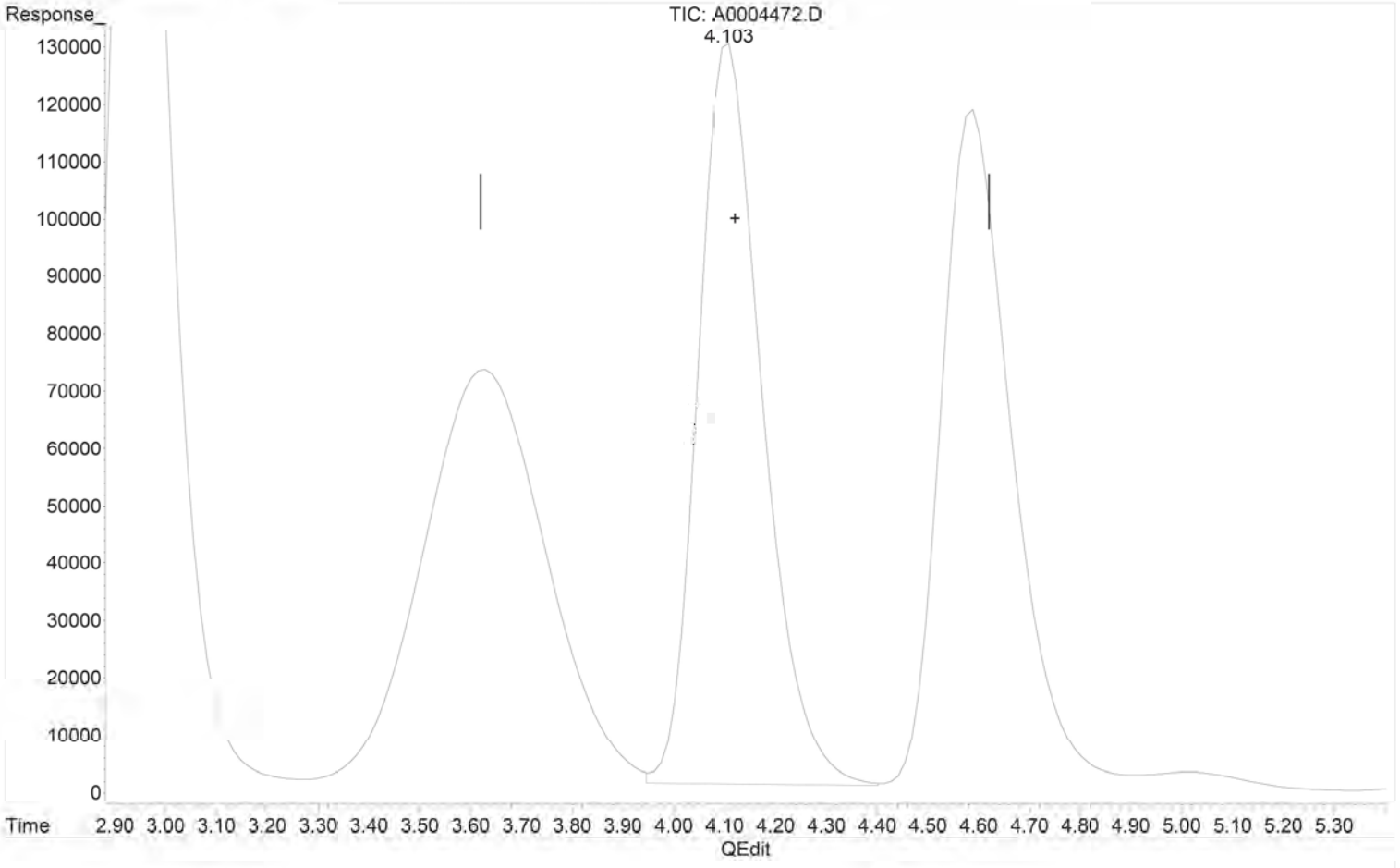
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(3) Lactic Acid (T)

4.110min 205.006 ppm

response 11356650

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

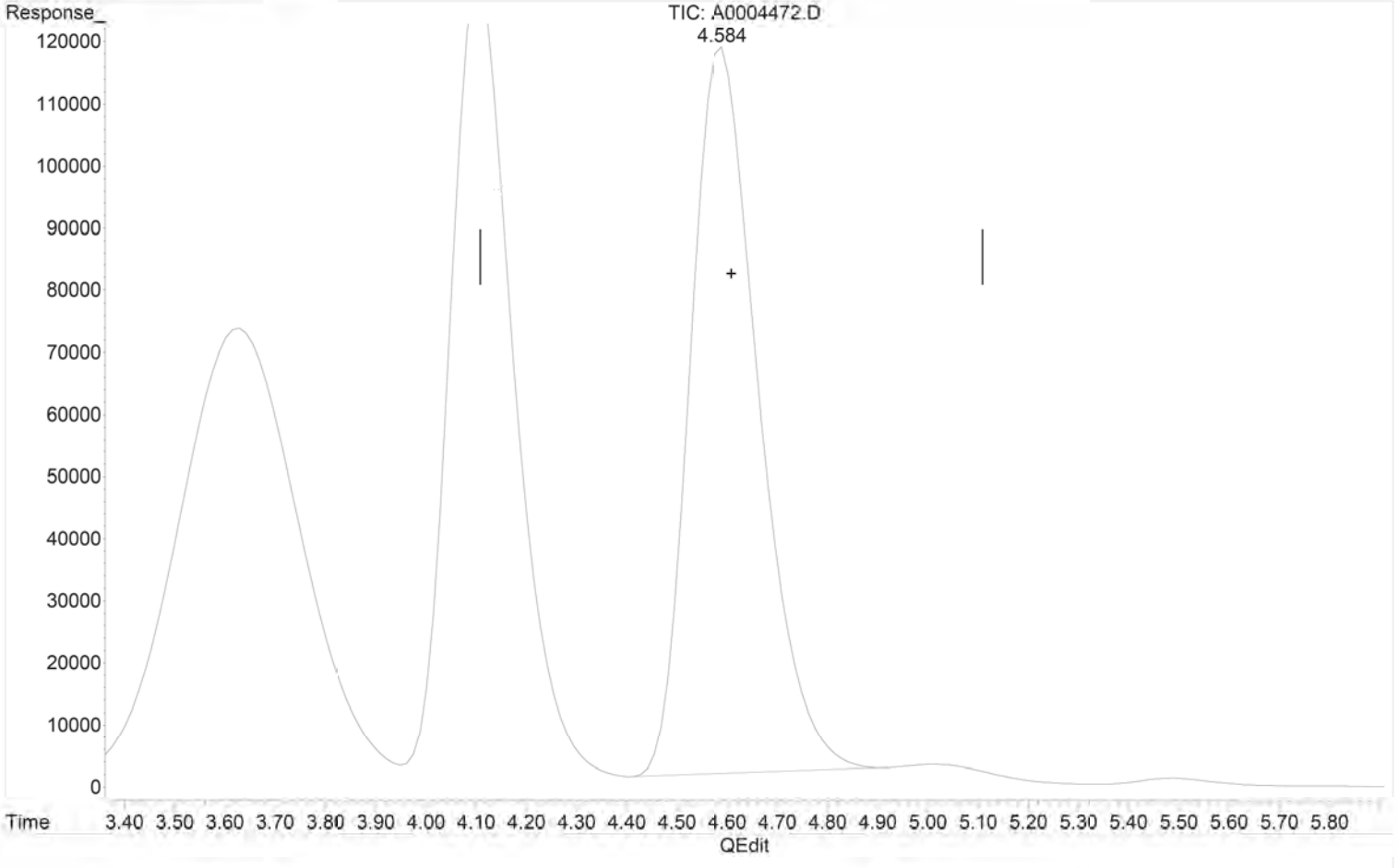
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.584min 197.987 ppm m

response 11047591

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:28:54 2020

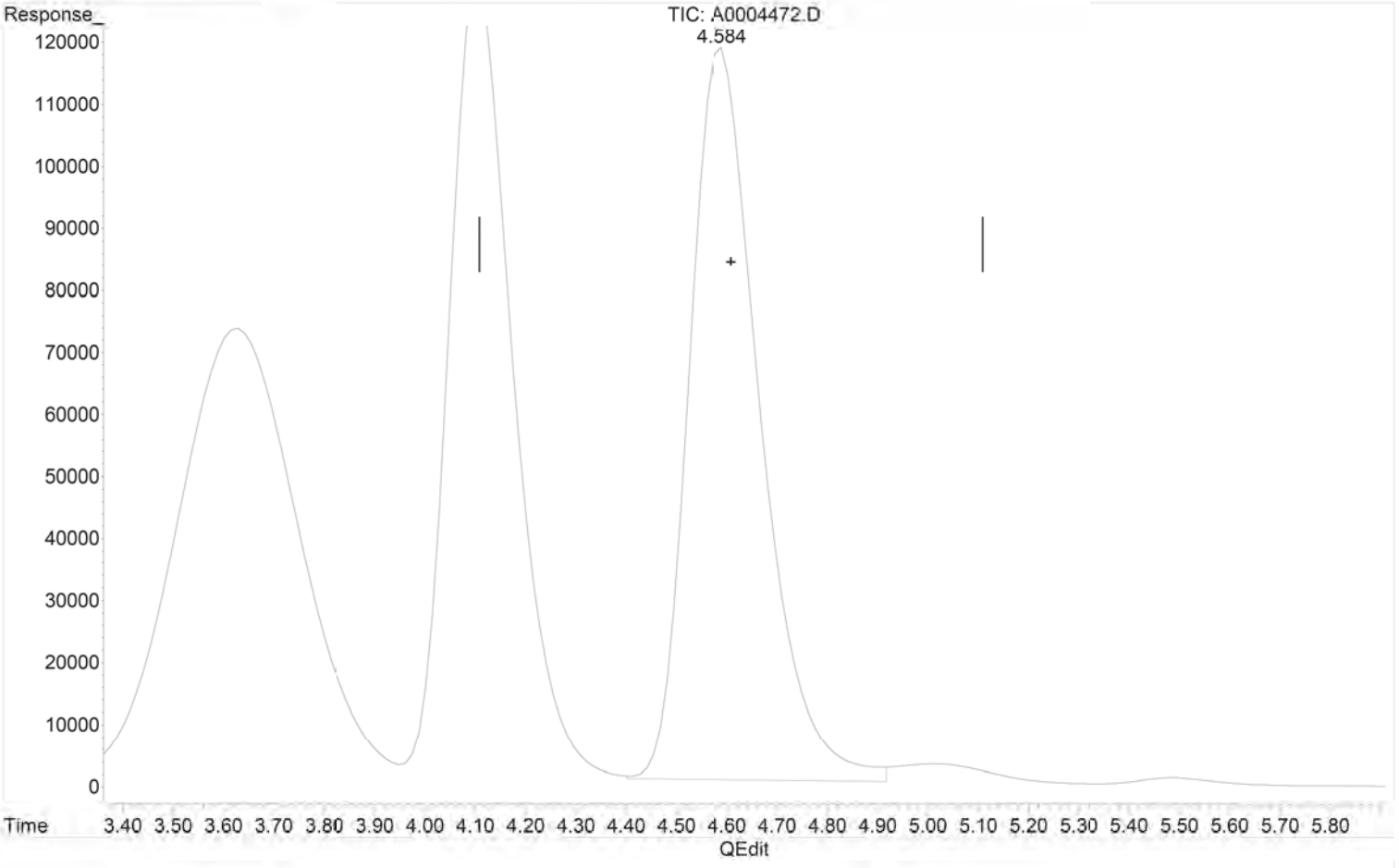
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(4) Acetic Acid (T)

4.592min 205.148 ppm

response 11447174

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

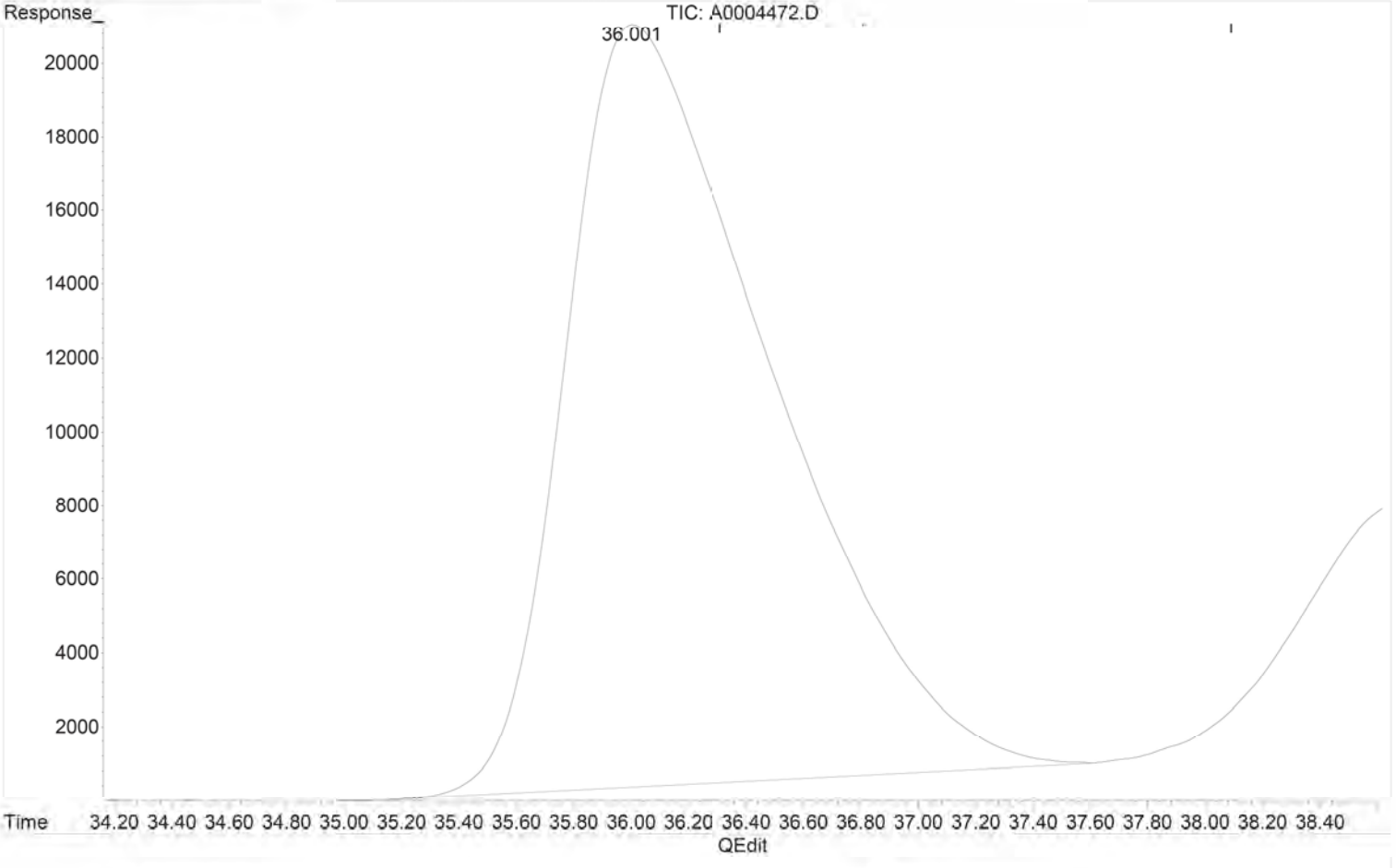
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.001min 196.253 ppm m

response 10326182

Manual Integration:

After

Poor integration.

03/16/20

(+) = Expected Retention Time

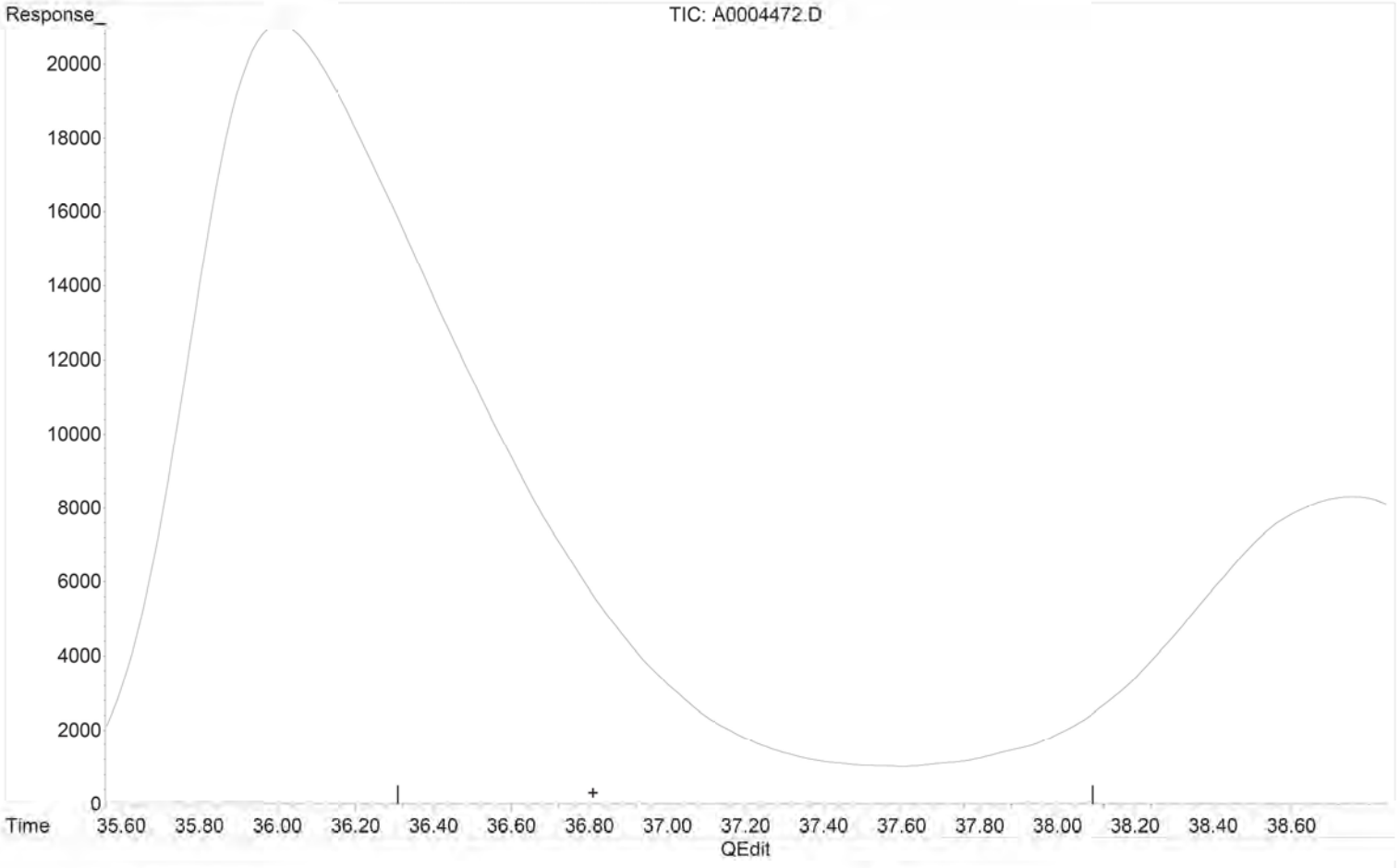
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.808min 0.000 ppm

response 0

Manual Integration:

Before

03/16/20

(+) = Expected Retention Time

MA031220.M Mon Mar 16 09:28:59 2020

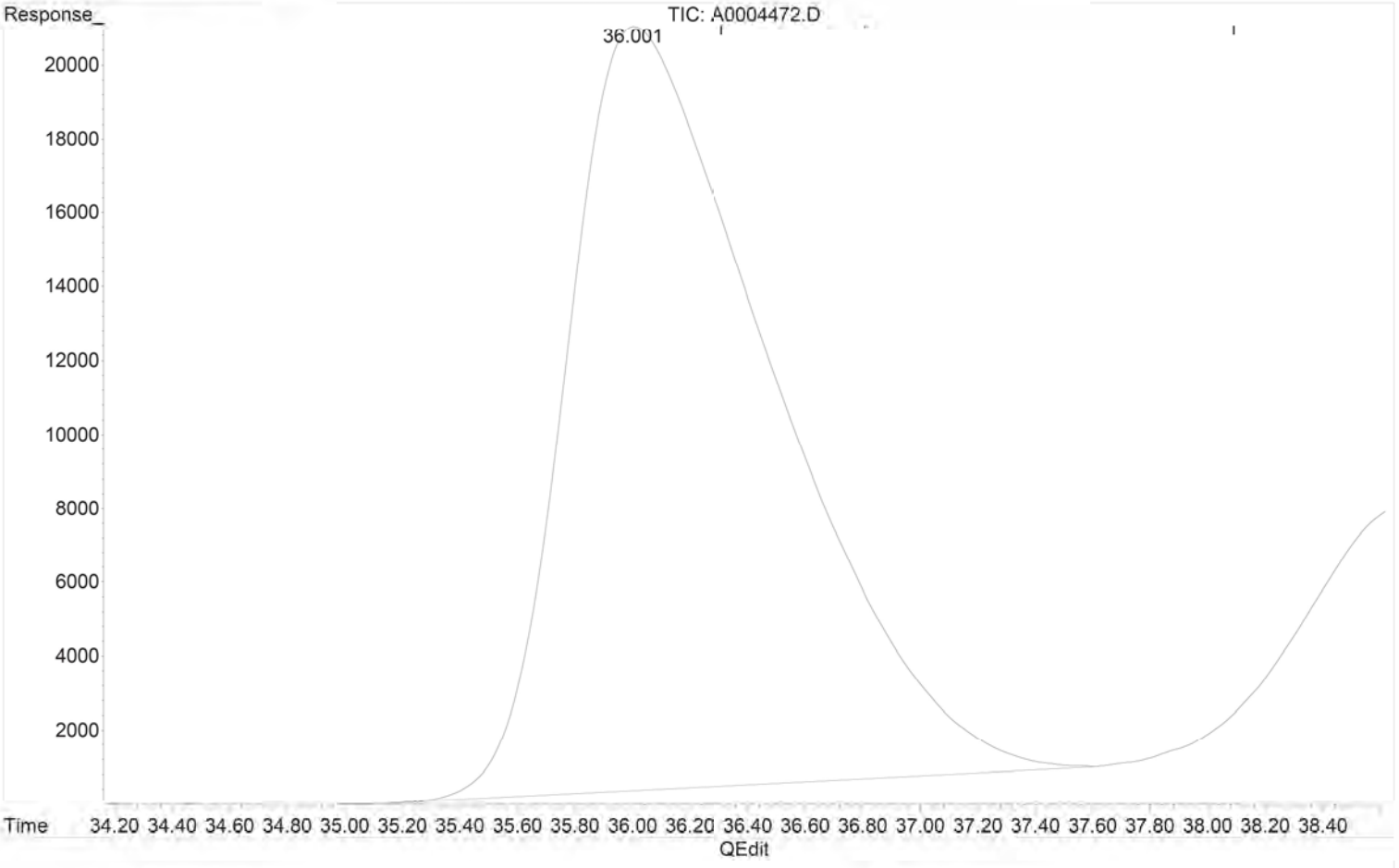
1st AF 03/17/20
2nd DM 03/19/20

Quantitation Report (Qedit)

Data Path : I:\ACQUDATA\hplc05\data\031220\
Data File : A0004472.D
Signal(s) : dad1C.ch
Acq On : 12-Mar-2020, 20:00:49
Operator : A.Felser
Sample : STD 8
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: MA1.E
Quant Time: Mar 16 09:18:28 2020
Quant Method : I:\ACQUDATA\hplc05\Methods\MA031220.M
Quant Title : organic acids
QLast Update : Mon Mar 16 09:18:01 2020
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 50.0ul
Signal Phase : synergi hydro rp
Signal Info : UV wave 210



(6) Butyric Acid (T)

36.001min 196.253 ppm m

response 10326182

Manual Integration:

After

Peak not found.

03/16/20

(+) = Expected Retention Time

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58

Service Request: R2005464
Calibration Date: 12/30/2000

Initial Calibration Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Calibration ID: RC2000053
Instrument ID: R-HPLC-05

Signal ID: 1

#	Lab Code	Sample Name	File Location	Acquisition Date
01	RC2000053-01	STD 1	I:\ACQUDATA\hplc05\data\031220\A0004465.D	03/12/2020 12:39
02	RC2000053-02	STD 2	I:\ACQUDATA\hplc05\data\031220\A0004466.D	03/12/2020 13:42
04	RC2000053-04	STD 4	I:\ACQUDATA\hplc05\data\031220\A0004468.D	03/12/2020 15:48
07	RC2000053-07	STD 7	I:\ACQUDATA\hplc05\data\031220\A0004471.D	03/12/2020 18:57
08	RC2000053-08	STD 8	I:\ACQUDATA\hplc05\data\031220\A0004472.D	03/12/2020 20:00
03	RC2000053-03	STD 3	I:\ACQUDATA\hplc05\data\031220\A0004467.D	12/30/2000 02:48
06	RC2000053-06	STD 6	I:\ACQUDATA\hplc05\data\031220\A0004470.D	12/30/2000 17:47
05	RC2000053-05	STD 5	I:\ACQUDATA\hplc05\data\031220\A0004469.D	12/30/2000 17:48

Analyte

Acetic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1	5.521E4	02	2	5.659E4	03	5	5.611E4	04	10	5.731E4
05	20	5.58E4	06	50	5.655E4	07	100	5.558E4	08	200	5.524E4

Butanoic Acid (Butyric Acid)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1	5.323E4	02	2	5.338E4	03	5	5.087E4	04	10	5.32E4
05	20	5.262E4	06	50	5.313E4	07	100	5.244E4	08	200	5.163E4

Lactic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1	6.266E4	02	2	5.467E4	03	5	5.515E4	04	10	5.641E4
05	20	5.54E4	06	50	5.626E4	07	100	5.545E4	08	200	5.532E4

Propionic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1	5.153E4	02	2	5.435E4	03	5	5.182E4	04	10	5.598E4
05	20	5.494E4	06	50	5.59E4	07	100	5.536E4	08	200	5.497E4

Pyruvic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	.1	6.507E5	02	.2	5.665E5	03	.5	5.865E5	04	1	5.943E5
05	2	5.829E5	06	5	5.906E5	07	10	5.807E5	08	20	5.803E5

ALS Group USA, Corp.
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QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58

Service Request: R2005464
Calibration Date: 12/30/2000

Initial Calibration Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Calibration ID: RC2000053
Instrument ID: R-HPLC-05

Signal ID: 1

Analyte Name	Compound Type	Calibration Evaluation				Calibration Evaluation	
		Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Acetic Acid	TRG	Average RF	% RSD	1.3	≤	5.605E4	
Butanoic Acid (Butyric Acid)	TRG	Average RF	% RSD	1.7	≤	5.256E4	
Lactic Acid	TRG	Average RF	% RSD	4.6	≤	5.642E4	
Propionic Acid	TRG	Average RF	% RSD	3.2	≤	5.436E4	
Pyruvic Acid	TRG	Average RF	% RSD	4.3	≤	5.916E5	

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QA/QC Report

Client: ALS Environmental - US **Service Request:** R2005464
Project: LHAAP / Site 58 **Calibration Date:** 12/30/2000

Initial Calibration Verification Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Calibration ID: RC2000053 **Signal ID:** 1
Instrument ID: R-HPLC-05

#	Lab Code	Sample Name	File Location	Acquisition Date
09	RC2000053-09	ICV	I:\ACQUDATA\hplc05\data\031620\A0004777.D	12/30/2000 00:01

Analyte Name	Expected	Result	Average RF	SSV RF	Rec.	Criteria	Curve Fit
Pyruvic Acid	2.00	1.80	5.916E5	5.334E5	90.0	85-115	Average RF
Acetic Acid	20.0	18.9	5.605E4	5.295E4	94.5	85-115	Average RF
Butanoic Acid (Butyric Acid)	20.0	19.4	5.256E4	5.089E4	97.0	85-115	Average RF
Lactic Acid	20.0	18.8	5.642E4	5.298E4	94.0	85-115	Average RF
Propionic Acid	20.0	20.4	5.436E4	5.533E4	102	85-115	Average RF

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QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	R2005464
Project:	LHAAP / Site 58/NW01312.0150	**Date Analyzed:**	07/01/20 13:56

Continuing Calibration Verification (CCV) Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method:	Organic Acids	**Calibration Date:**	12/30/2000
File ID:	I:\ACQUDATA\hplc05\data\070120\A0005448.D\	**Calibration ID:**	RC2000053
Signal ID:	1	**Analysis Lot:**	686010
		Units:	mg/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Pyruvic Acid	5.00	5.23	5.916E5	6.194E5	4.7	NA	±15	Average RF
Acetic Acid	50.0	49.7	5.605E4	5.568E4	-0.7	NA	±15	Average RF
Butanoic Acid (Butyric Acid)	50.0	49.0	5.256E4	5.154E4	-1.9	NA	±15	Average RF
Lactic Acid	50.0	47.0	5.642E4	5.305E4	-6.0	NA	±15	Average RF
Propionic Acid	50.0	49.6	5.436E4	5.387E4	-0.9	NA	±15	Average RF

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QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58/NW01312.0150

Service Request: R2005464
Date Analyzed: 07/01/20 20:11

Continuing Calibration Verification (CCV) Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids
File ID: I:\ACQUDATA\hplc05\data\070120\A0005454.D\
Signal ID: 1

Calibration Date: 12/30/2000
Calibration ID: RC2000053
Analysis Lot: 686010
Units: mg/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Pyruvic Acid	5.00	5.20	5.916E5	6.161E5	4.2	NA	±15	Average RF
Acetic Acid	50.0	49.6	5.605E4	5.559E4	-0.8	NA	±15	Average RF
Butanoic Acid (Butyric Acid)	50.0	47.2	5.256E4	4.962E4	-5.6	NA	±15	Average RF
Lactic Acid	50.0	47.4	5.642E4	5.345E4	-5.3	NA	±15	Average RF
Propionic Acid	50.0	49.2	5.436E4	5.343E4	-1.7	NA	±15	Average RF

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QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58/NW01312.0150

Service Request: R2005464
Date Analyzed: 07/02/20 02:32

Continuing Calibration Verification (CCV) Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids
File ID: I:\ACQUDATA\hplc05\data\070120\A0005460.D\
Signal ID: 1

Calibration Date: 12/30/2000
Calibration ID: RC2000053
Analysis Lot: 686010
Units: mg/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Pyruvic Acid	5.00	5.23	5.916E5	6.187E5	4.6	NA	±15	Average RF
Acetic Acid	50.0	49.6	5.605E4	5.552E4	-0.9	NA	±15	Average RF
Butanoic Acid (Butyric Acid)	50.0	48.2	5.256E4	5.077E4	-3.4	NA	±15	Average RF
Lactic Acid	50.0	47.5	5.642E4	5.362E4	-5.0	NA	±15	Average RF
Propionic Acid	50.0	48.9	5.436E4	5.313E4	-2.3	NA	±15	Average RF

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QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	R2005464
Project:	LHAAP / Site 58/NW01312.0150	**Date Analyzed:**	07/02/20 08:50

Continuing Calibration Verification (CCV) Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method:	Organic Acids	**Calibration Date:**	12/30/2000
File ID:	I:\ACQUDATA\hplc05\data\070120\A0005466.D\	**Calibration ID:**	RC2000053
Signal ID:	1	**Analysis Lot:**	686010
		Units:	mg/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Pyruvic Acid	5.00	5.02	5.916E5	5.947E5	0.5	NA	±15	Average RF
Acetic Acid	50.0	48.6	5.605E4	5.439E4	-3.0	NA	±15	Average RF
Butanoic Acid (Butyric Acid)	50.0	49.7	5.256E4	5.232E4	-0.5	NA	±15	Average RF
Lactic Acid	50.0	46.8	5.642E4	5.278E4	-6.5	NA	±15	Average RF
Propionic Acid	50.0	48.7	5.436E4	5.289E4	-2.7	NA	±15	Average RF

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QA/QC Report

Client: ALS Environmental - US
Project: LHAAP / Site 58/NW01312.0150

Service Request: R2005464
Date Analyzed: 07/02/20 15:08

Continuing Calibration Verification (CCV) Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids
File ID: I:\ACQUDATA\hplc05\data\070120\A0005472.D\
Signal ID: 1

Calibration Date: 12/30/2000
Calibration ID: RC2000053
Analysis Lot: 686010
Units: mg/L

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Pyruvic Acid	5.00	5.02	5.916E5	5.94E5	0.4	NA	±15	Average RF
Acetic Acid	50.0	48.5	5.605E4	5.431E4	-3.1	NA	±15	Average RF
Butanoic Acid (Butyric Acid)	50.0	49.7	5.256E4	5.231E4	-0.5	NA	±15	Average RF
Lactic Acid	50.0	47.0	5.642E4	5.308E4	-5.9	NA	±15	Average RF
Propionic Acid	50.0	49.5	5.436E4	5.375E4	-1.1	NA	±15	Average RF

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QA/QC Report

Client: ALS Environmental - US **Service Request:**R2005464
Project: LHAAP / Site 58/NW01312.0150

Analysis Run Log
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids **Analysis Lot:**686010
Instrument ID:R-HPLC-05

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
I:\ACQUDATA\hplc05\data\070120\A0005465.D\	35AWW19_062420 MS	RQ2007136-07	12/29/2000	23:47:48	
I:\ACQUDATA\hplc05\data\070120\A0005455.D\	ZZZZZZZ	ZZZZZZZ	12/29/2000	23:48:29	
I:\ACQUDATA\hplc05\data\070120\A0005461.D\	ZZZZZZZ	ZZZZZZZ	12/30/2000	02:47:58	
I:\ACQUDATA\hplc05\data\070120\A0005456.D\	ZZZZZZZ	ZZZZZZZ	12/30/2000	16:48:33	
I:\ACQUDATA\hplc05\data\070120\A0005467.D\	35AWW19_062420 DMS	RQ2007136-08	12/30/2000	16:48:42	
I:\ACQUDATA\hplc05\data\070120\A0005449.D\	Method Blank	RQ2007136-02	12/31/2000	02:48:24	
I:\ACQUDATA\hplc05\data\070120\A0005454.D\	Continuing Calibration Verification	RQ2007136-05	12/31/2000	02:48:28	
I:\ACQUDATA\hplc05\data\070120\A0005469.D\	LHSMW07_062420	R2005464-003	12/31/2000	02:48:33	
I:\ACQUDATA\hplc05\data\070120\A0005471.D\	35AWW23_062420	R2005464-005	12/31/2000	02:48:34	
I:\ACQUDATA\hplc05\data\070120\A0005448.D\	Continuing Calibration Verification	RQ2007136-01	7/1/2020	13:56:19	
I:\ACQUDATA\hplc05\data\070120\A0005449.D\	Method Blank	RQ2007136-02	7/1/2020	14:56:00	
I:\ACQUDATA\hplc05\data\070120\A0005450.D\	Lab Control Sample	RQ2007136-03	7/1/2020	16:02:18	
I:\ACQUDATA\hplc05\data\070120\A0005451.D\	Duplicate Lab Control Sample	RQ2007136-04	7/1/2020	17:05:25	
I:\ACQUDATA\hplc05\data\070120\A0005452.D\	ZZZZZZZ	ZZZZZZZ	7/1/2020	18:08:24	
I:\ACQUDATA\hplc05\data\070120\A0005453.D\	ZZZZZZZ	ZZZZZZZ	7/1/2020	19:11:21	
I:\ACQUDATA\hplc05\data\070120\A0005454.D\	Continuing Calibration Verification	RQ2007136-05	7/1/2020	20:11:00	
I:\ACQUDATA\hplc05\data\070120\A0005455.D\	ZZZZZZZ	ZZZZZZZ	7/1/2020	21:14:00	
I:\ACQUDATA\hplc05\data\070120\A0005456.D\	ZZZZZZZ	ZZZZZZZ	7/1/2020	22:17:00	
I:\ACQUDATA\hplc05\data\070120\A0005460.D\	Continuing Calibration Verification	RQ2007136-06	7/2/2020	02:32:48	
I:\ACQUDATA\hplc05\data\070120\A0005461.D\	ZZZZZZZ	ZZZZZZZ	7/2/2020	03:32:00	
I:\ACQUDATA\hplc05\data\070120\A0005462.D\	ZZZZZZZ	ZZZZZZZ	7/2/2020	04:38:45	
I:\ACQUDATA\hplc05\data\070120\A0005463.D\	ZZZZZZZ	ZZZZZZZ	7/2/2020	05:41:40	
I:\ACQUDATA\hplc05\data\070120\A0005464.D\	35AWW19_062420	R2005464-001	7/2/2020	06:44:40	

ALS Group USA, Corp.
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QA/QC Report

Client: ALS Environmental - US **Service Request:**R2005464
Project: LHAAP / Site 58/NW01312.0150

Analysis Run Log
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids **Analysis Lot:**686010
Instrument ID:R-HPLC-05

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
I:\ACQUDATA\hplc05\data\070120\A0005465.D\	35AWW19_062420 MS	RQ2007136-07	7/2/2020	07:44:00	
I:\ACQUDATA\hplc05\data\070120\A0005466.D\	Continuing Calibration Verification	RQ2007136-09	7/2/2020	08:50:41	
I:\ACQUDATA\hplc05\data\070120\A0005467.D\	35AWW19_062420 DMS	RQ2007136-08	7/2/2020	09:50:00	
I:\ACQUDATA\hplc05\data\070120\A0005468.D\	35AWW20_062420	R2005464-002	7/2/2020	10:56:30	
I:\ACQUDATA\hplc05\data\070120\A0005469.D\	LHSMW07_062420	R2005464-003	7/2/2020	11:56:00	
I:\ACQUDATA\hplc05\data\070120\A0005470.D\	35AWW06_062420	R2005464-004	7/2/2020	13:02:27	
I:\ACQUDATA\hplc05\data\070120\A0005471.D\	35AWW23_062420	R2005464-005	7/2/2020	14:02:00	
I:\ACQUDATA\hplc05\data\070120\A0005472.D\	Continuing Calibration Verification	RQ2007136-10	7/2/2020	15:08:24	

Analysis: Organic Acids Analyst: AFelix Run Method: NEUMETA.M
Date: 07/01/2020 Instr. HPLC05 Quant Method: MAD31220.M
LIMS Run#: 686010
Setup: Column: Synergi Hydro RP 150x4.6 Col.Temp: 35 Flow: 0.6 mL/min
Mobile Phase: Organic Acids proprietary ul Inj.: 50
Mobile Phase ID: O-766-77G

Pos.	Sample	Diln.	Stds. ID	File#	OK?	Comments
2	BLK			A000 5446	—	
2	BLK			47	—	
1	CCV	100µL/1mL	209218	48	Y	
2	MB			49	Y	
3	LCS	100µL/1mL	208621	50	Y	
4	DLCS	〃	〃	51	Y	
5	R2005448-001			52	Y	
6	〃 -002			53	Y	
1	CCV	100µL/1mL	209218	54	Y	
7	R2005448-003			55	Y	
8	R2005449-001			56	Y	
9	〃 -002			57	N	>LR, repeat @ 1/2
10	〃 -002 MS		208621	58	N	
11	〃 -002 DMS		〃	59	N	
1	CCV	100µL/1mL	209218	60	Y	
12	R2005353-001			61	Y	
13	〃 -002			62	Y	
14	〃 -003			63	Y	
15	R2005464-001			64	Y	
16	〃 -001 MS		208621	65	Y	
1	CCV	100µL/1mL	209218	66	Y	
17	R2005464-001 DMS		208621	67	Y	Pyruvic 〃
18	〃 -002			68	Y	
19	〃 -003			69	Y	
20	〃 -004			70	Y	
21	〃 -005			71	Y	
1	CCV	100µL/1mL	209218	72	Y	

AFelix 07/06/2020

Primary: 209218 exp: 09/19/2020 Secondary: 208621 exp: 09/19/2020
pH Paper: 208628 Acid: 209896

Runlog HPLCr2
3/23/18

LABORATORY REPORT

July 6, 2020

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

RE: HS20061218

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on June 26, 2020. For your reference, these analyses have been assigned our service request number P2003597.

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 Sue Anderson at 1:28 pm, Jul 06, 2020

For Hayden Akers
Project Manager

Client: ALS Laboratory Group Service Request No: P2003597
Project: HS20061218

CASE NARRATIVE

The samples were received intact under chain of custody on June 26, 2020 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 also 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	4068-007
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: HS20061218

Service Request: P2003597

Date Received: 6/26/2020
Time Received: 09:15

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
35AWW19_062420	P2003597-001	Water	6/24/2020	08:30	X	X
35AWW20_062420	P2003597-002	Water	6/24/2020	09:25	X	X
LHSMW07_062420	P2003597-003	Water	6/24/2020	10:15	X	X
35AWW06_062420	P2003597-004	Water	6/24/2020	11:05	X	X
35AWW23_062420	P2003597-005	Water	6/24/2020	12:00	X	X

RJ003597

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: **Texas** **COC ID:** **14191**

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:	HS20061218
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS20061218-01**	**35AWW19_062420**	**Groundwater**	**24 Jun 2020 08:30**
	MEE plus CO2 Sub to ALS SimiValley			06 Jul 2020
2.	**HS20061218-02**	**35AWW20_062420**	**Groundwater**	**24 Jun 2020 09:25**
	MEE plus CO2 Sub to ALS SimiValley			06 Jul 2020
3.	**HS20061218-03**	**LHSMW07_062420**	**Groundwater**	**24 Jun 2020 10:15**
	MEE plus CO2 Sub to ALS SimiValley			06 Jul 2020
4.	**HS20061218-04**	**35AWW06_062420**	**Groundwater**	**24 Jun 2020 11:05**
	MEE plus CO2 Sub to ALS SimiValley			06 Jul 2020
5.	**HS20061218-05**	**35AWW23_062420**	**Groundwater**	**24 Jun 2020 12:00**
	MEE plus CO2 Sub to ALS SimiValley			06 Jul 2020

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

QC Level: DOD IV (DoD Data Package)

RIGHT SOLUTIONS | RIGHT PARTNER

PJ003597

Subcontract Chain of Custody

SAMPLING STATE: **Texas**

COC ID: **14191**

Relinquished By: _____ Date/Time: 6/25/2020 1800

Received By: _____ Date/Time: 6-26-20 0915 3° wet

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

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P2003597

Project: HS20061218

Sample(s) received on: 06/26/20 Date opened: 06/26/20 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: 3° 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
P2003597-001.01	40mL VOA NP		7		A	LD 06/30/2020
P2003597-001.02	40mL VOA NP				A	
P2003597-001.04	40ml VOA HCL		1		A	LD 07/01/2020
P2003597-001.05	40ml VOA HCL				A	
P2003597-001.06	40ml VOA HCL				A	
P2003597-002.01	40mL VOA NP		7		A	LD 06/30/2020
P2003597-002.02	40mL VOA NP				A	
P2003597-002.04	40ml VOA HCL		1		A	LD 07/01/2020
P2003597-002.05	40ml VOA HCL				A	
P2003597-002.06	40ml VOA HCL				A	
P2003597-003.01	40mL VOA NP		7		A	LD 06/30/2020
P2003597-003.02	40mL VOA NP				A	
P2003597-003.04	40ml VOA HCL		1		A	LD 07/01/2020
P2003597-003.05	40ml VOA HCL				A	
P2003597-003.06	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
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P2003597

Project: HS20061218

Sample(s) received on: 06/26/20 Date opened: 06/26/20 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P2003597-004.01	40mL VOA NP		7		A	LD 06/30/2020
P2003597-004.02	40mL VOA NP				A	
P2003597-004.04	40ml VOA HCL		1		A	LD 07/01/2020
P2003597-004.05	40ml VOA HCL				A	
P2003597-004.06	40ml VOA HCL				A	
P2003597-005.01	40mL VOA NP		7		A	LD 06/30/2020
P2003597-005.02	40mL VOA NP				A	
P2003597-005.04	40ml VOA HCL		1		A	LD 07/01/2020
P2003597-005.05	40ml VOA HCL				A	
P2003597-005.06	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 Laboratory Group**
Client Project ID: **HS20061218** ALS Project ID: P2003597

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD Date(s) Collected: 6/24/20
Analyst: Li Donghao Date Received: 6/26/20
Matrix: Liquid Date Analyzed: 6/30/20
Test Notes:

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
35AWW19_062420	P2003597-001	0.10	**160,000**	1,000	860	370	
35AWW20_062420	P2003597-002	0.10	**250,000**	1,000	860	370	
LHSMW07_062420	P2003597-003	0.10	**250,000**	1,000	860	370	
35AWW06_062420	P2003597-004	0.10	**270,000**	1,000	860	370	
35AWW23_062420	P2003597-005	0.10	**310,000**	1,000	860	370	
Method Control Sample	P200630-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 Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P2003597
Client Project ID: **HS20061218** ALS Sample ID: P200630-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Li Donghao Date Analyzed: 6/30/20
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	19,500	19,200	**85**	**84**	80-122	1	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: **35AWW19_062420**
Client Project ID: **HS20061218**

ALS Project ID: P2003597
ALS Sample ID: P2003597-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 06/24/20
Date Received: 06/26/20
Date Analyzed: 07/01/20
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	**3.0**	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: **35AWW20_062420**
Client Project ID: **HS20061218**

ALS Project ID: P2003597
ALS Sample ID: P2003597-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 06/24/20
Date Received: 06/26/20
Date Analyzed: 07/01/20
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	**260**	1.3	1.0	0.51	
74-85-1	Ethene	**5.5**	1.0	0.55	0.24	
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: **LHSMW07_062420**
Client Project ID: **HS20061218**

ALS Project ID: P2003597
ALS Sample ID: P2003597-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 06/24/20
Date Received: 06/26/20
Date Analyzed: 07/01/20
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	**140**	1.3	1.0	0.51	
74-85-1	Ethene	**2.2**	1.0	0.55	0.24	
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: **35AWW06_062420**
Client Project ID: **HS20061218**

ALS Project ID: P2003597
ALS Sample ID: P2003597-004

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 06/24/20
Date Received: 06/26/20
Date Analyzed: 07/01/20
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	**1,400**	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: **35AWW23_062420**
Client Project ID: **HS20061218**

ALS Project ID: P2003597
ALS Sample ID: P2003597-005

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: 06/24/20
Date Received: 06/26/20
Date Analyzed: 07/01/20
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	**1,300**	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: **Method Control Sample**
Client Project ID: **HS20061218**

ALS Project ID: P2003597
ALS Sample ID: P200701-MB

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/01/20
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 Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS20061218**

ALS Project ID: P2003597
ALS Sample ID: P200701-LCS
P200701-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Li Donghao
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 7/01/20
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	2.72	2.70	**108**	**107**	73-125	0.9	26	
74-85-1	Ethene	4.40	4.68	4.60	**106**	**105**	72-133	0.9	11	
74-84-0	Ethane	4.72	4.52	4.38	**96**	**93**	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 : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302011.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 18:11:05
Operator : LD
Sample : P2003597-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 18:55:08 2020
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 :

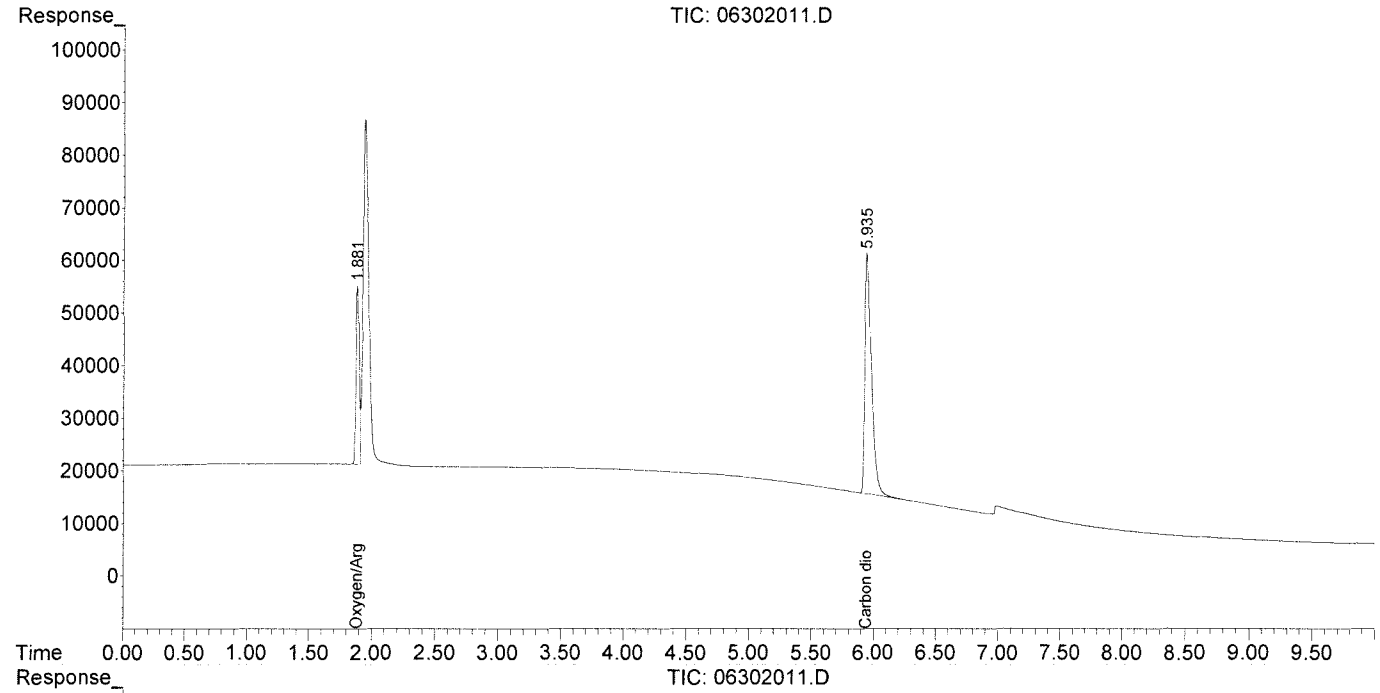
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.881	579437	0.122	ppm
2)	Carbon monoxide	1.881	579437	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.936	1692930	7212.270	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	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

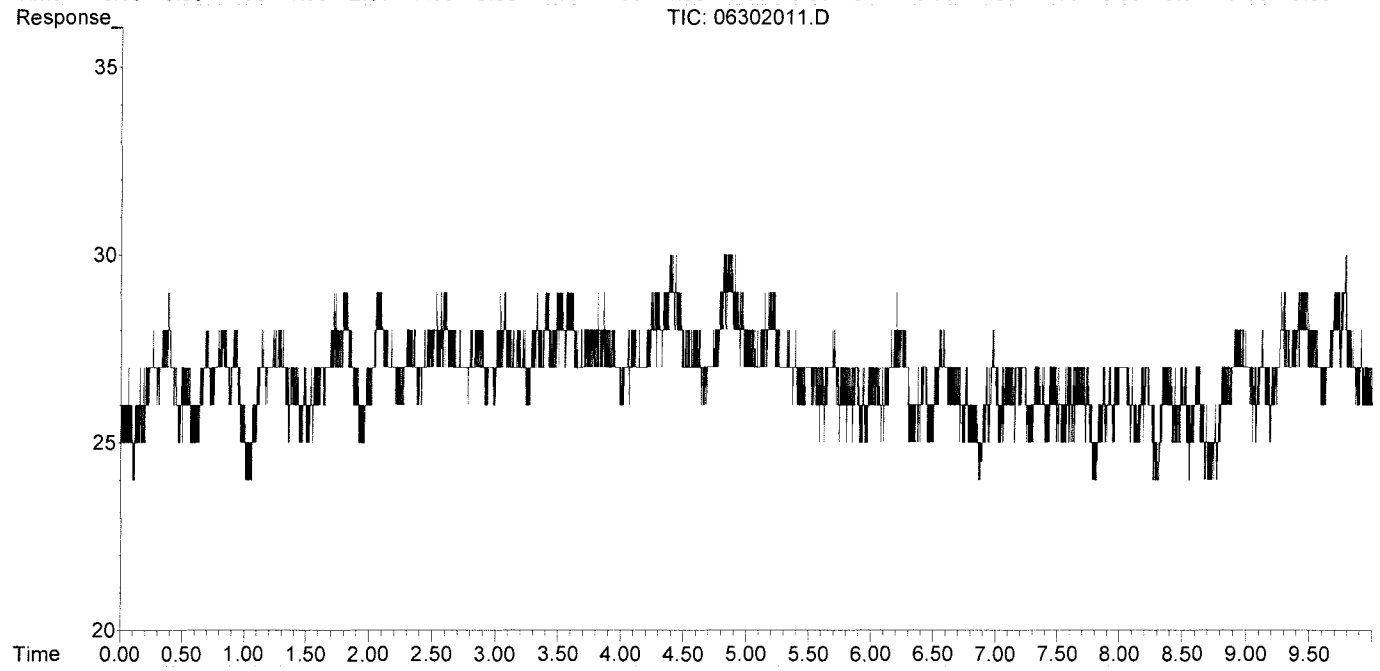
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302011.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 18:11:05
Operator : LD
Sample : P2003597-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 18:55:08 2020
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 : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302012.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 18:24:23
Operator : LD
Sample : P2003597-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 18:55:19 2020
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 :

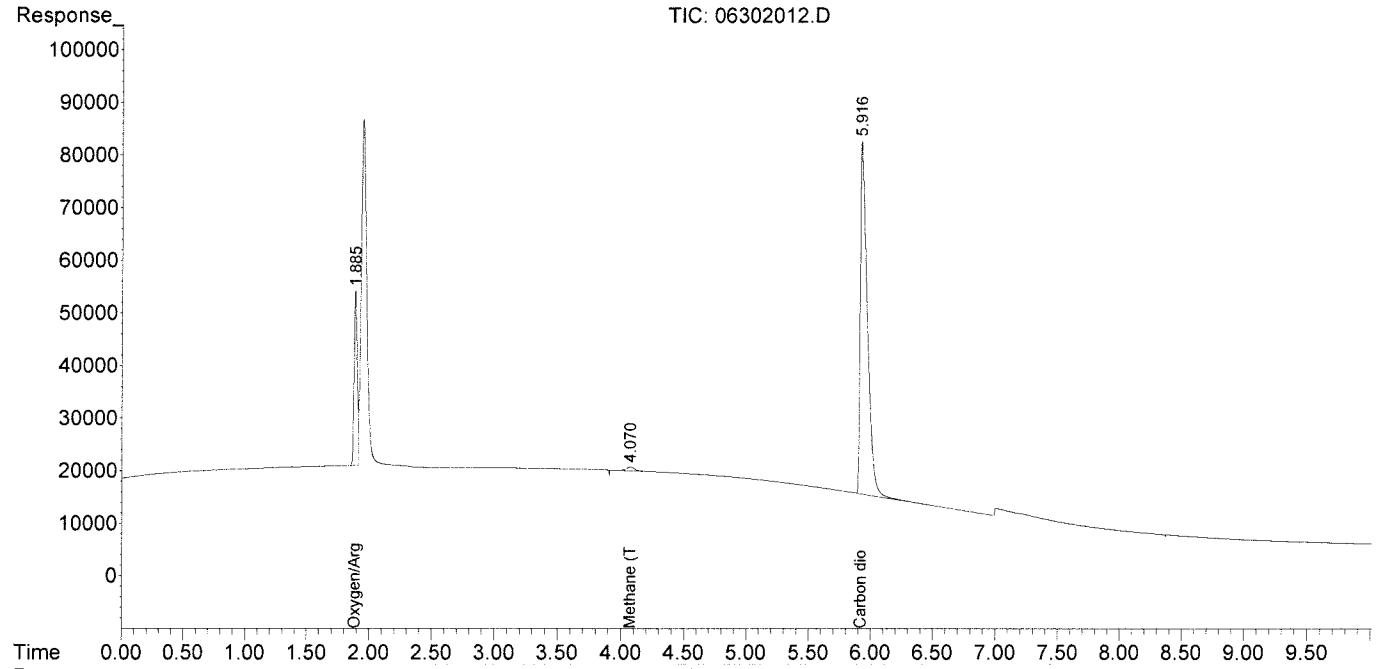
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.886	562008	0.118	ppm
2)	Carbon monoxide	1.886	562008	N.D.	ppm
3)	Methane (TCD)	4.070f	30428	3217.401	ppm
4)	Carbon dioxide	5.917	2660994	11336.443	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	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

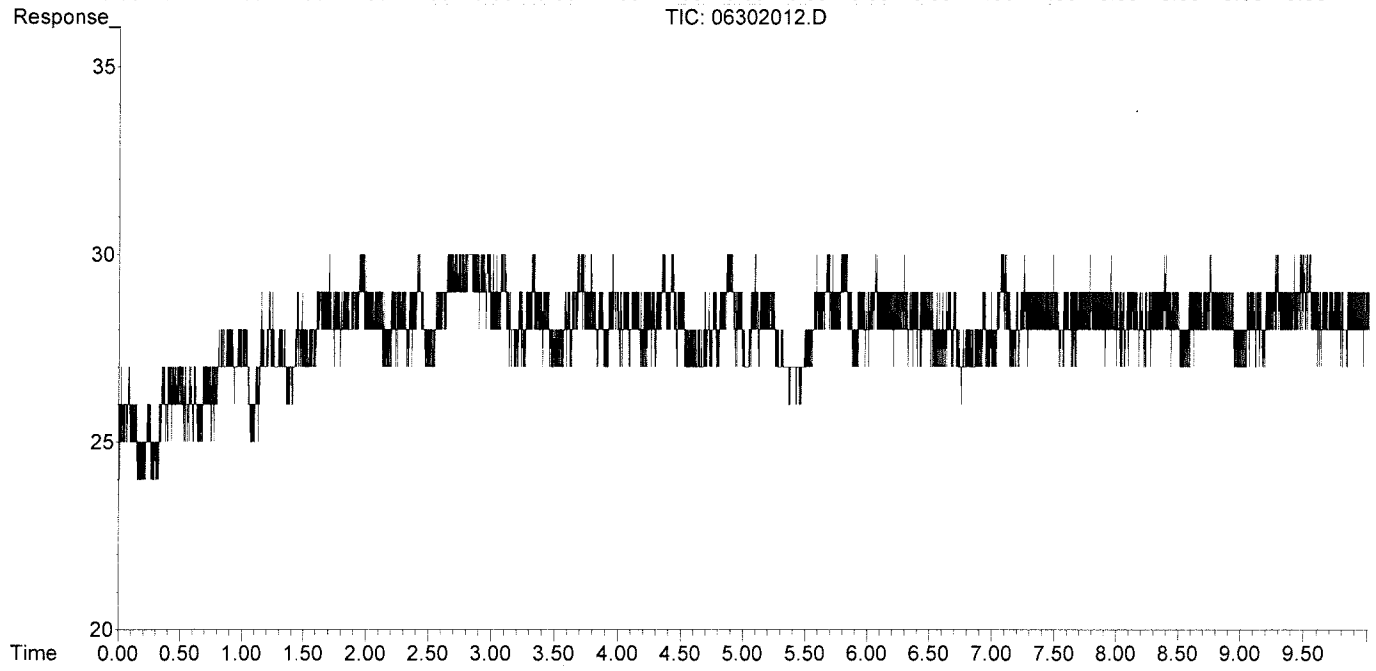
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302012.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 18:24:23
Operator : LD
Sample : P2003597-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 18:55:19 2020
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 : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302013.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 18:51:47
Operator : LD
Sample : P2003597-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 19:13:04 2020
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 :

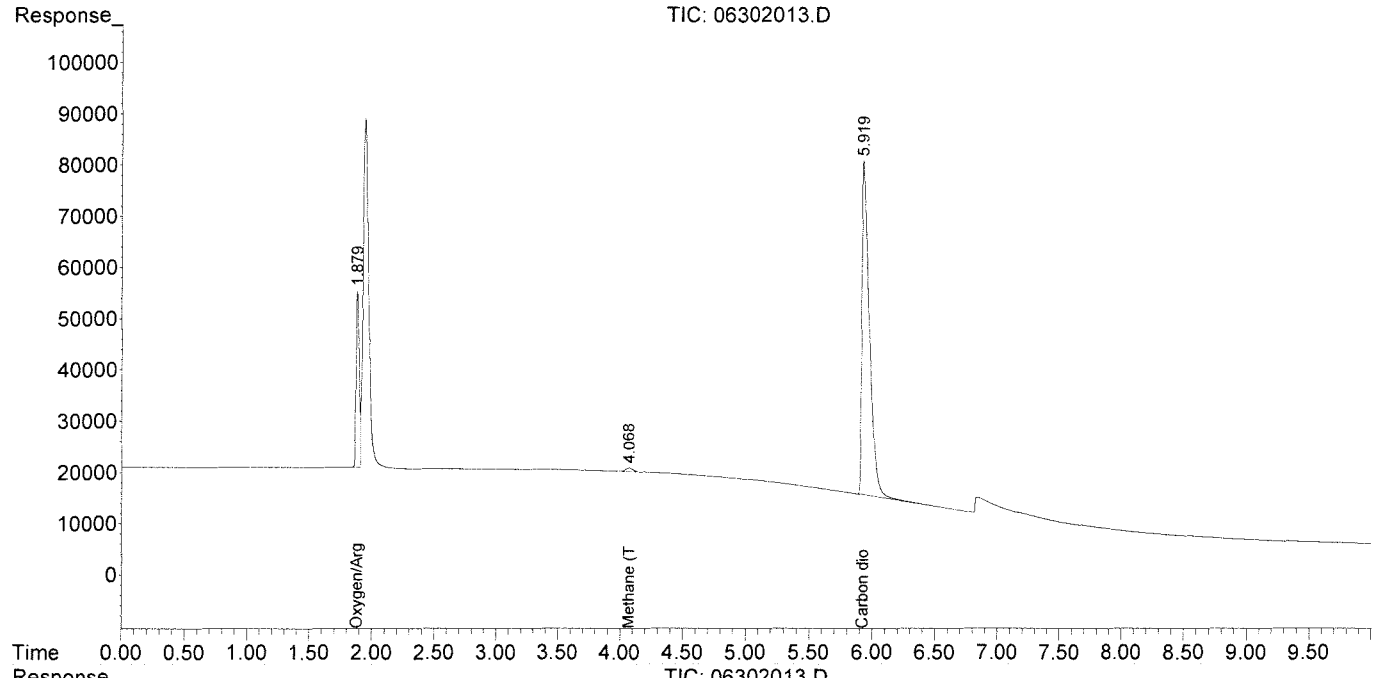
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.880	583209	0.123	ppm
2)	Carbon monoxide	1.880	583209	N.D.	ppm
3)	Methane (TCD)	4.068f	32458	3432.037	ppm
4)	Carbon dioxide	5.921	2659264	11329.071	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	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

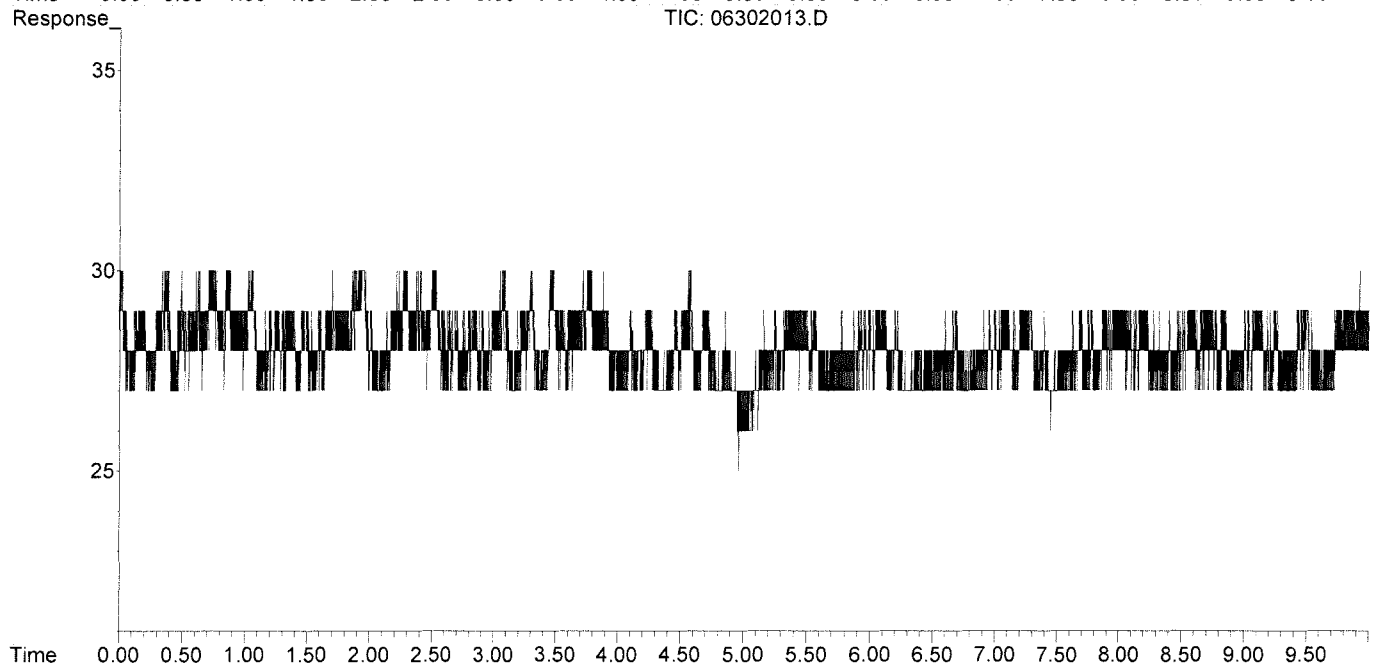
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302013.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 18:51:47
Operator : LD
Sample : P2003597-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 19:13:04 2020
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 : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302014.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 19:04:54
Operator : LD
Sample : P2003597-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 19:22:07 2020
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 :

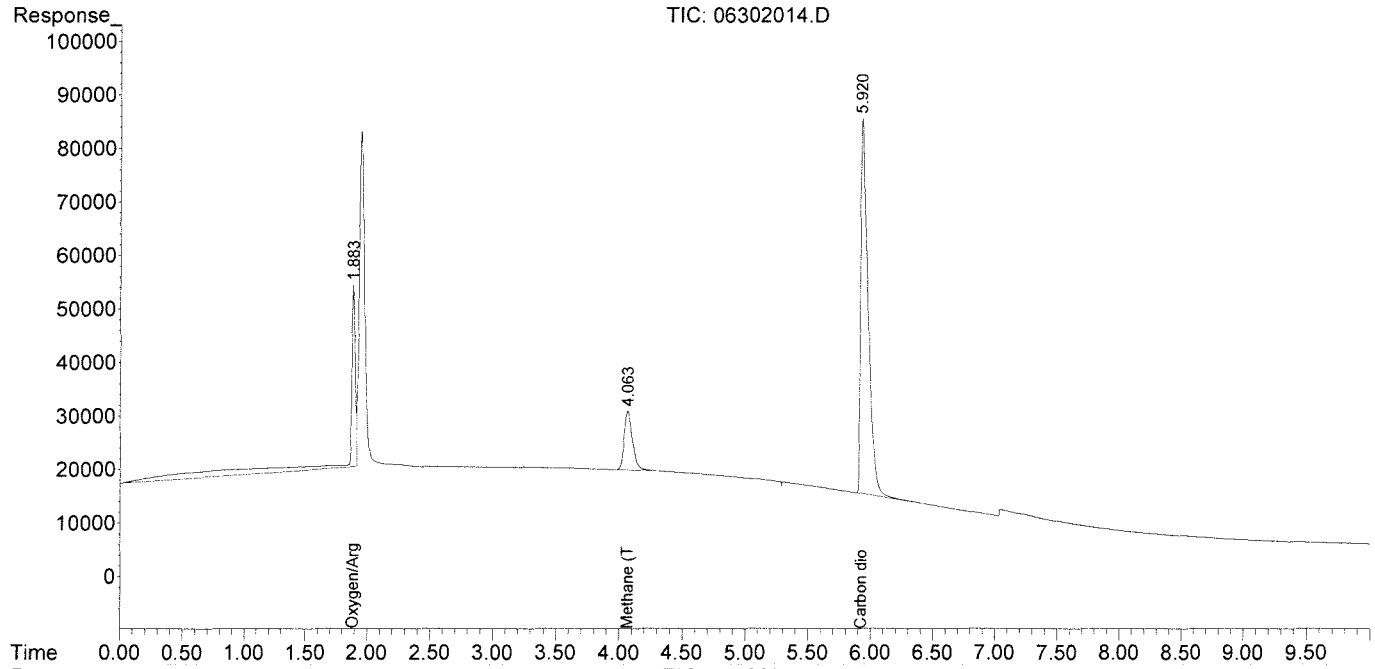
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	1463966	0.308	ppm
2)	Carbon monoxide	1.884	1463966	N.D.	ppm
3)	Methane (TCD)	4.064f	501100	52985.194	ppm
4)	Carbon dioxide	5.922	2859104	12180.436	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	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

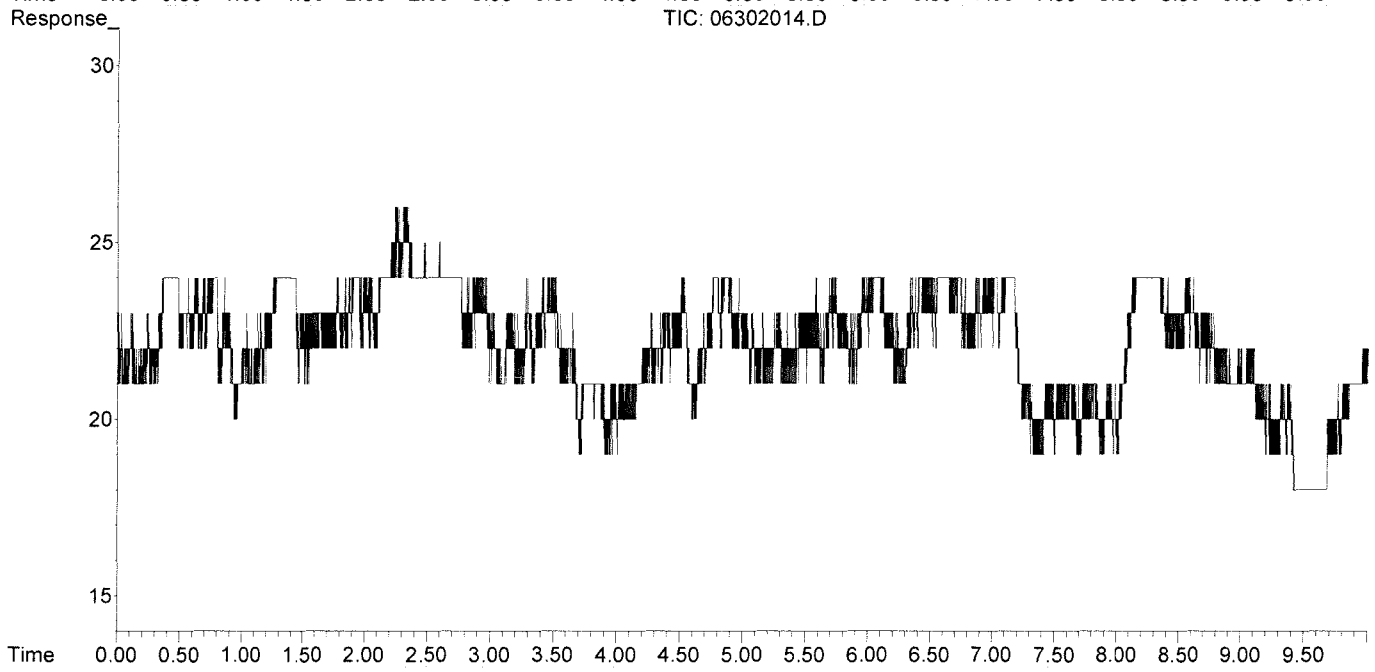
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302014.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 19:04:54
Operator : LD
Sample : P2003597-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 19:22:07 2020
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 : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302015.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 19:23:20
Operator : LD
Sample : P2003597-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 19:38:56 2020
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 :

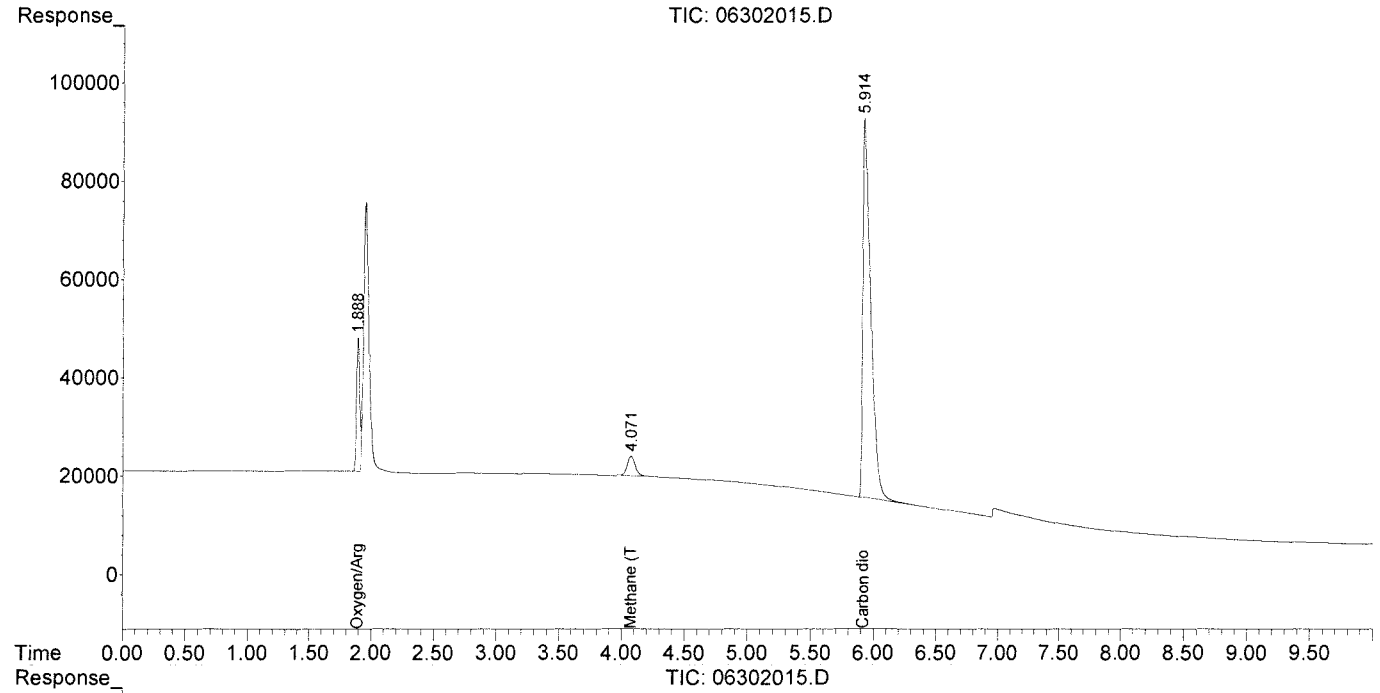
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.889	467981	0.098	ppm
2)	Carbon monoxide	1.889	467981	N.D.	ppm
3)	Methane (TCD)	4.072f	176956	18710.902	ppm
4)	Carbon dioxide	5.916	3343077	14242.272	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	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

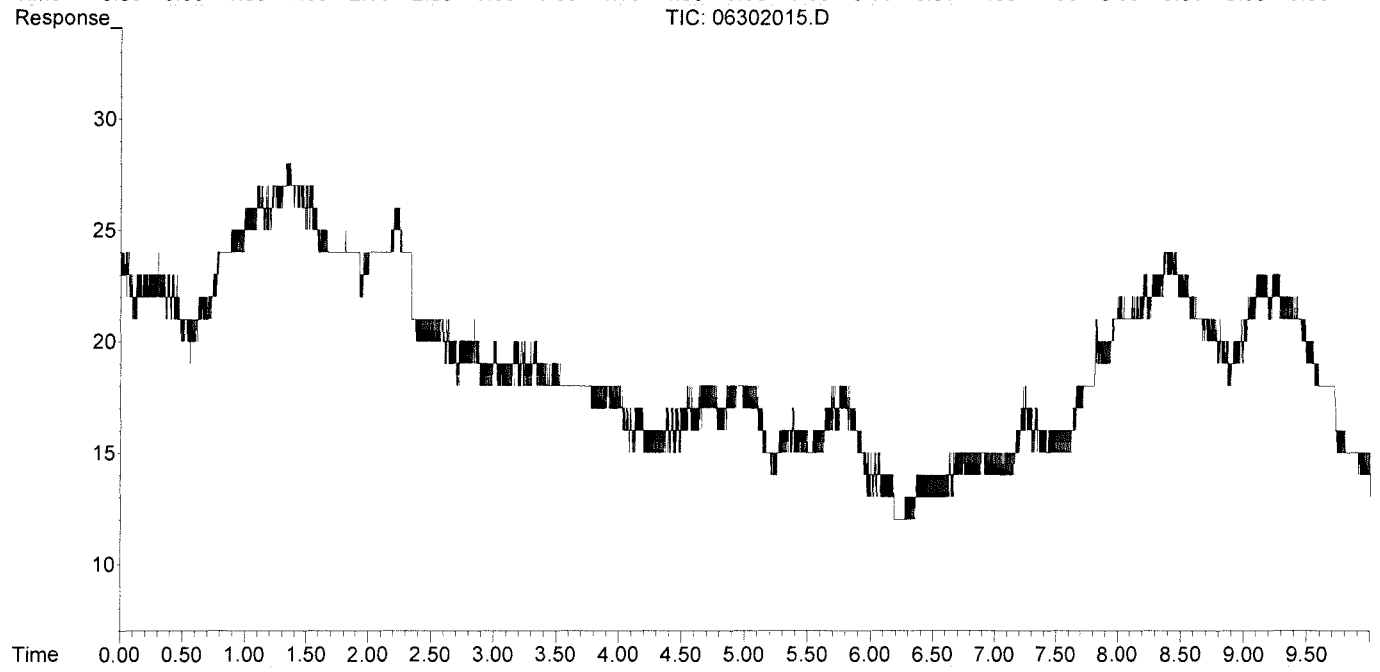
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302015.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 19:23:20
Operator : LD
Sample : P2003597-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 19:38:56 2020
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 : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302003.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 15:53:39
Operator : LD
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 30 16:06:51 2020
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 :

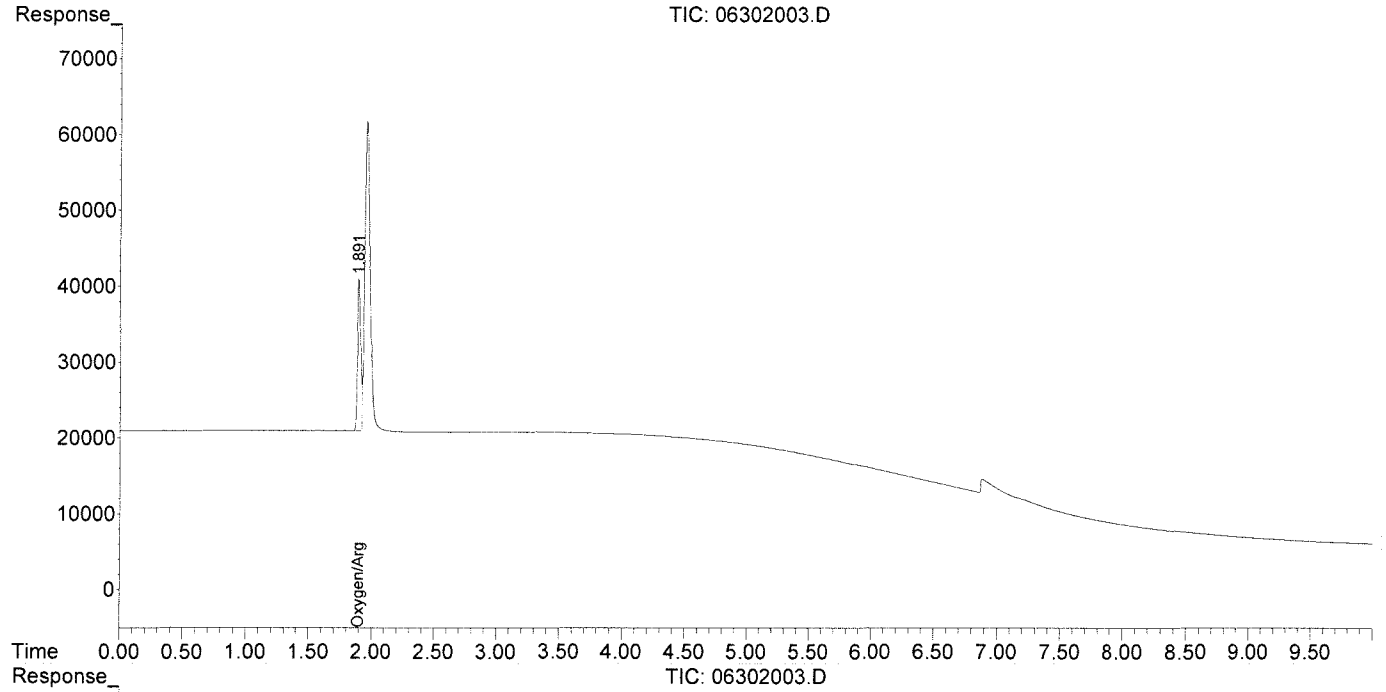
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.892	355521	0.075	ppm
2)	Carbon monoxide	1.892	355521	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	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

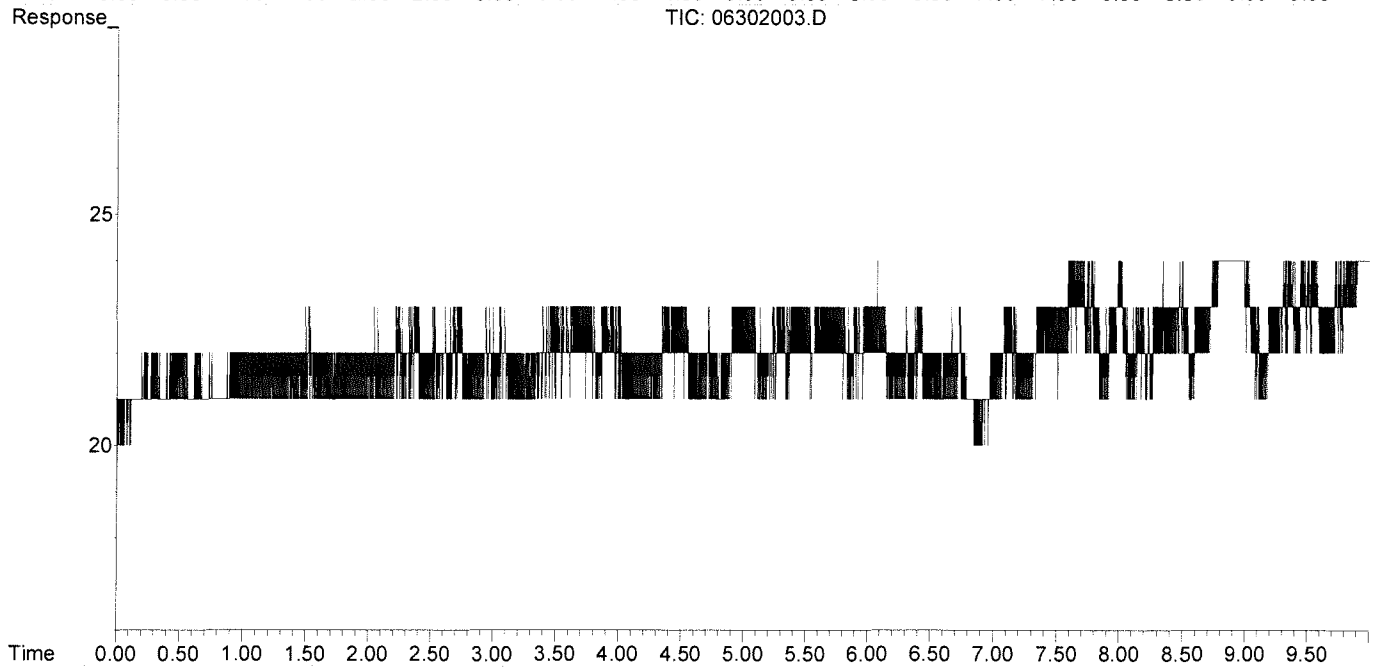
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302003.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 15:53:39
Operator : LD
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 30 16:06:51 2020
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 : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302005.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 16:21:46
Operator : LD
Sample : LCS S32-01212003
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 16:34:35 2020
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 :

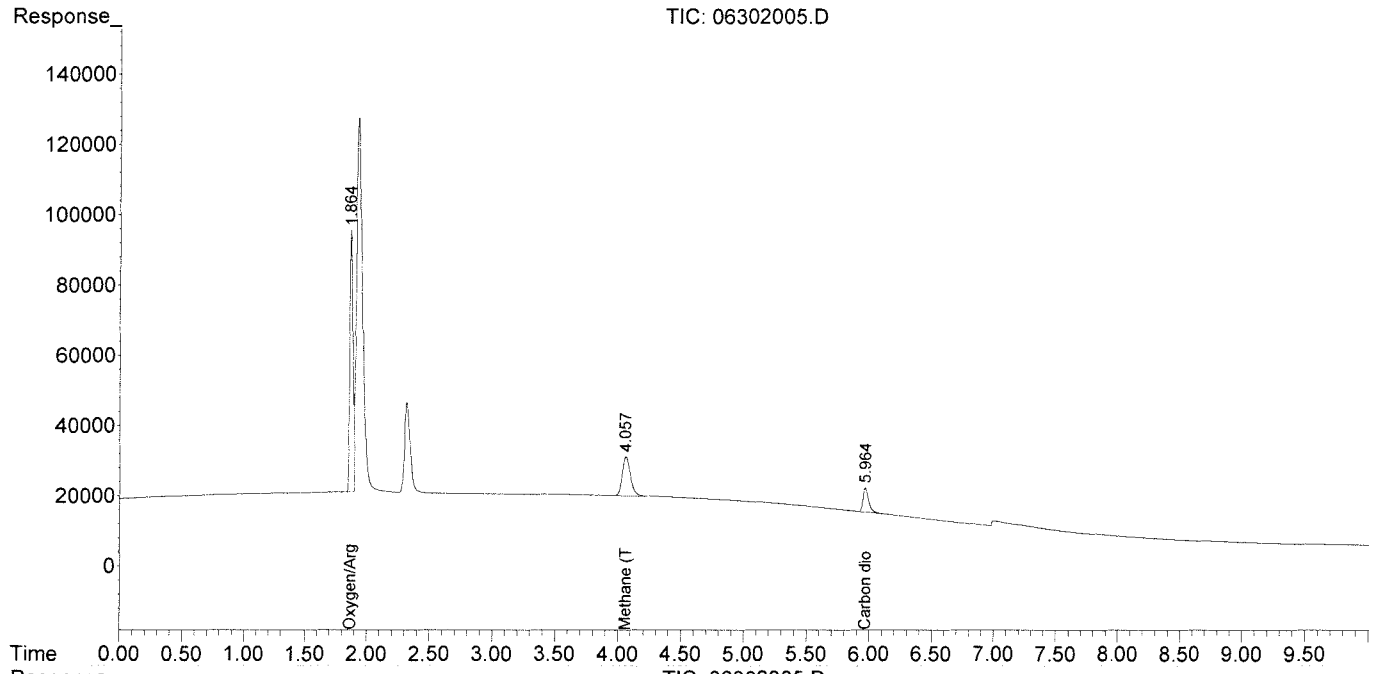
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.864	1294617	0.272	ppm
2)	Carbon monoxide	1.864	1294617	N.D.	ppm
3)	Methane (TCD)	4.058f	508271	53743.498	ppm
4)	Carbon dioxide	5.965	209388	892.043	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	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

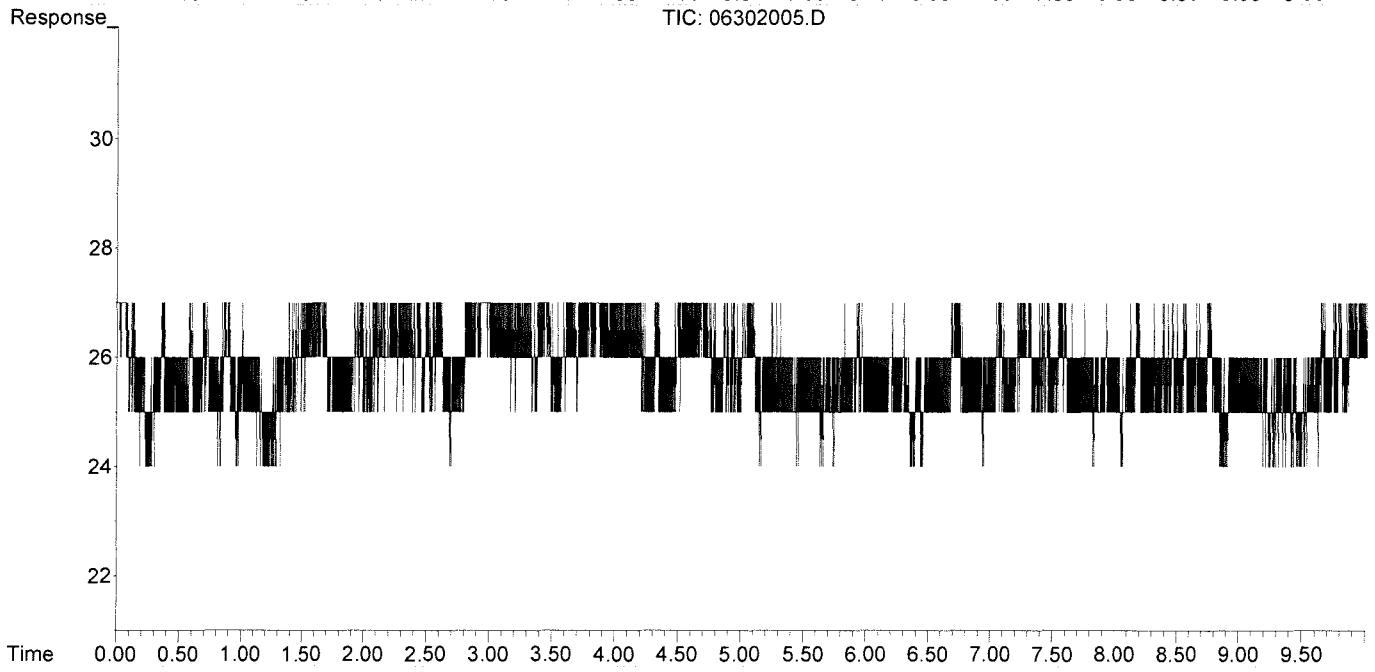
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302005.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 16:21:46
Operator : LD
Sample : LCS S32-01212003
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 16:34:35 2020
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 : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302006.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 16:35:59
Operator : LD
Sample : LCSD S32-01212003
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 17:12:43 2020
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 :

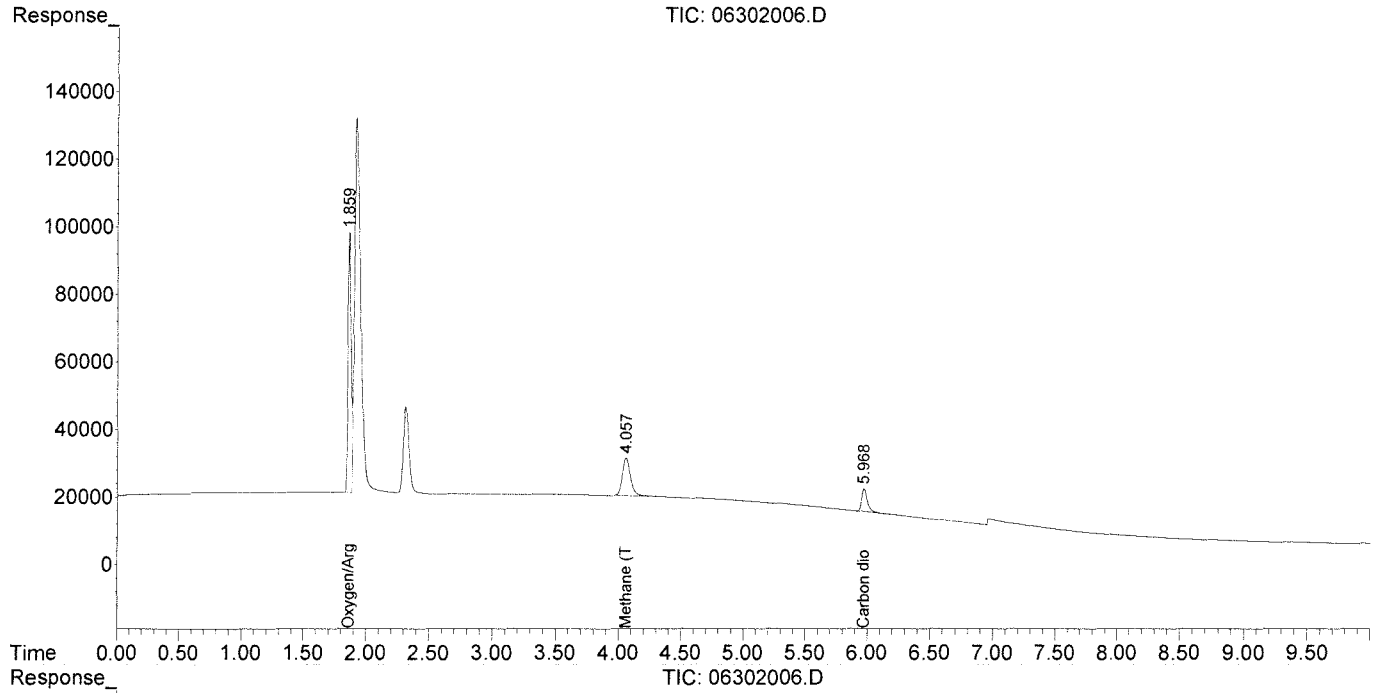
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.860	1335935	0.281	ppm
2)	Carbon monoxide	1.860	1335935	N.D.	ppm
3)	Methane (TCD)	4.058f	508224	53738.492	ppm
4)	Carbon dioxide	5.969	206148	878.239	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	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

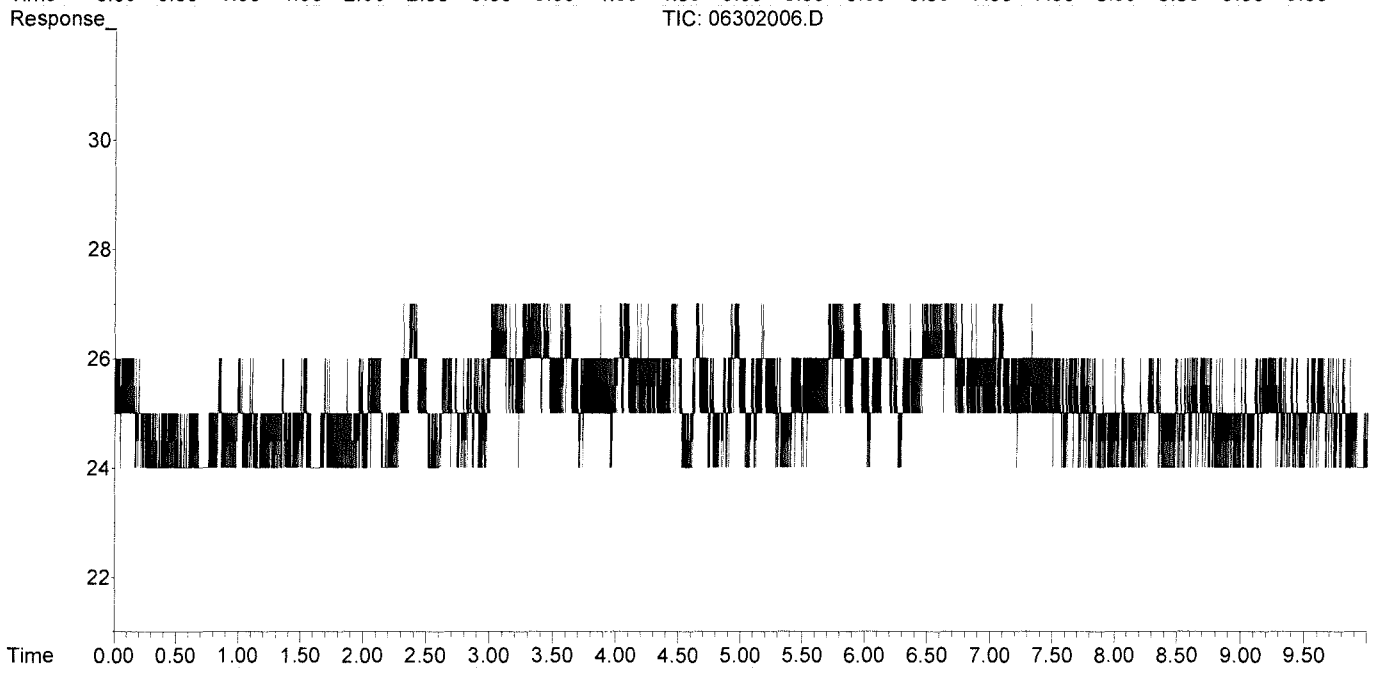
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302006.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 16:35:59
Operator : LD
Sample : LCSD S32-01212003
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 17:12:43 2020
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 :





Response Factor Report HP5890

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

dit Compounds -- Compound #4 -- Carbon dioxide

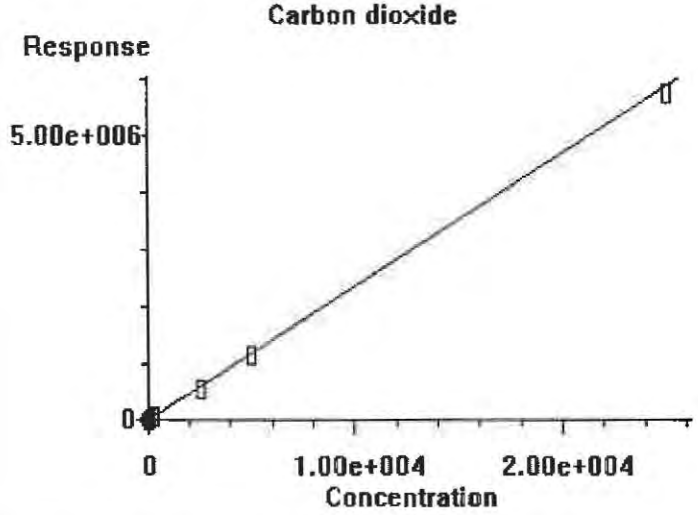
Search by: Ret Time | Name | Index | Find Compound

- 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

Calibration Status Report HP5890

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

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 :

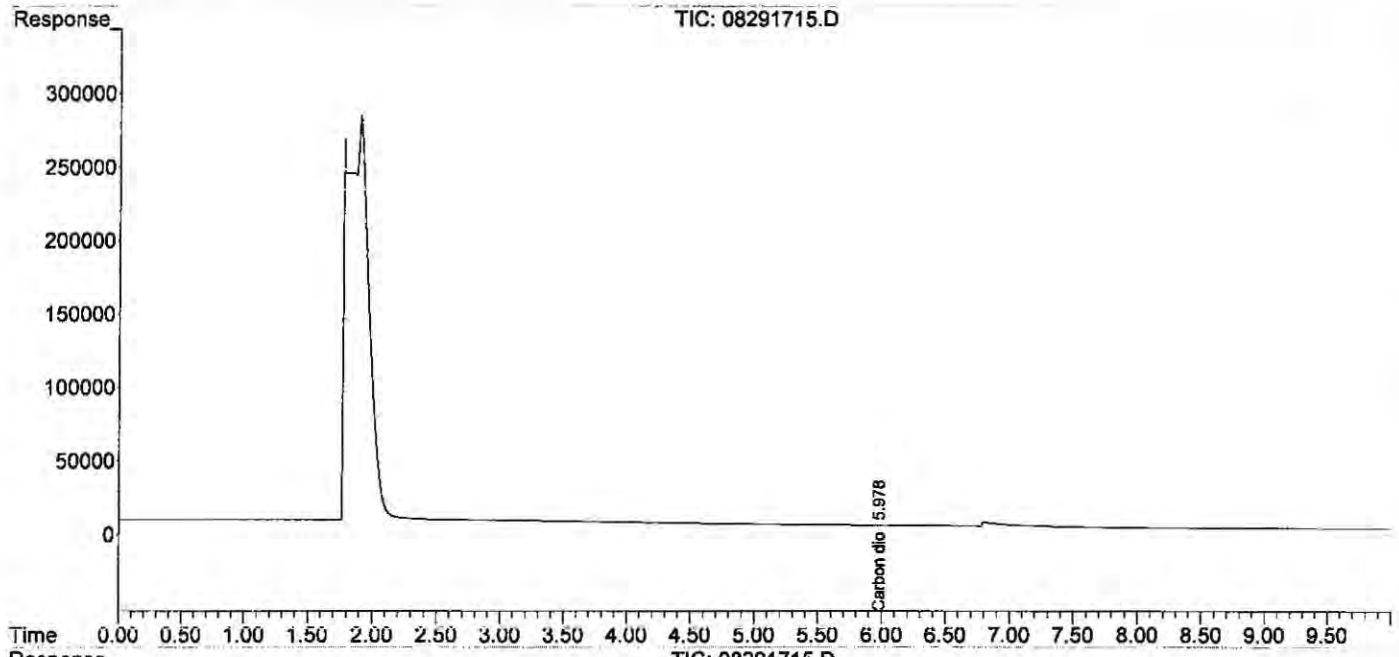
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	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	

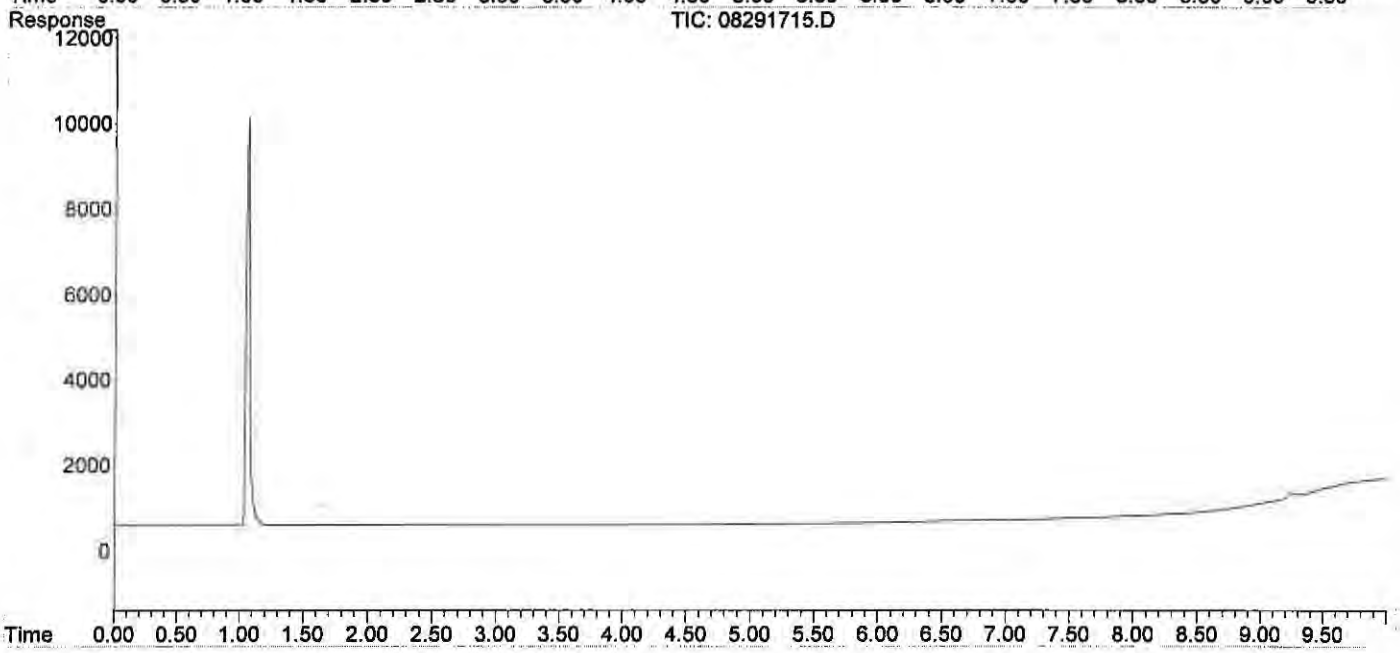
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



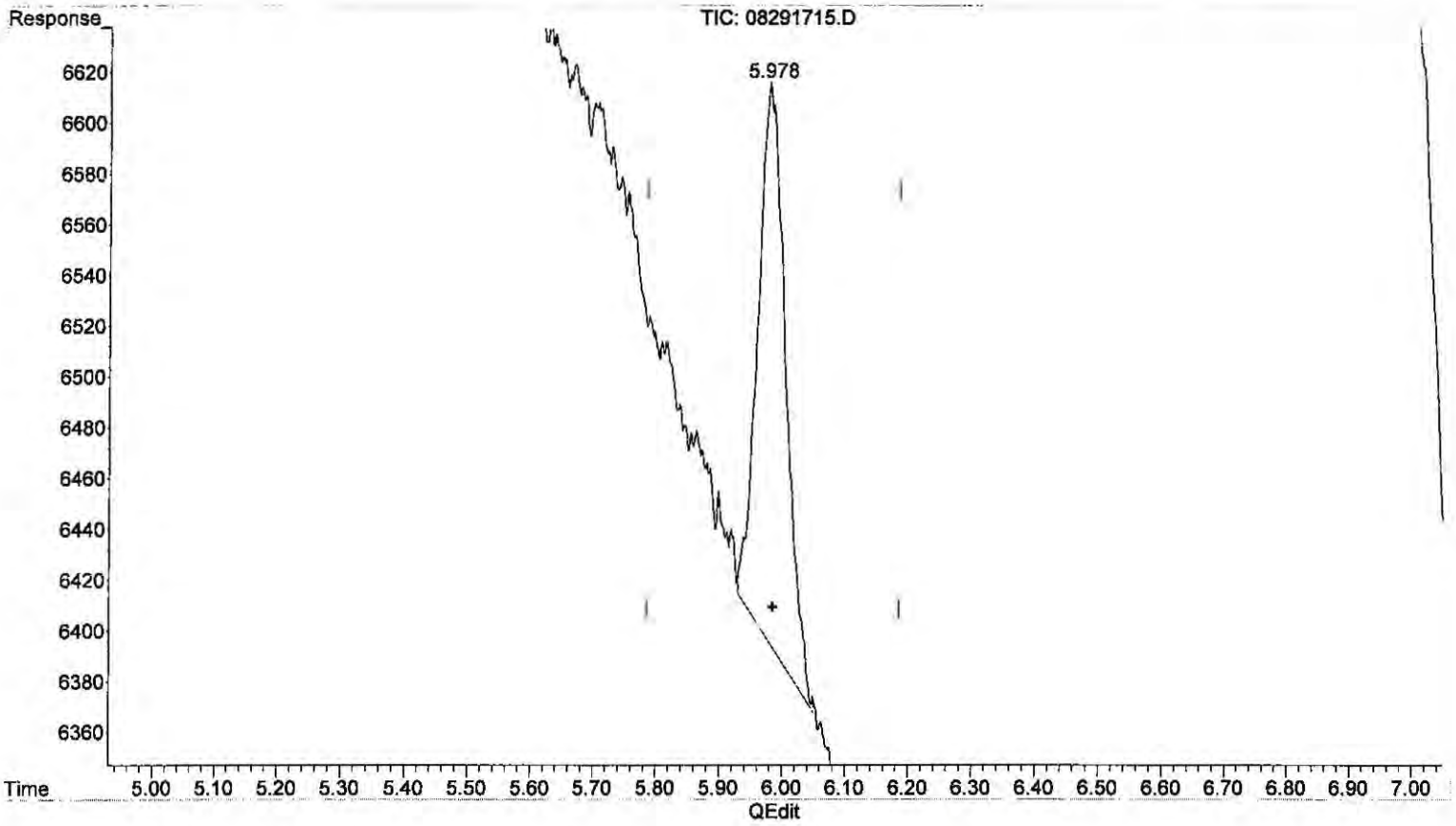


Quantitation Report (Qedit)

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

8/30/17 BW M. prcw

8/4/17

(+) = 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 :

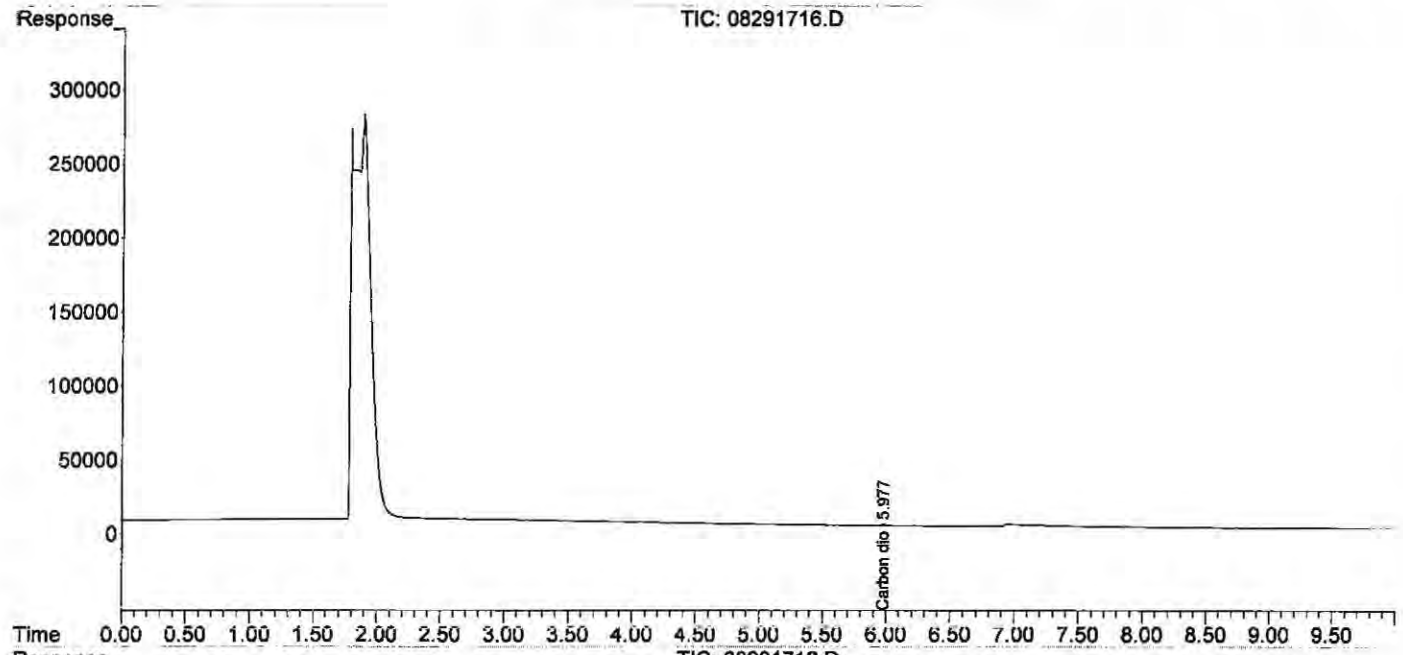
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	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	

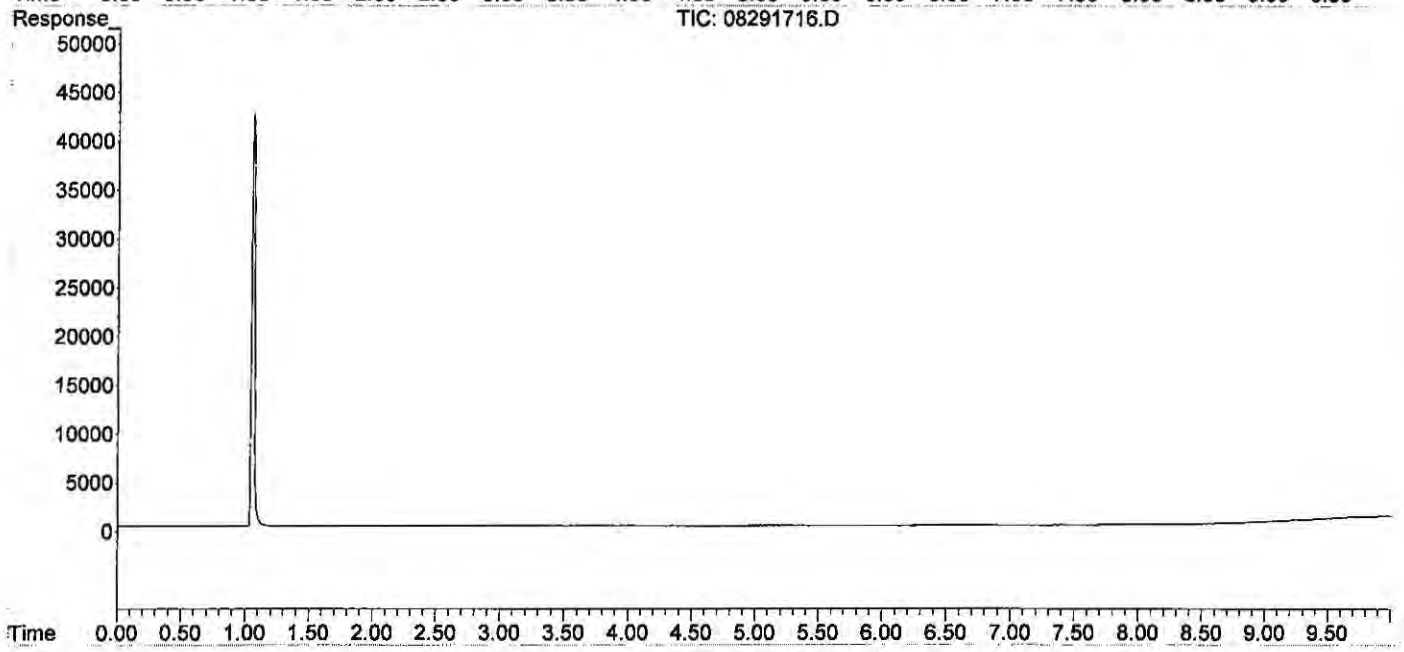
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

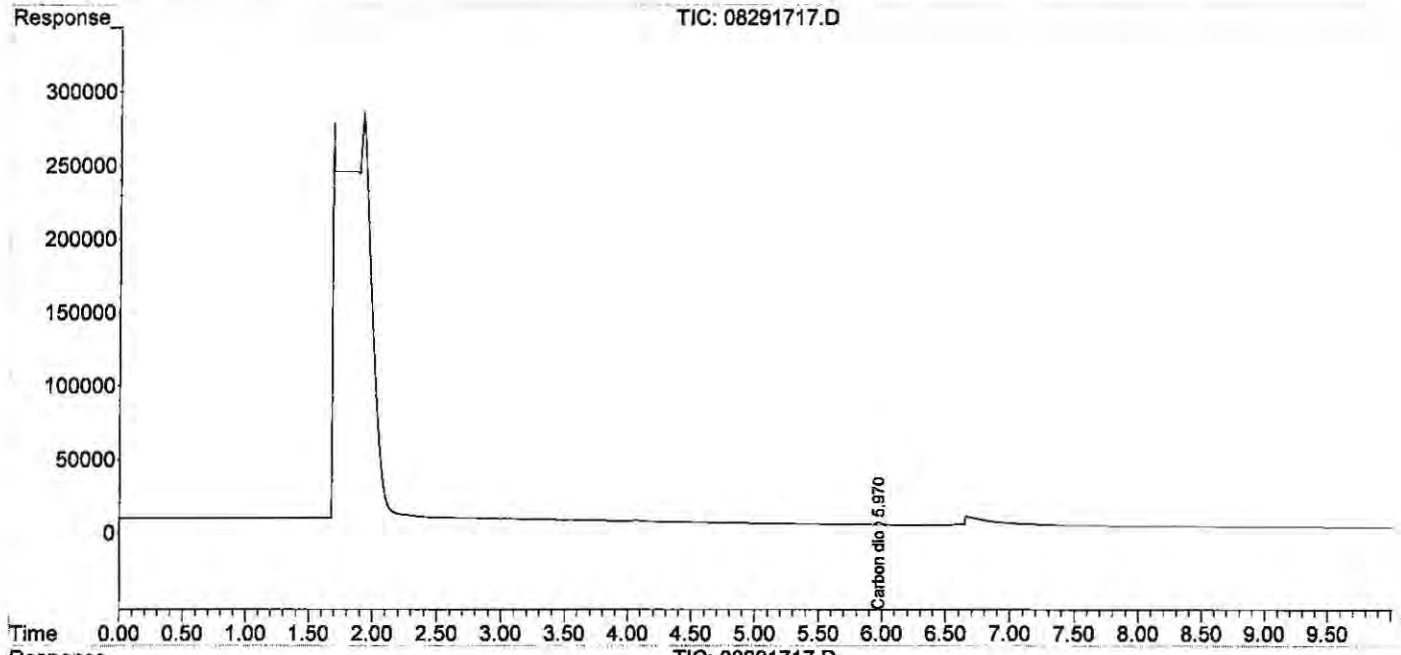
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	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	

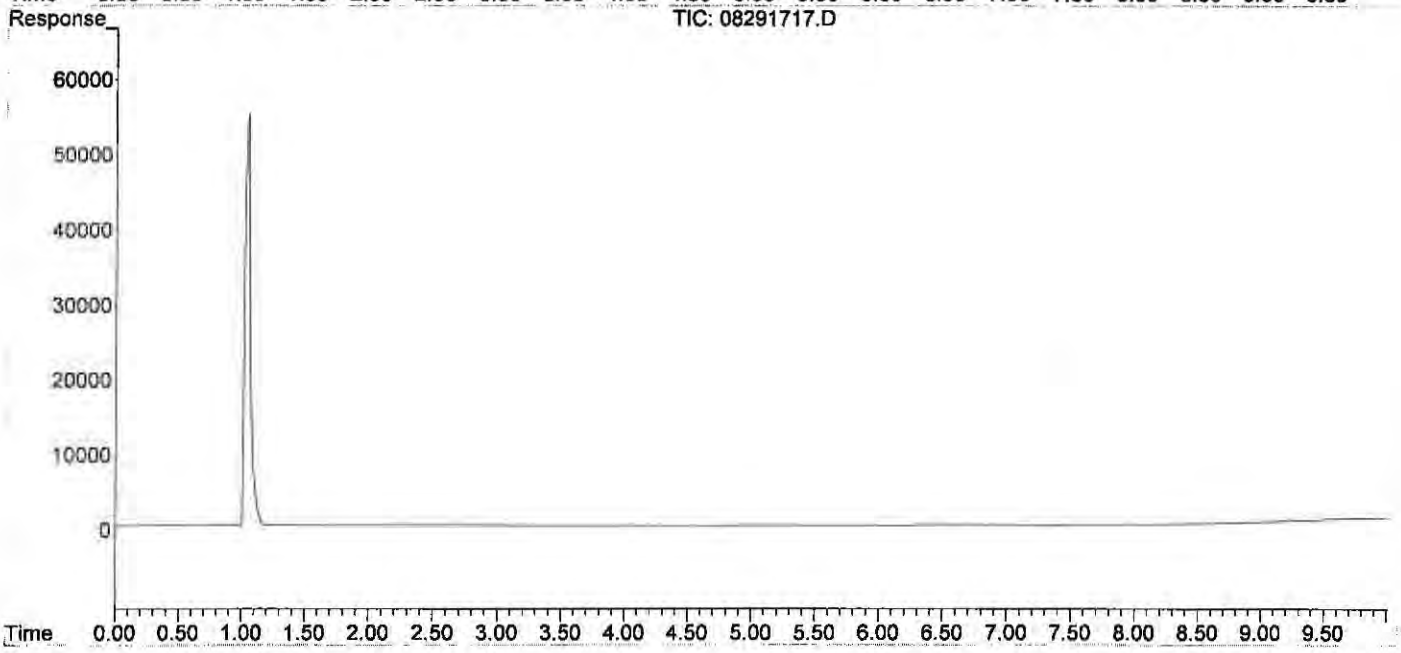
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

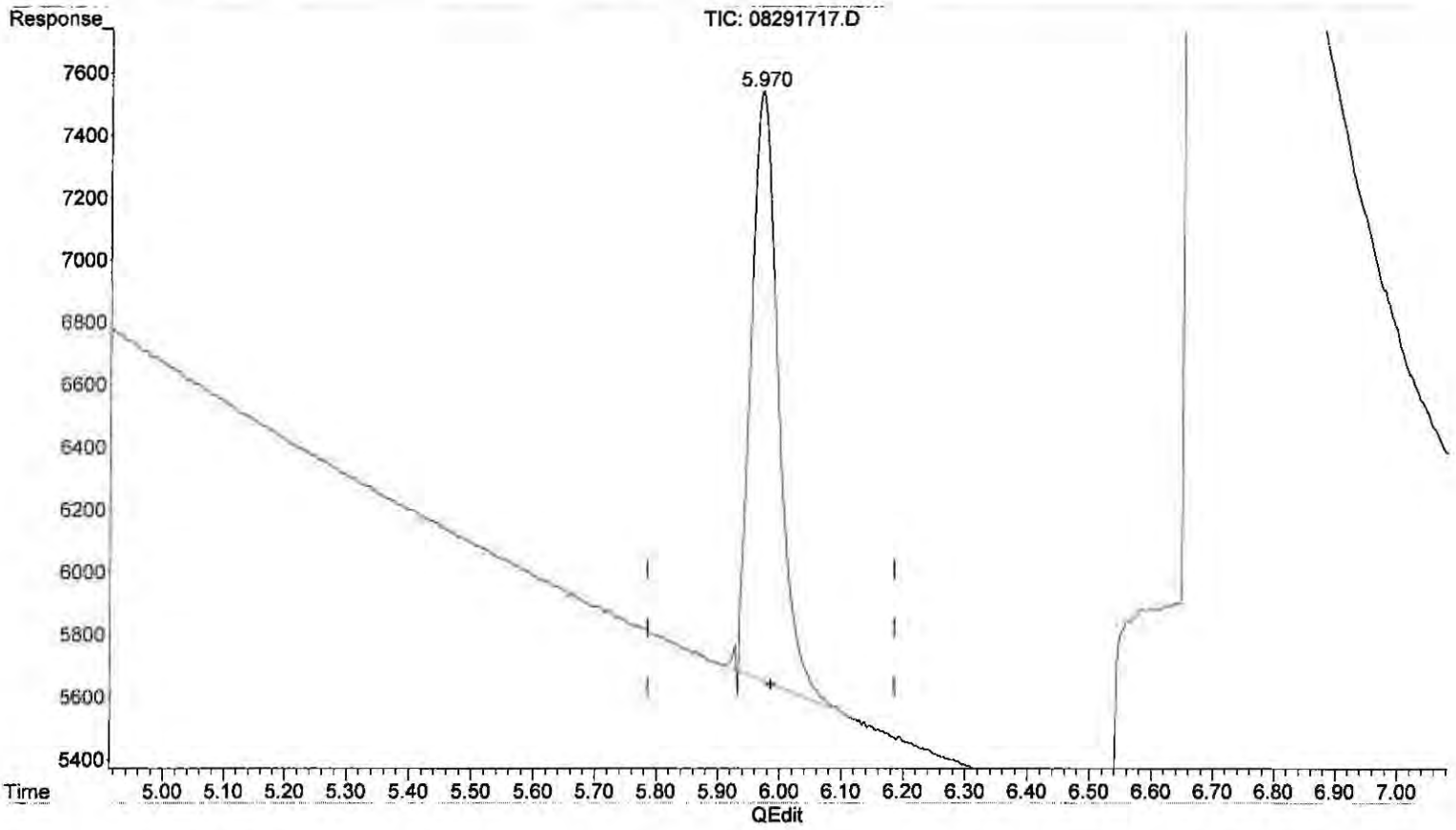




Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

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 #1 Info :
Signal #2 Phase:
Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

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	

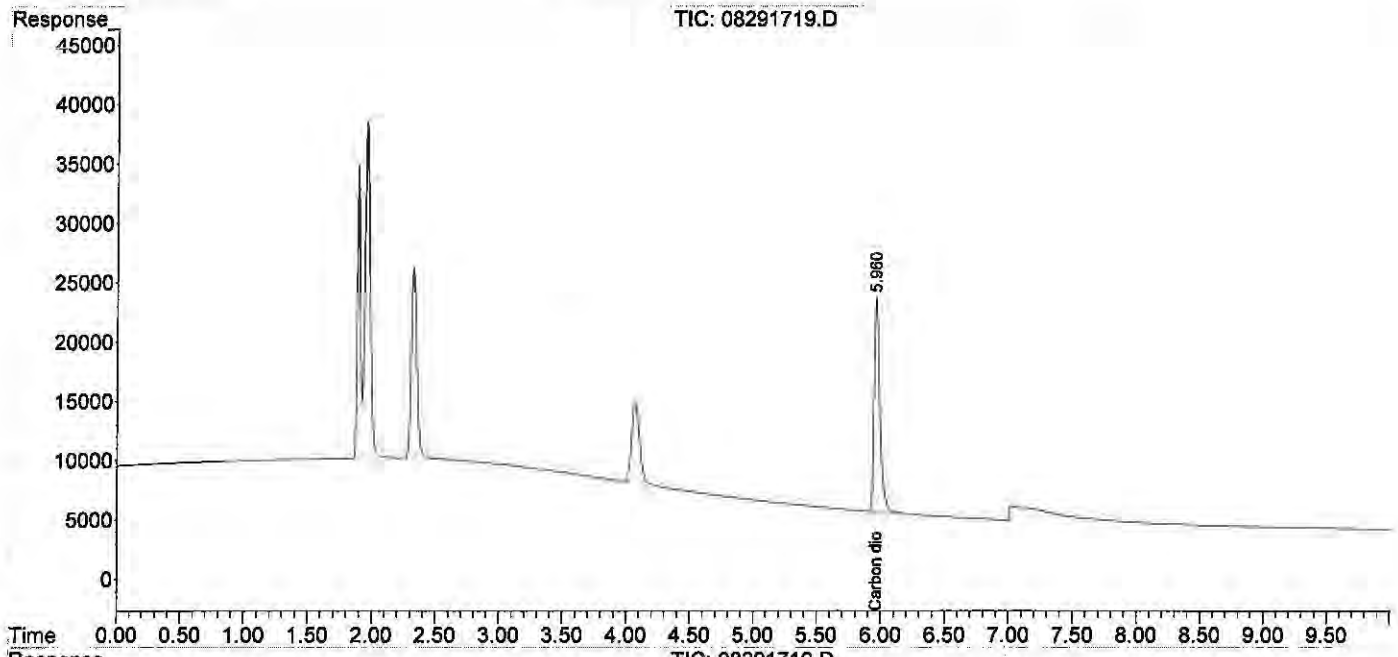
(f)=RT Delta > 1/2 Window (m)=manual int.

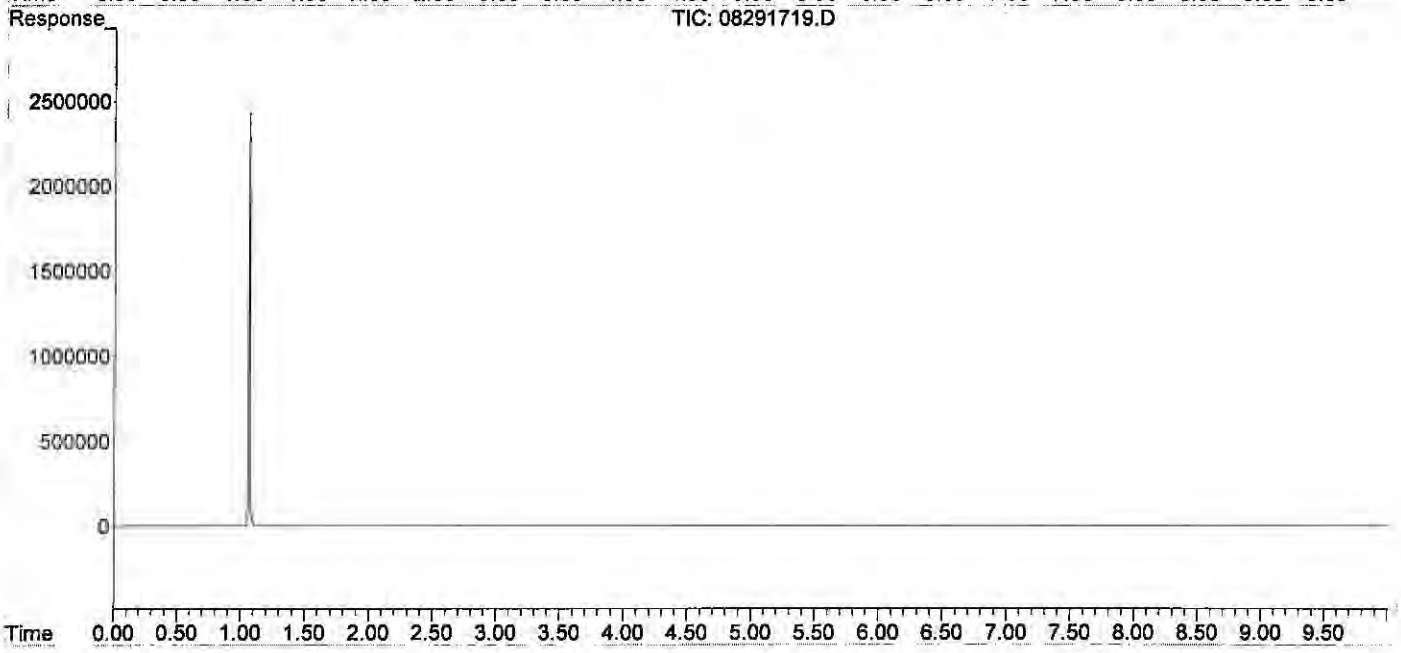
Quantitation Report (QT Reviewed)

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 :

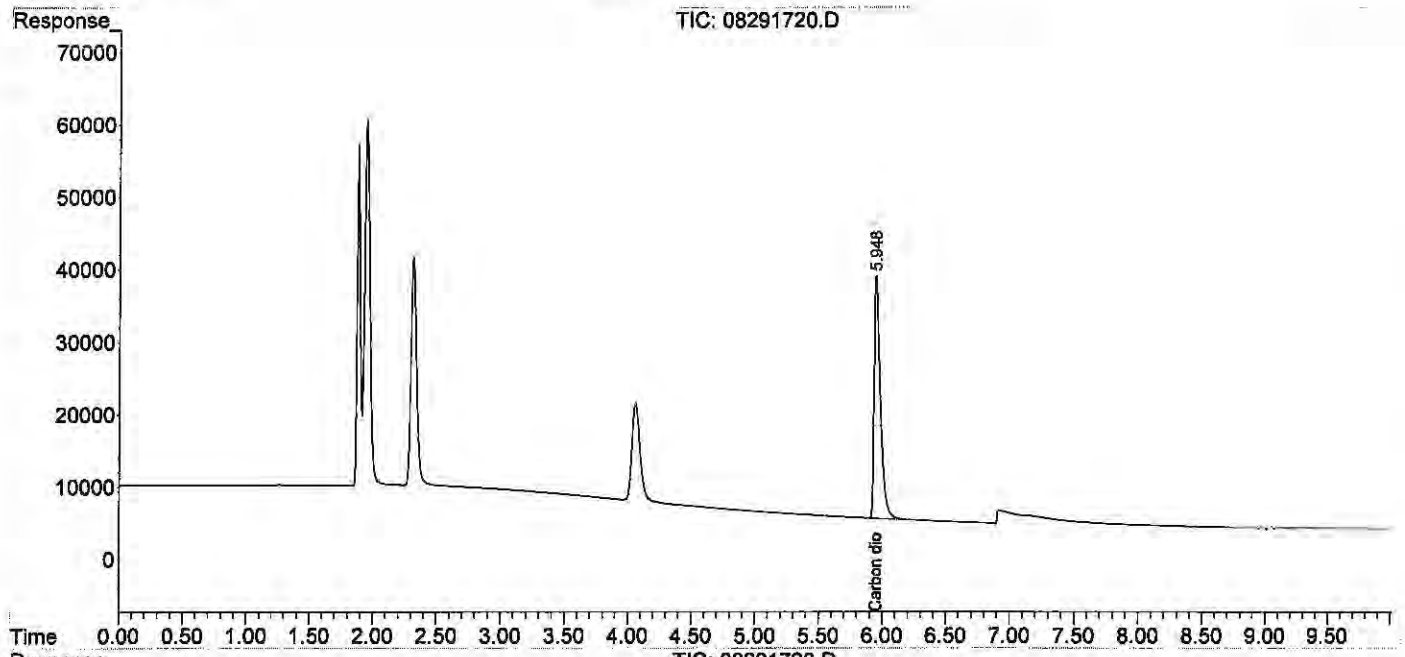
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	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	

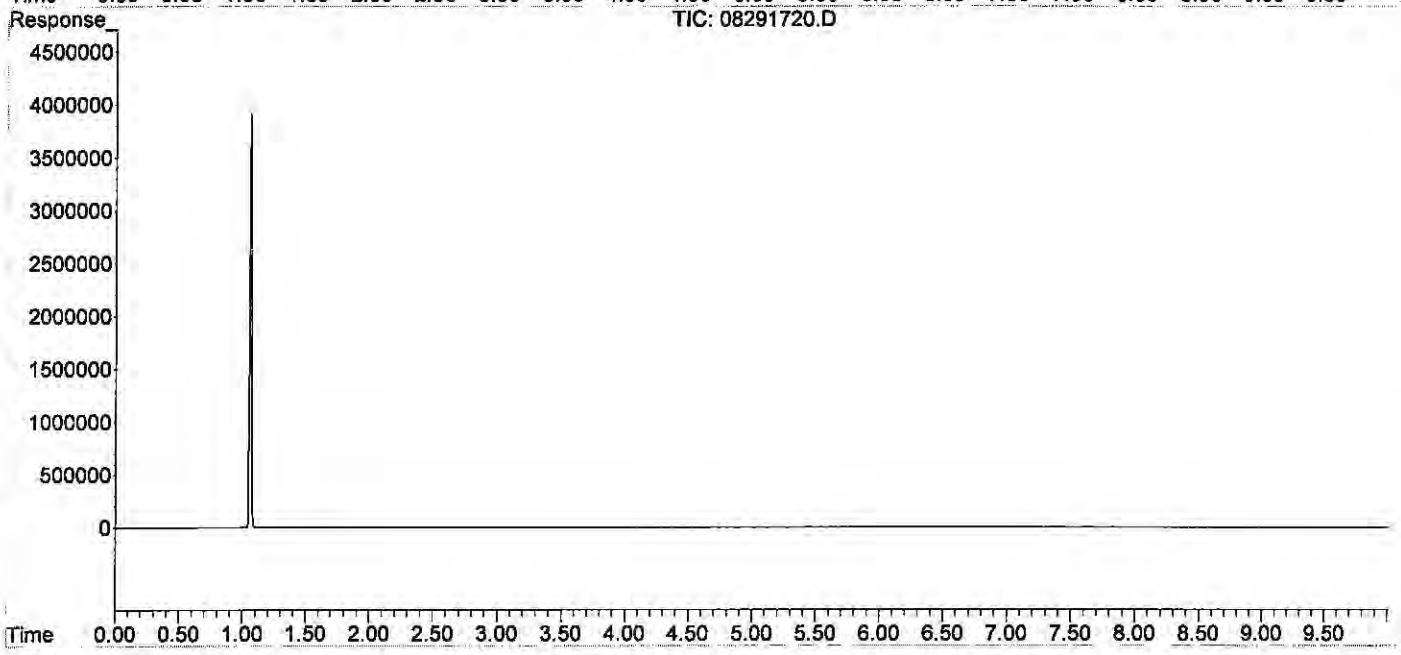
(f)=RT Delta > 1/2 Window (m)=manual int.

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	

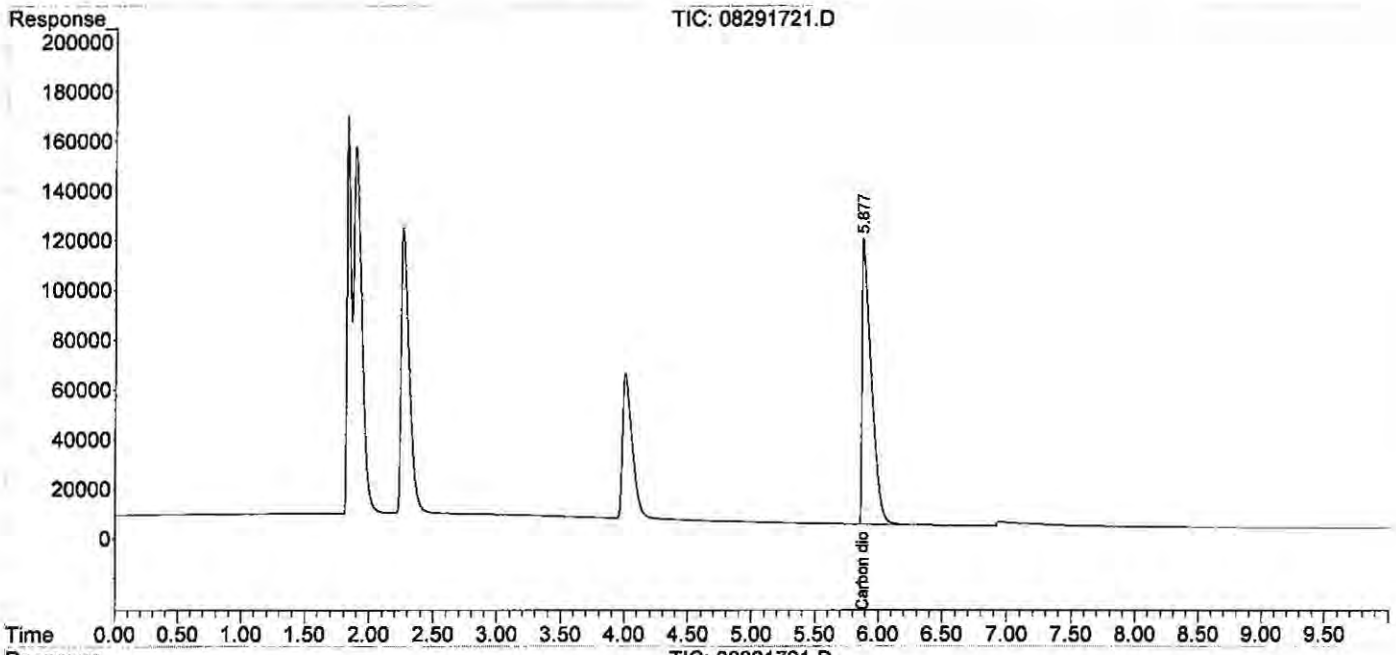
(f)=RT Delta > 1/2 Window (m)=manual int.

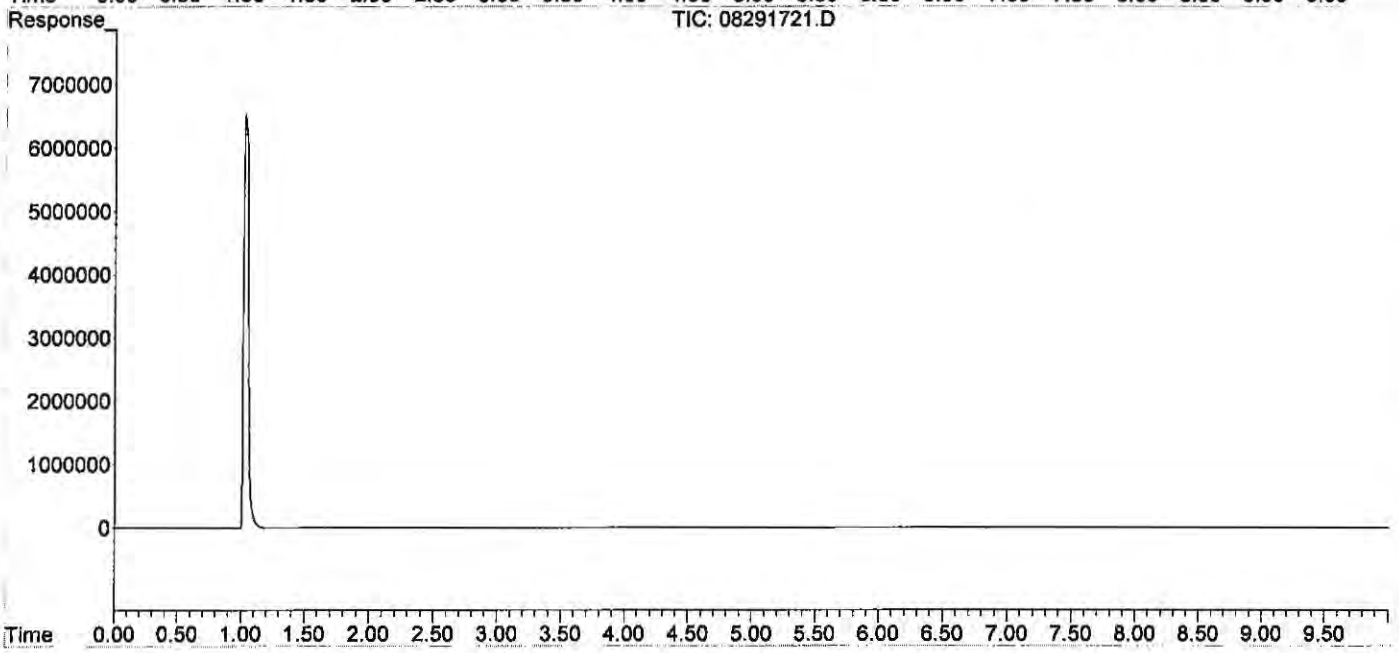
Quantitation Report (QT Reviewed)

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 :





Quantitation Report (QT Reviewed)

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

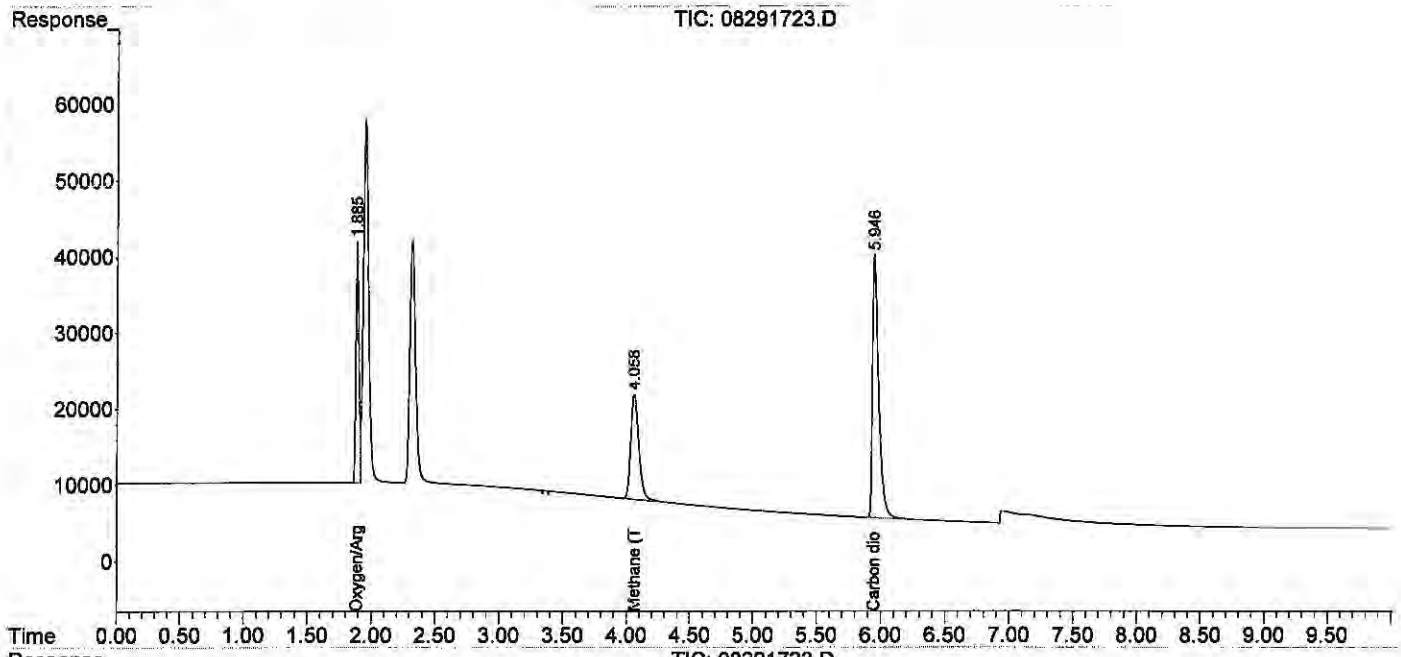
(f)=RT Delta > 1/2 Window (m)=manual int.

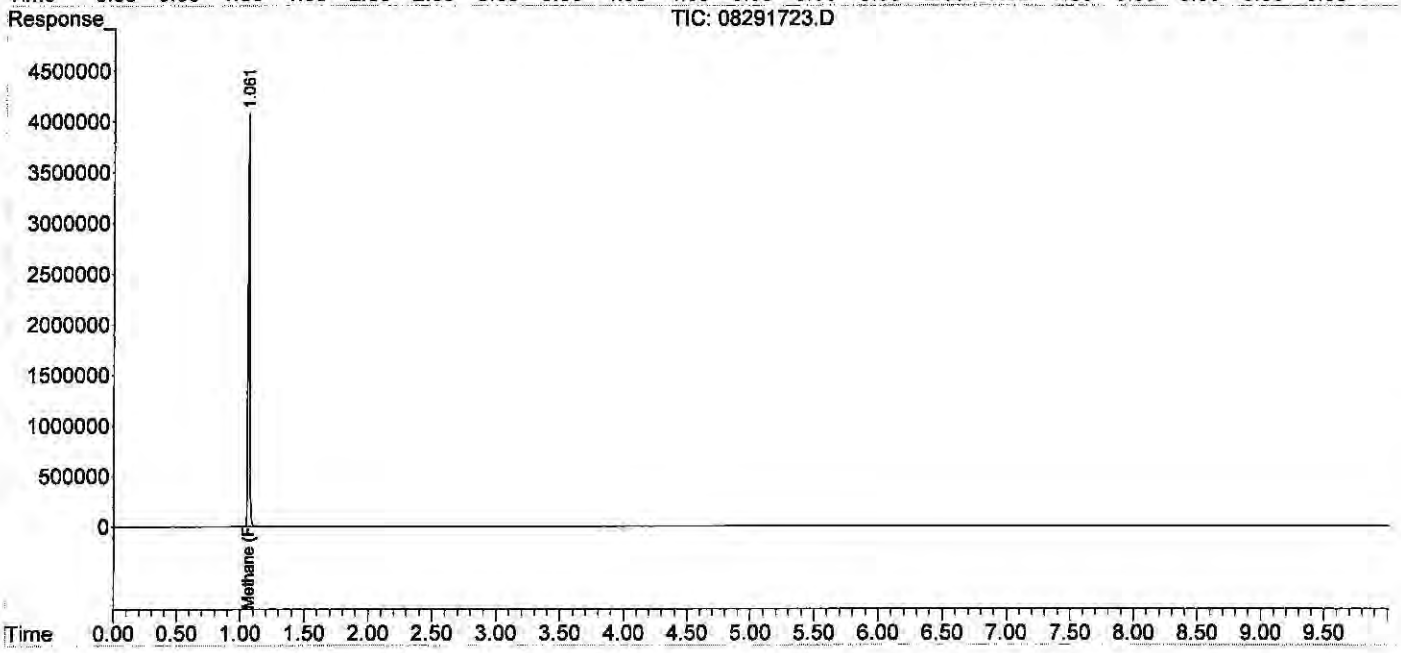
9/4/17

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 | Analyst : LD | Instrument : GC#10
Service Request: P2003597 | Date Analysis : 06/30/20 | 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 S32-06222001	0.100	4877.612
ACTUAL		5000.00
%Difference		2.4%
MCS 0.1ml	0.100	0.000
RB 0.1ml	0.100	0.000
LCS S32-01212003	0.100	892.043
LCSD S32-01212003	0.100	878.239
P2003597-001 0.1ml	0.100	7212.270
P2003597-002 0.1ml	0.100	11336.44
P2003597-003 0.1ml	0.100	11329.07
P2003597-004 0.1ml	0.100	12180.44
P2003597-005 0.1ml	0.100	14242.27

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 S32-01212003	8920.430
LCSD S32-01212003	8782.390
P2003597-001 0.1ml	72122.700
P2003597-002 0.1ml	113364.43
P2003597-003 0.1ml	113290.71
P2003597-004 0.1ml	121804.36
P2003597-005 0.1ml	142422.72

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LP 06/30

STD S32-06222001	4778.670
ACTUAL	5000.00
%Difference	4.4%

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302001.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 12:47:00
Operator : LD
Sample : STD S32-06222001
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 13:05:55 2020
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

LP 06/30

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

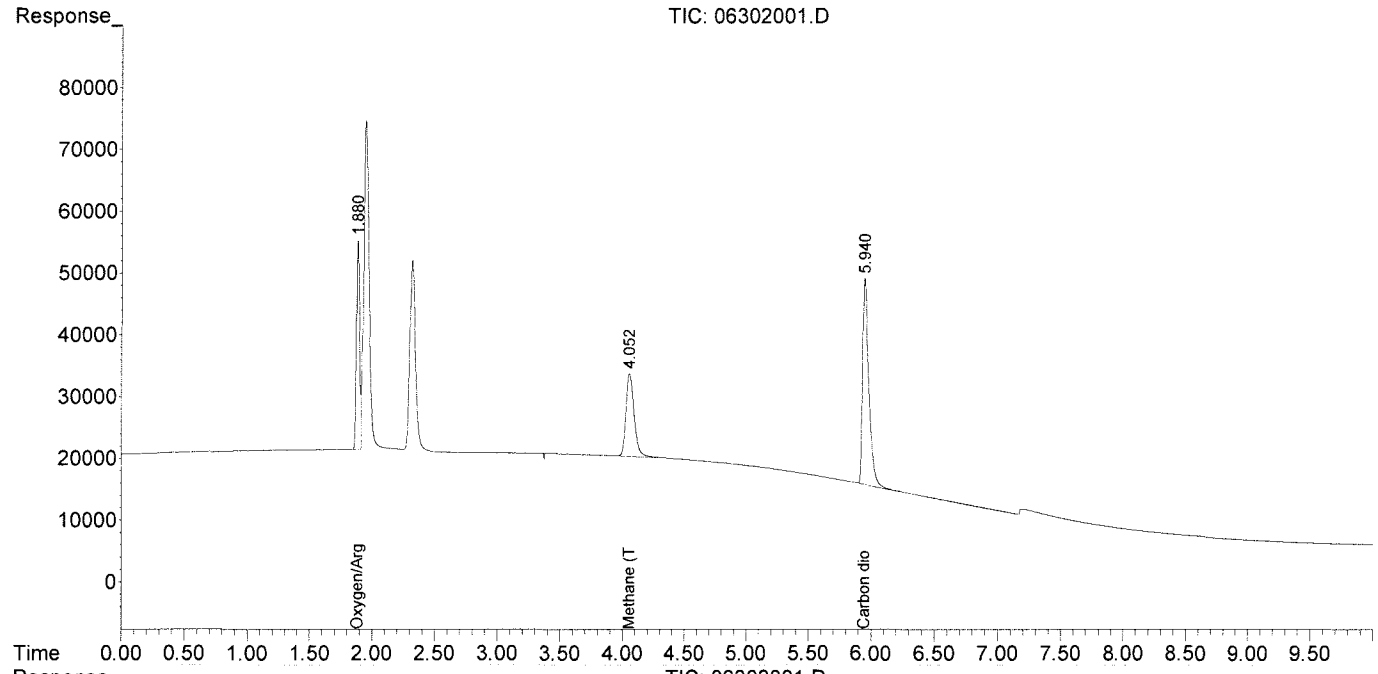
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.881	581272	0.122	ppm
2)	Carbon monoxide	1.881	581272	N.D.	ppm
3)	Methane (TCD)	4.053f	611602	64669.487	ppm
4)	Carbon dioxide	5.941	1144918	4877.612	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	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

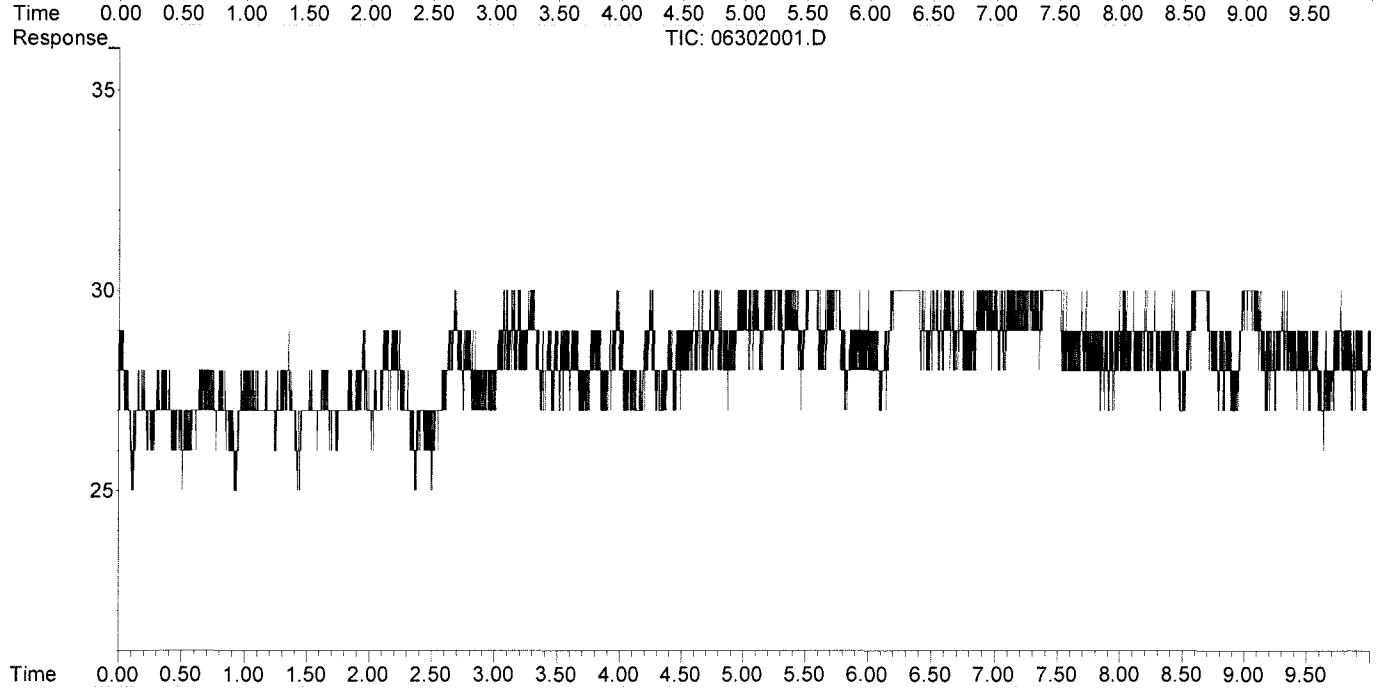
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302001.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 12:47:00
Operator : LD
Sample : STD S32-06222001
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 13:05:55 2020
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 : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302016.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 19:40:55
Operator : LD
Sample : STD S32-06222001
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 19:52:35 2020
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 :

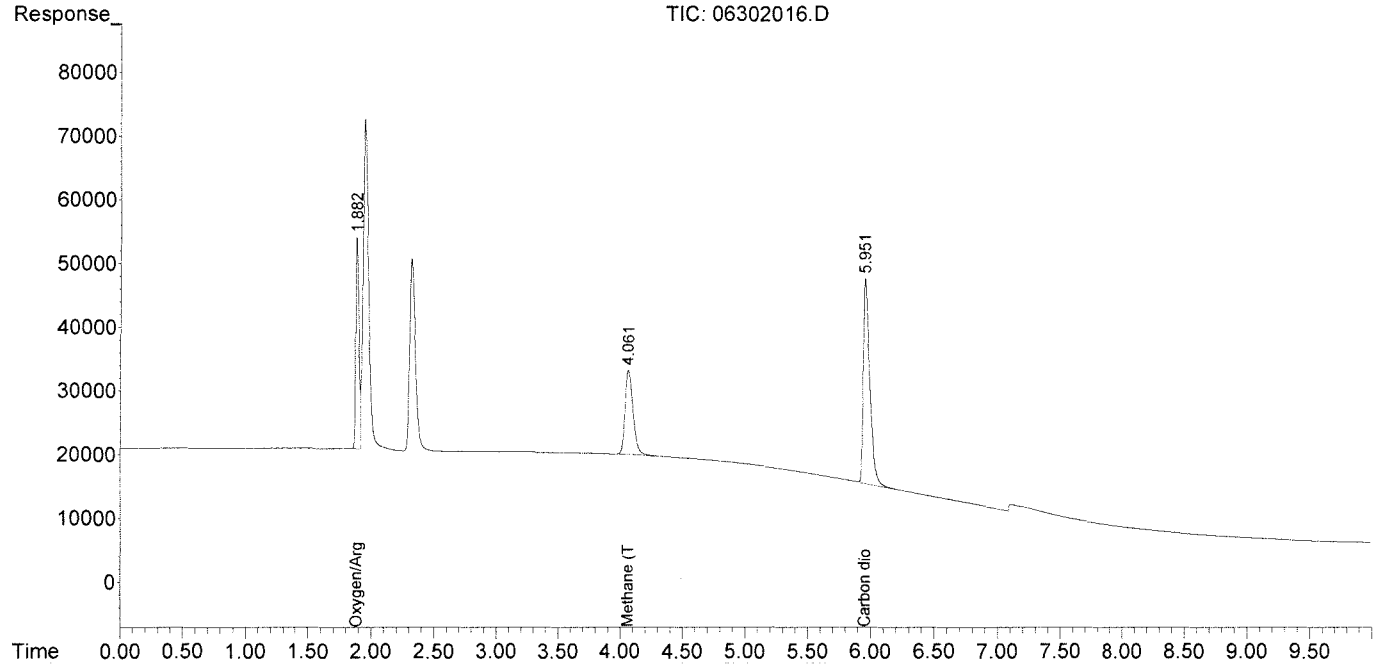
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.883	577214	0.121	ppm
2)	Carbon monoxide	1.883	577214	N.D.	ppm
3)	Methane (TCD)	4.061f	607023	64185.278	ppm
4)	Carbon dioxide	5.952	1121693	4778.670	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	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

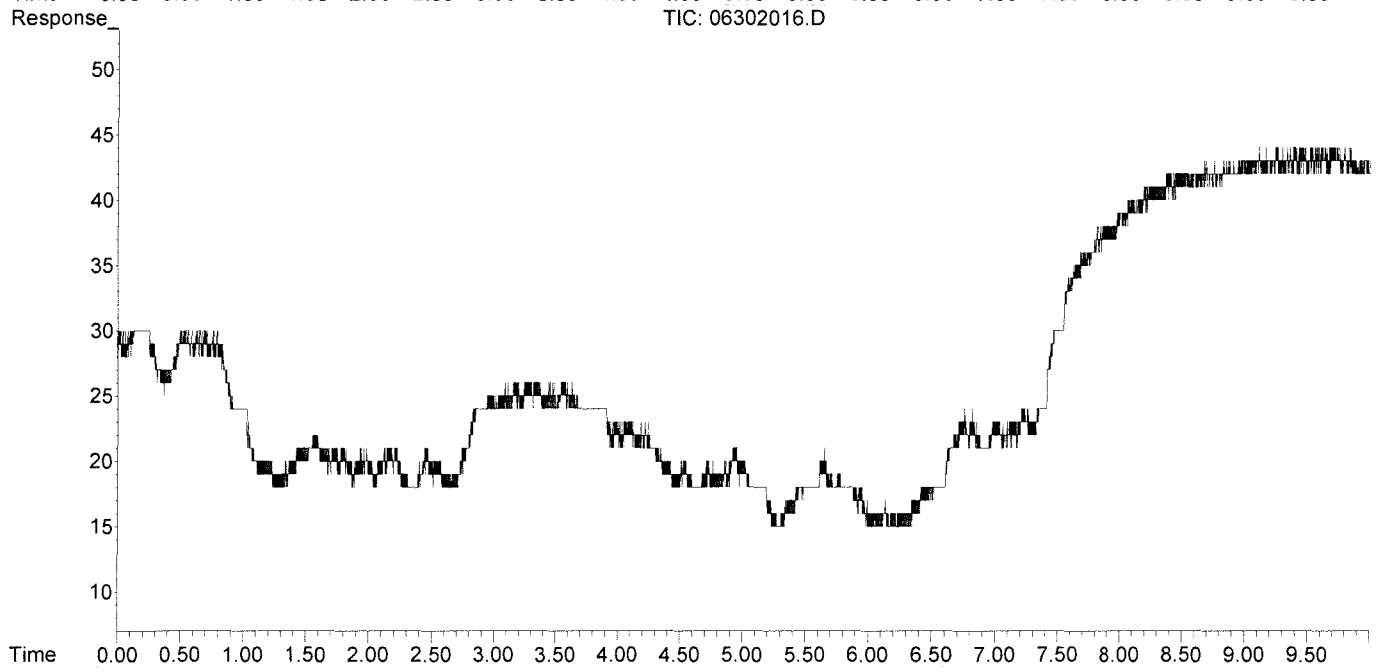
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_06\30CO2\
Data File : 06302016.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Jun-2020, 19:40:55
Operator : LD
Sample : STD S32-06222001
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jun 30 19:52:35 2020
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	mls 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	lcv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2020_06\30\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	30-Jun-20, 12:47:00	06302001.D	STD S32-06222001		LD	RSKBOTH.M	pass
2	30-Jun-20, 13:20:23	06302002.D	RB 0.1ml		LD	RSKBOTH.M	pass
3	30-Jun-20, 15:53:39	06302003.D	MCS 0.1ml		LD	RSKBOTH.M	pass
4	30-Jun-20, 16:08:23	06302004.D	xxxxLCS S32-01212003		LD	RSKBOTH.M	pass
5	30-Jun-20, 16:21:46	06302005.D	LCS S32-01212003		LD	RSKBOTH.M	pass
6	30-Jun-20, 16:35:59	06302006.D	LCSD S32-01212003		LD	RSKBOTH.M	pass
7	30-Jun-20, 17:15:13	06302007.D	P2003560-001 0.1ml		LD	RSKBOTH.M	
8	30-Jun-20, 17:29:19	06302008.D	P2003560-002 0.1ml		LD	RSKBOTH.M	
9	30-Jun-20, 17:42:46	06302009.D	P2003560-003 0.1ml		LD	RSKBOTH.M	
10	30-Jun-20, 17:55:45	06302010.D	P2003560-004 0.1ml		LD	RSKBOTH.M	
11	30-Jun-20, 18:11:05	06302011.D	P2003597-001 0.1ml		LD	RSKBOTH.M	
12	30-Jun-20, 18:24:23	06302012.D	P2003597-002 0.1ml		LD	RSKBOTH.M	
13	30-Jun-20, 18:51:47	06302013.D	P2003597-003 0.1ml		LD	RSKBOTH.M	
14	30-Jun-20, 19:04:54	06302014.D	P2003597-004 0.1ml		LD	RSKBOTH.M	
15	30-Jun-20, 19:23:20	06302015.D	P2003597-005 0.1ml		LD	RSKBOTH.M	
16	30-Jun-20, 19:40:55	06302016.D	STD S32-06222001		LD	RSKBOTH.M	pass

Quantitation Report (QT Reviewed)

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012010.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 15:43:08
Operator : LD
Sample : P2003597-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 16:07:01 2020
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 :

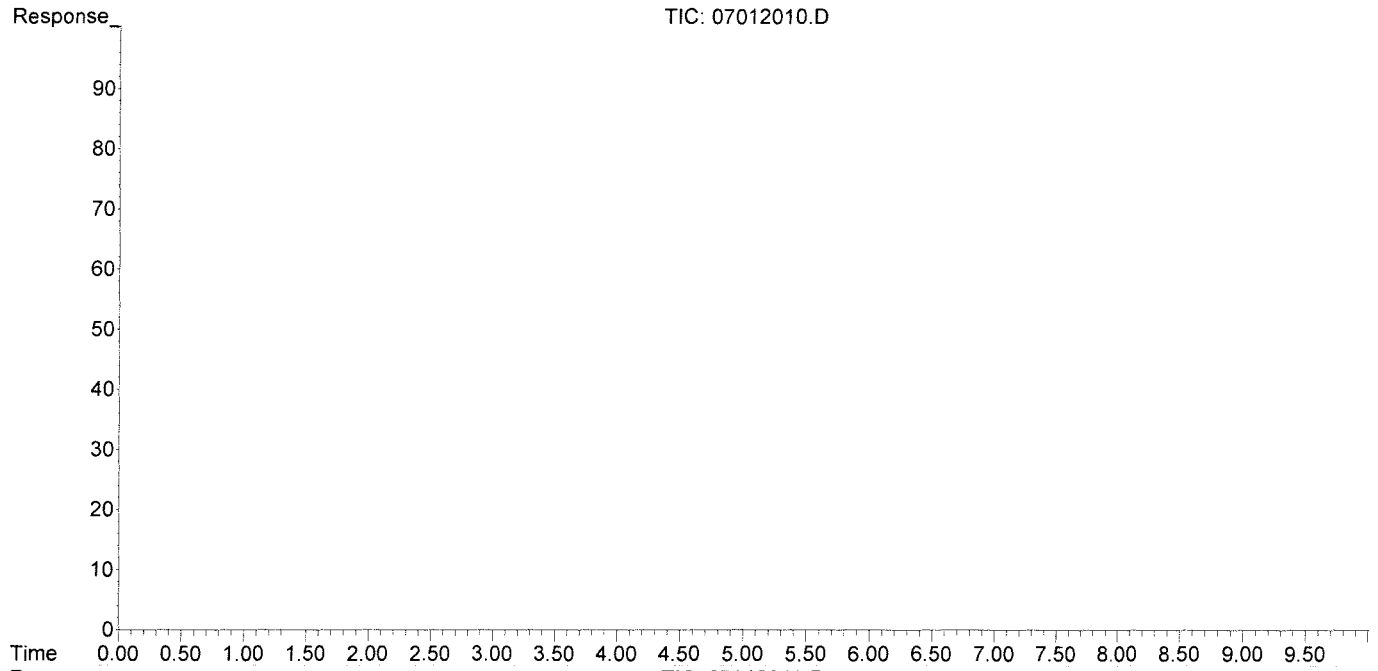
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.099	14388	1.586	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	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

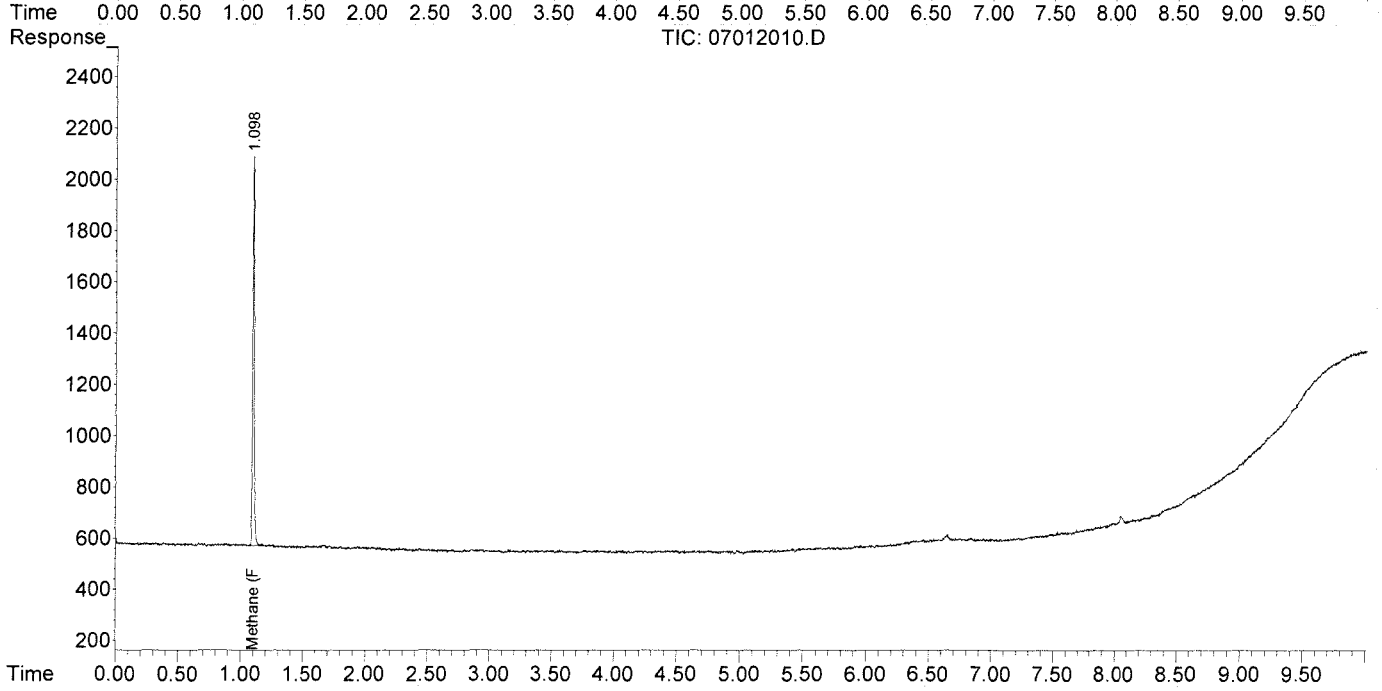
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012010.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 15:43:08
Operator : LD
Sample : P2003597-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 16:07:01 2020
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 : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012011.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 15:56:30
Operator : LD
Sample : P2003597-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 16:27:22 2020
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 :

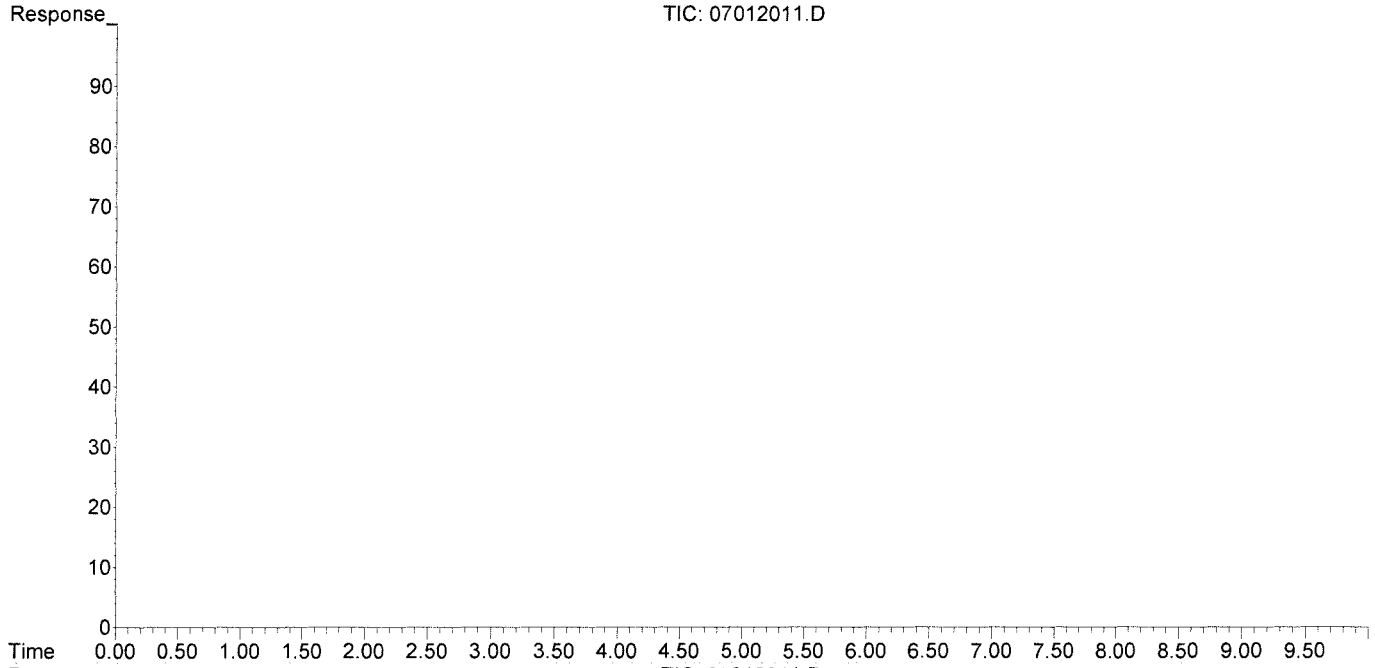
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.101	1221099	134.621	ppm	
7)	Ethylene	1.665	20894	1.249	ppm	
8)	Ethane	0.000	0	N.D.	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	d
13)	n-Butane	0.000	0	N.D.	ppm	d

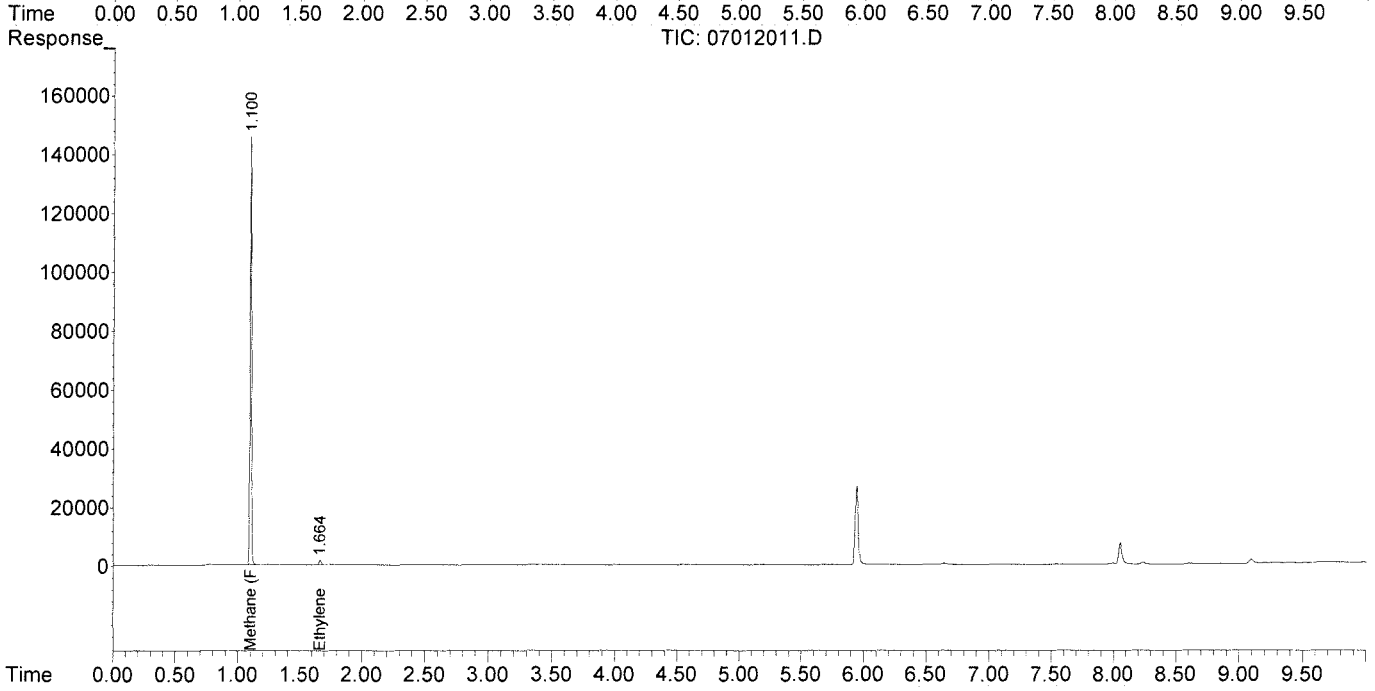
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012011.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 15:56:30
Operator : LD
Sample : P2003597-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 16:27:22 2020
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 : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012012.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 16:09:40
Operator : LD
Sample : P2003597-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 16:27:48 2020
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 :

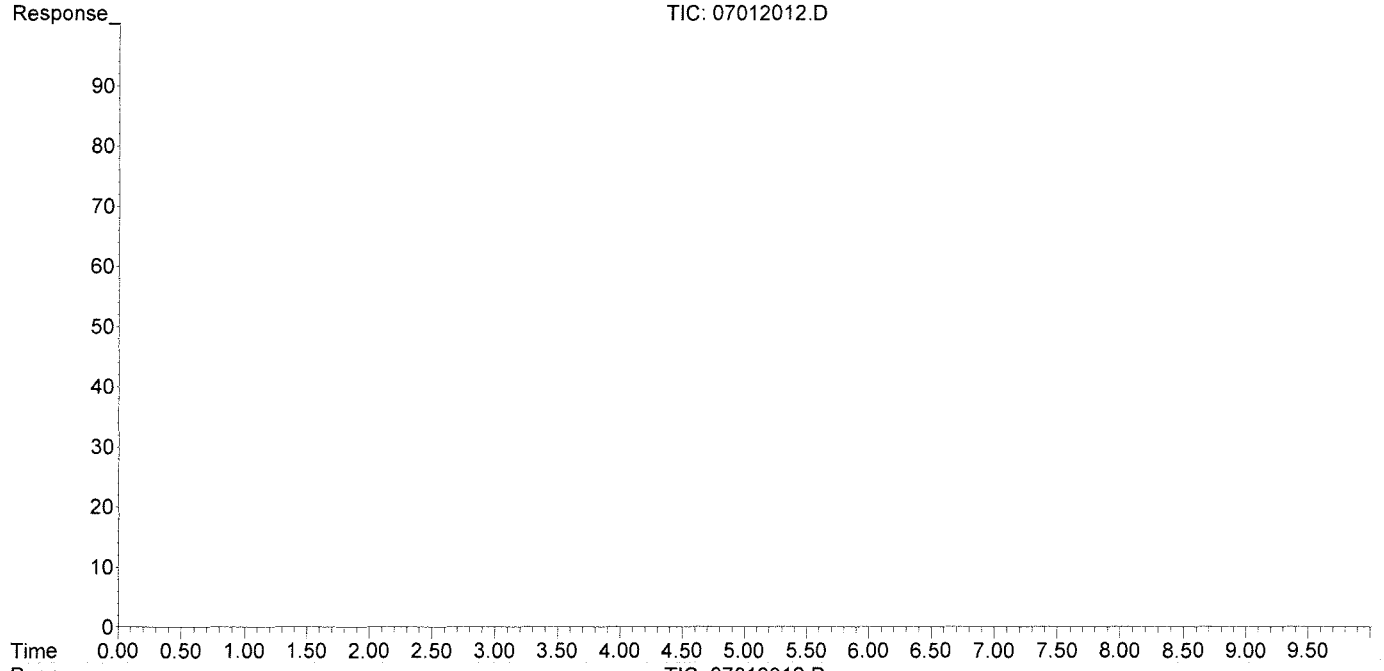
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.100	660866	72.858	ppm	
7)	Ethylene	1.665	8423	0.503	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
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	d
13)	n-Butane	0.000	0	N.D.	ppm	d

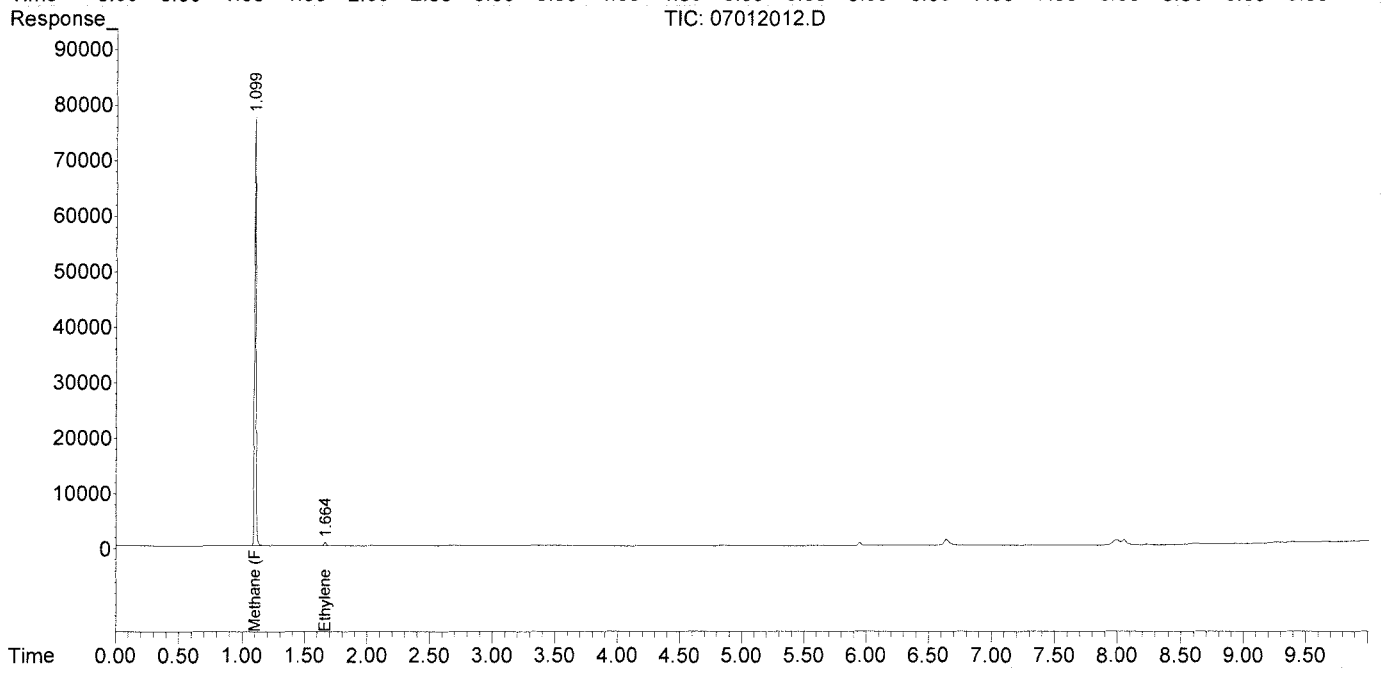
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012012.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 16:09:40
Operator : LD
Sample : P2003597-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 16:27:48 2020
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 : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012013.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 16:22:41
Operator : LD
Sample : P2003597-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 17:16:54 2020
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 :

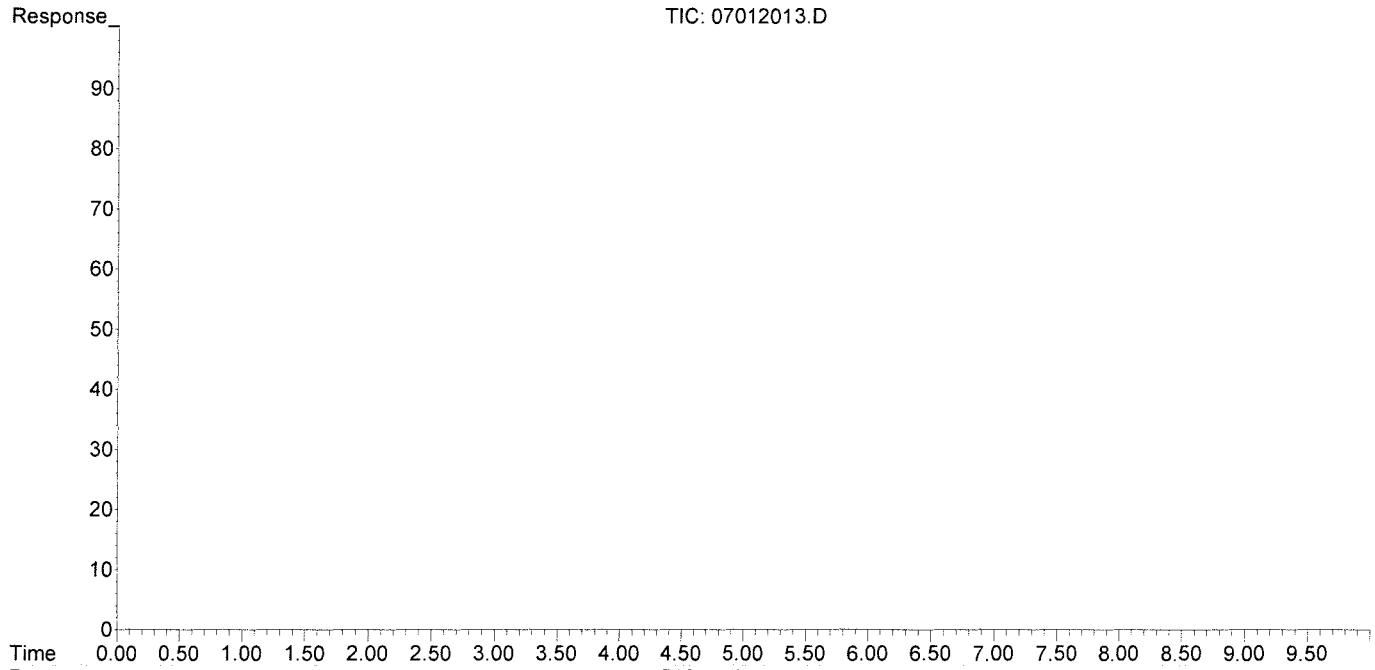
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.094	6516405	718.406	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	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

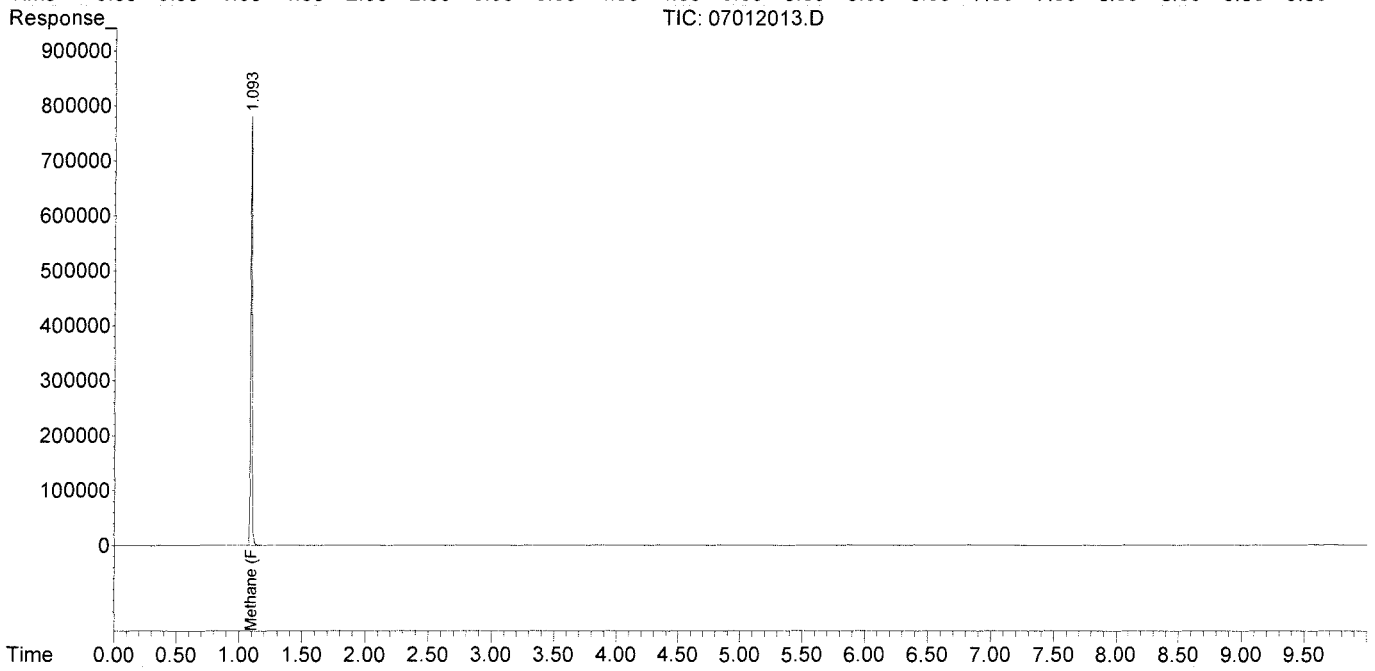
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012013.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 16:22:41
Operator : LD
Sample : P2003597-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 17:16:54 2020
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 : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012014.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 16:38:47
Operator : LD
Sample : P2003597-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 17:17:08 2020
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 :

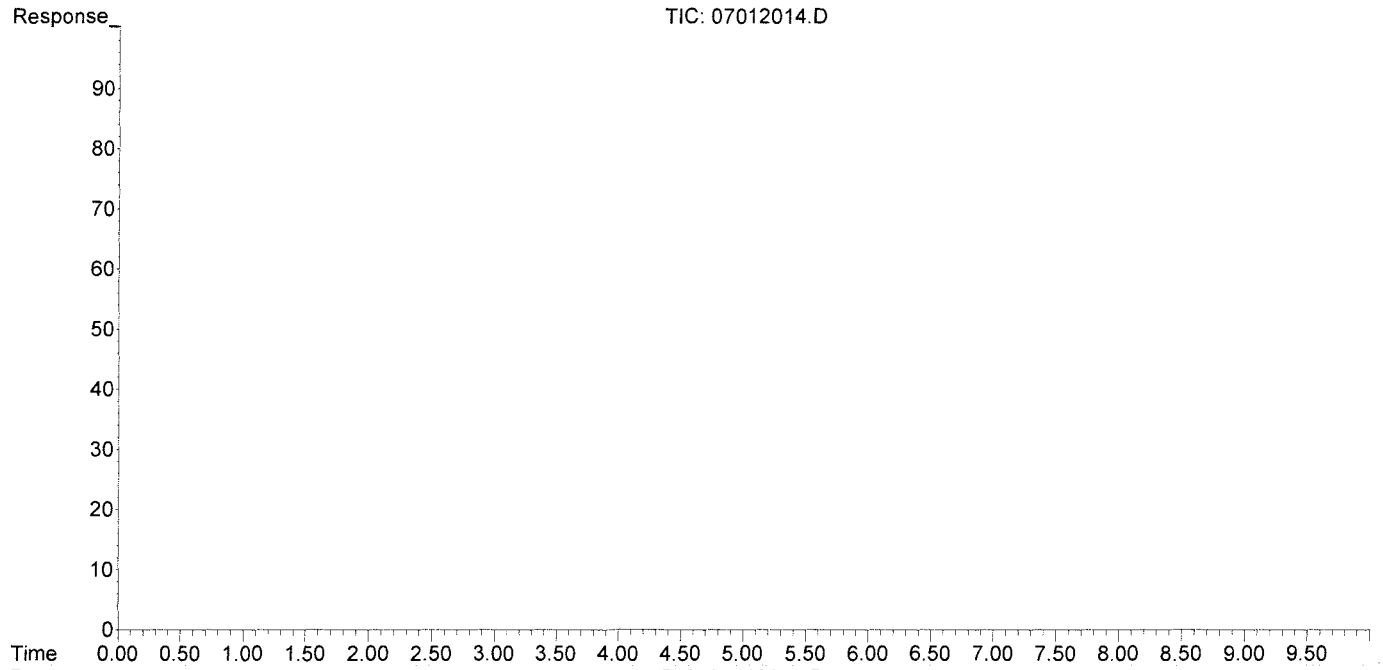
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.104	6073426	669.570	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	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

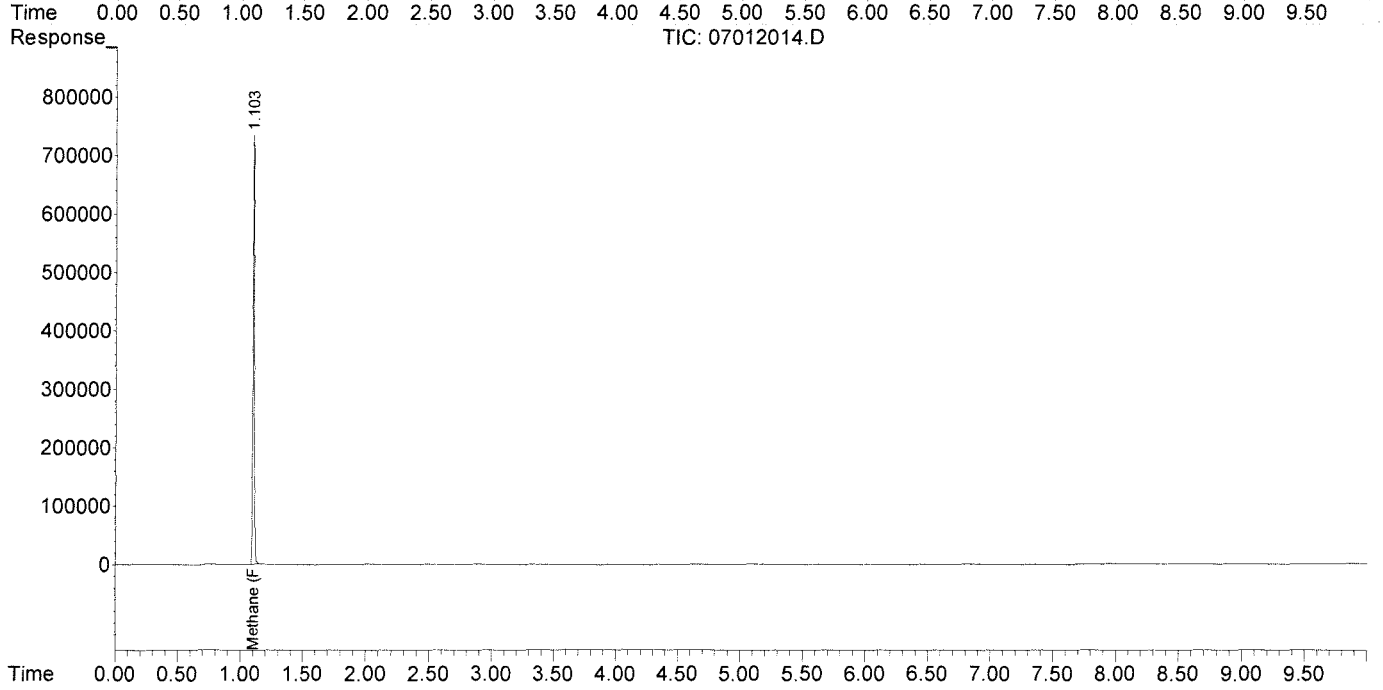
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012014.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 16:38:47
Operator : LD
Sample : P2003597-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Jul 01 17:17:08 2020
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 : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012003.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 13:48:06
Operator : LD
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: Jul 01 14:08:21 2020
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 :

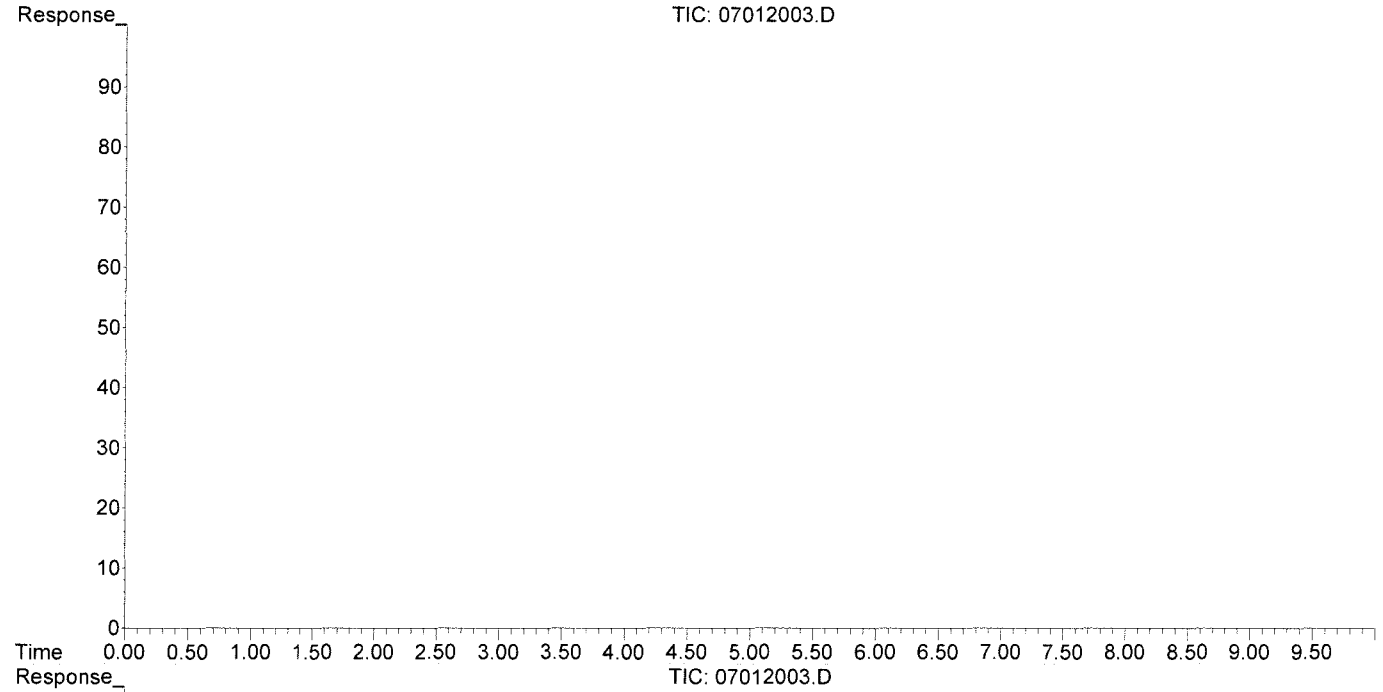
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000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

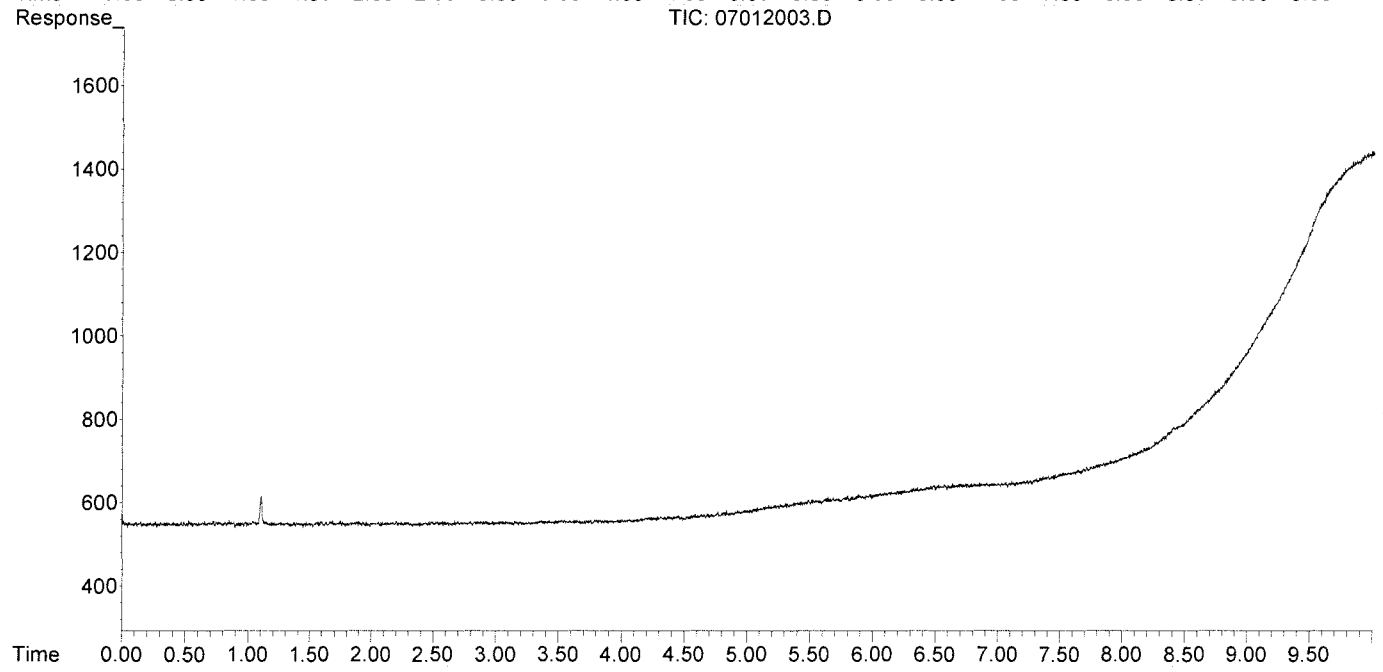
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012003.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 13:48:06
Operator : LD
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: Jul 01 14:08:21 2020
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 : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012004.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 14:01:52
Operator : LD
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: Jul 01 14:18:37 2020
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 :

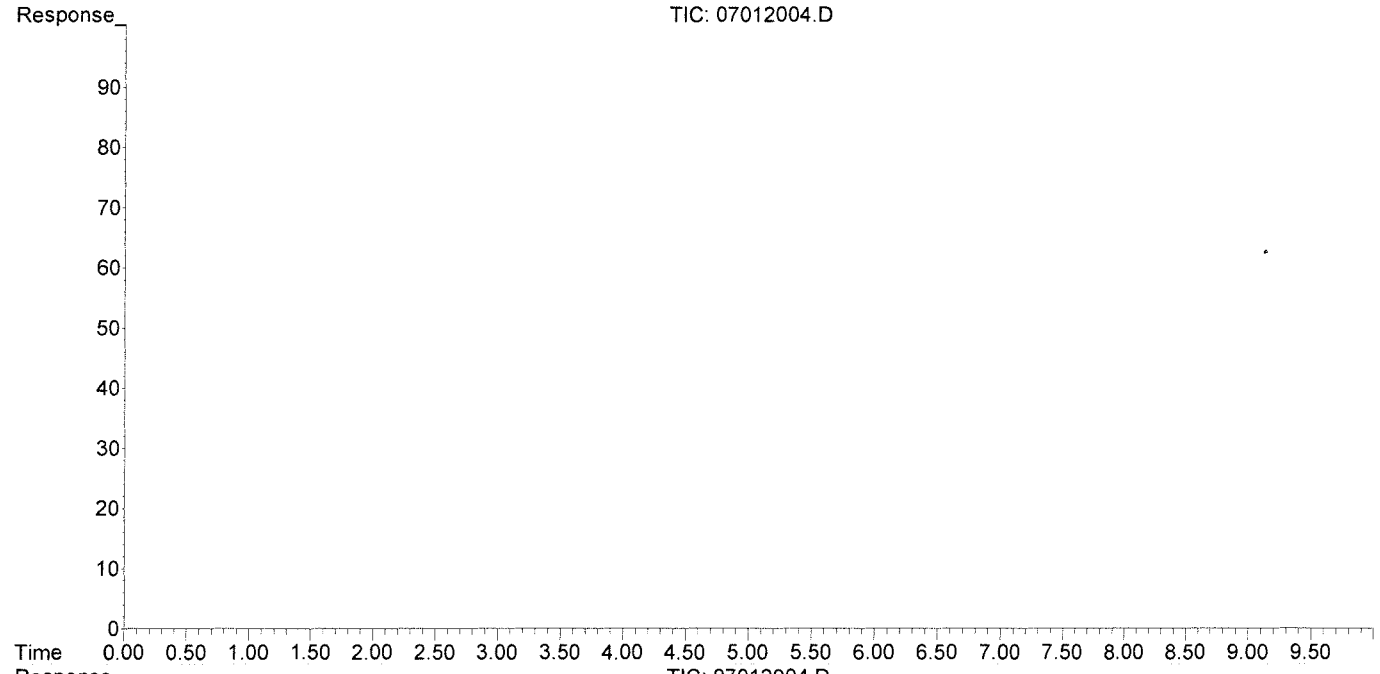
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.097	12970	1.430	ppm	
7)	Ethylene	1.664	17638	1.054	ppm	
8)	Ethane	1.928	20361	1.201	ppm	
9)	Propylene	4.313	23705	1.012	ppm	
10)	Propane	4.435	30311	1.218	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	d
13)	n-Butane	0.000	0	N.D.	ppm	d

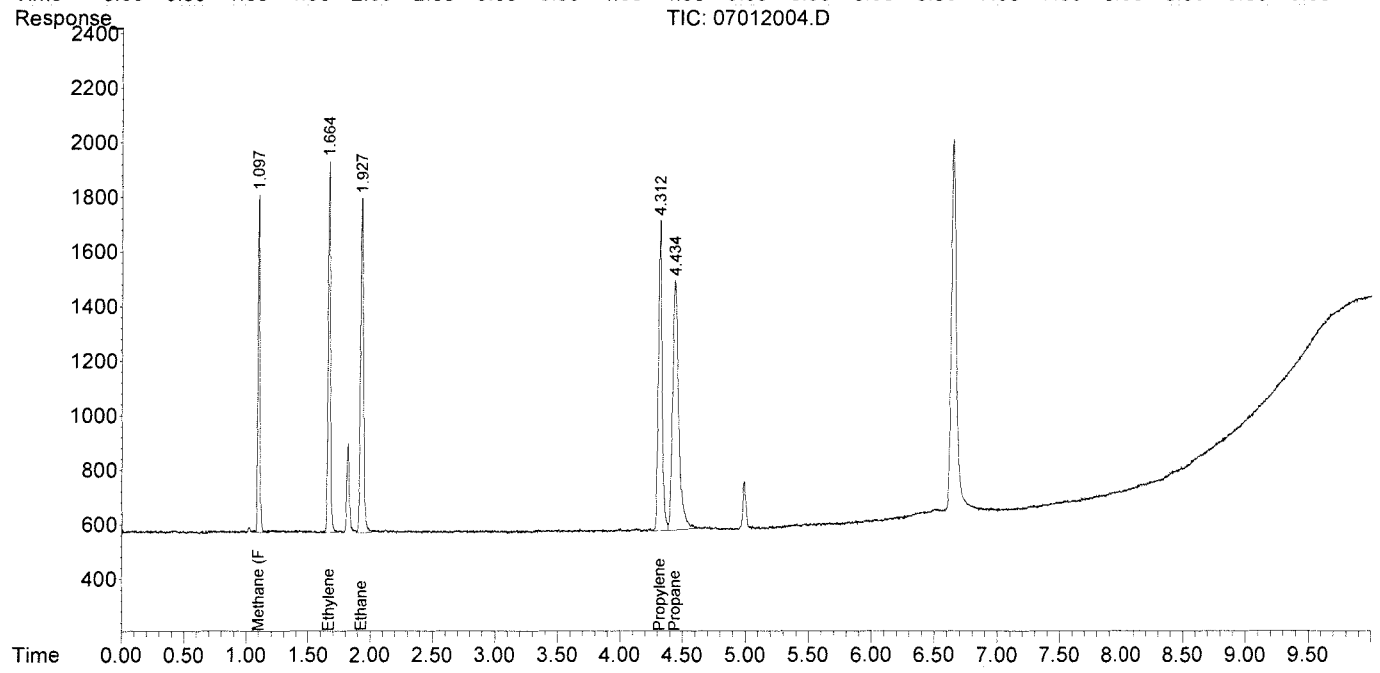
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012004.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 14:01:52
Operator : LD
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: Jul 01 14:18:37 2020
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 : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012005.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 14:21:34
Operator : LD
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: Jul 01 14:39:02 2020
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 :

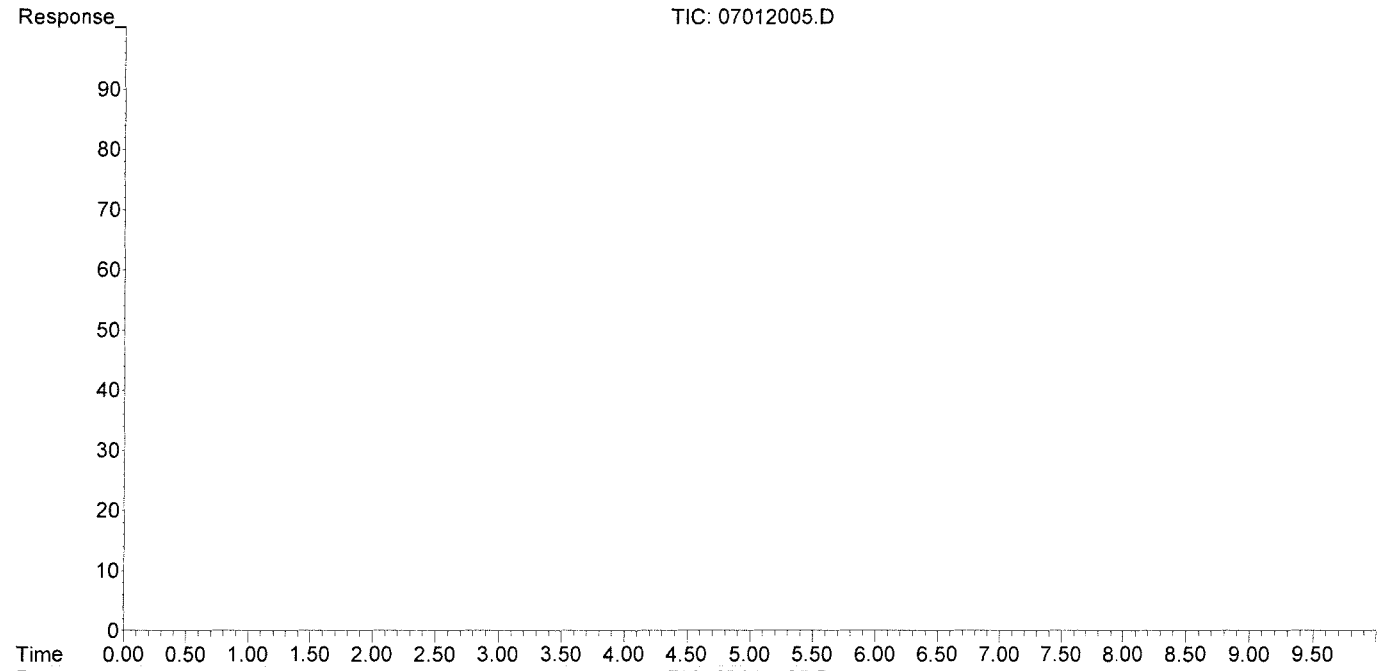
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.098	12856	1.417	ppm	
7)	Ethylene	1.665	17341	1.036	ppm	
8)	Ethane	1.928	19739	1.165	ppm	
9)	Propylene	4.311	23012	0.982	ppm	
10)	Propane	4.433	29429	1.183	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	d
13)	n-Butane	0.000	0	N.D.	ppm	d

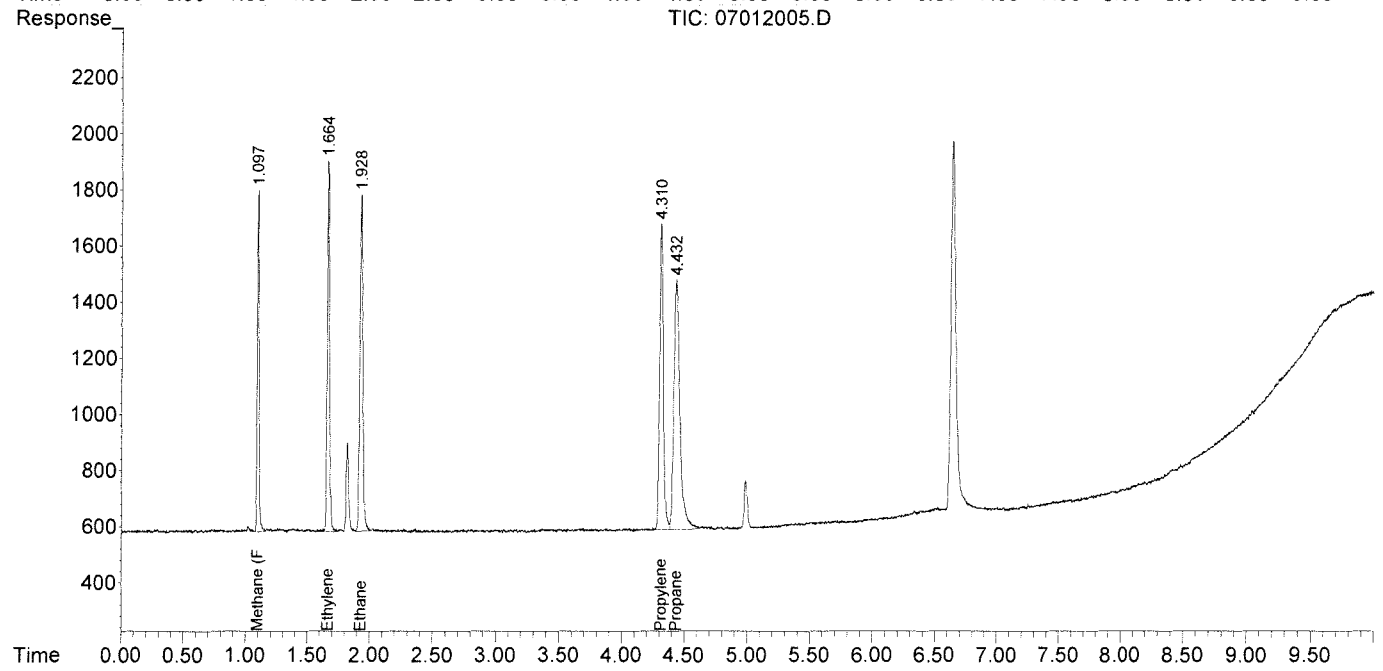
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012005.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 14:21:34
Operator : LD
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: Jul 01 14:39:02 2020
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 :





Response Factor Report HP5890

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)

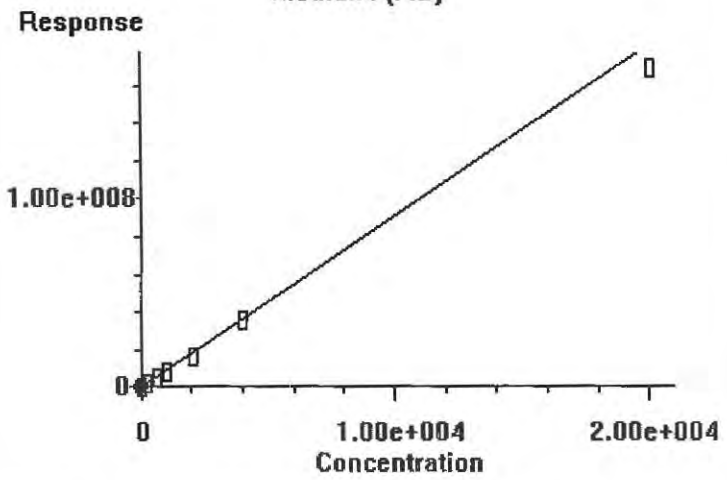
Search by: Ret Time | Name | Index | Find Compound

- 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

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

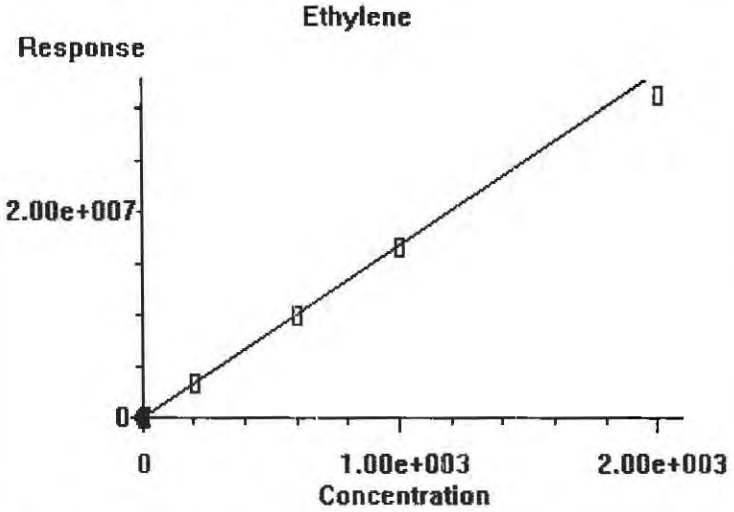
Search by: Ret Time | Name | Index | Find Compound

- 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

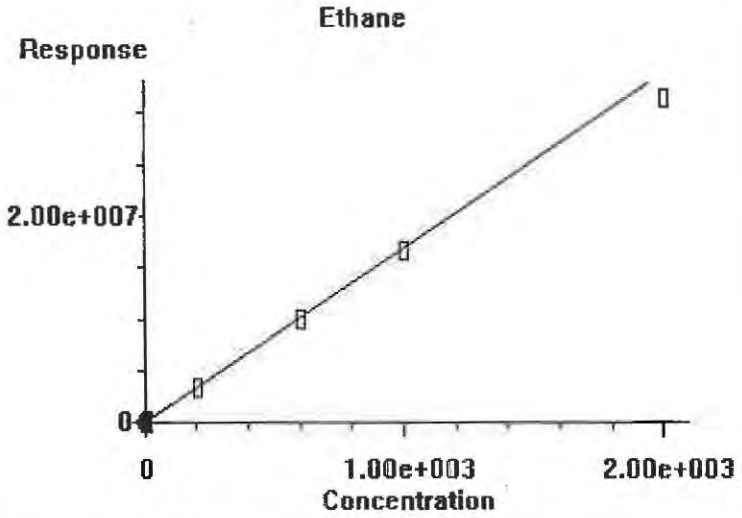
Search by: Ret Time | Name | Index — Find Compound

- 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	16703164.879012
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

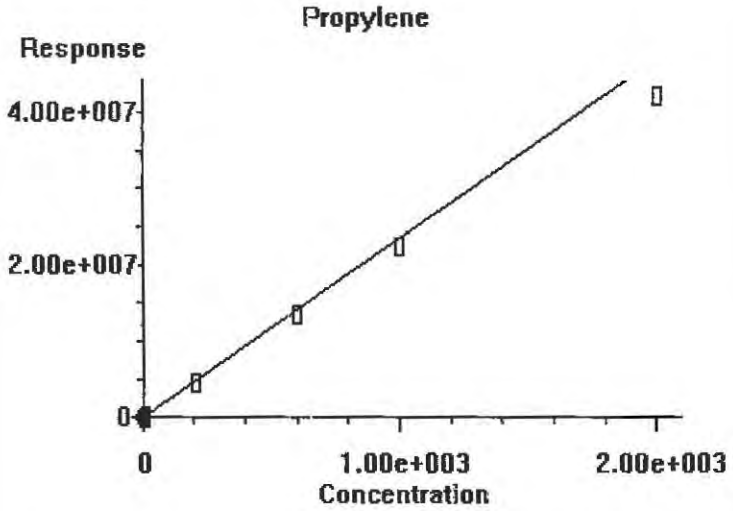
Search by: Ret Time | Name | Index | Find Compound

- 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

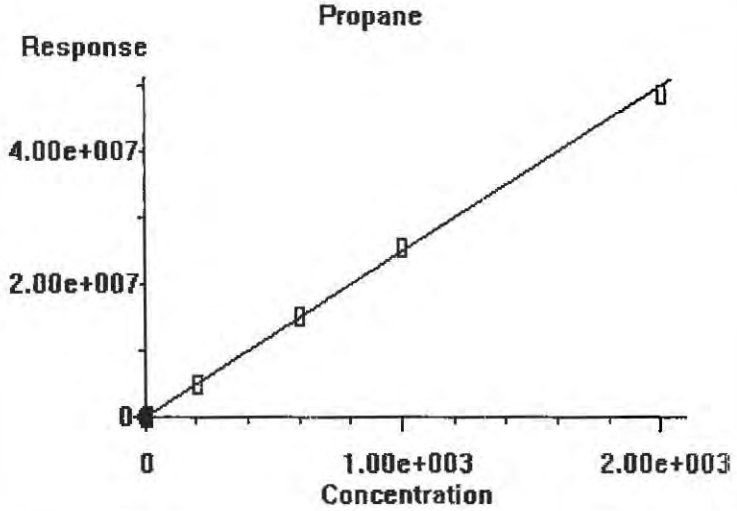
Search by: Ret Time | Name | Index — Find Compound

- 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	5043035.663316
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

Calibration Status Report HP5890

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

Quantitation Report (QT Reviewed)

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.

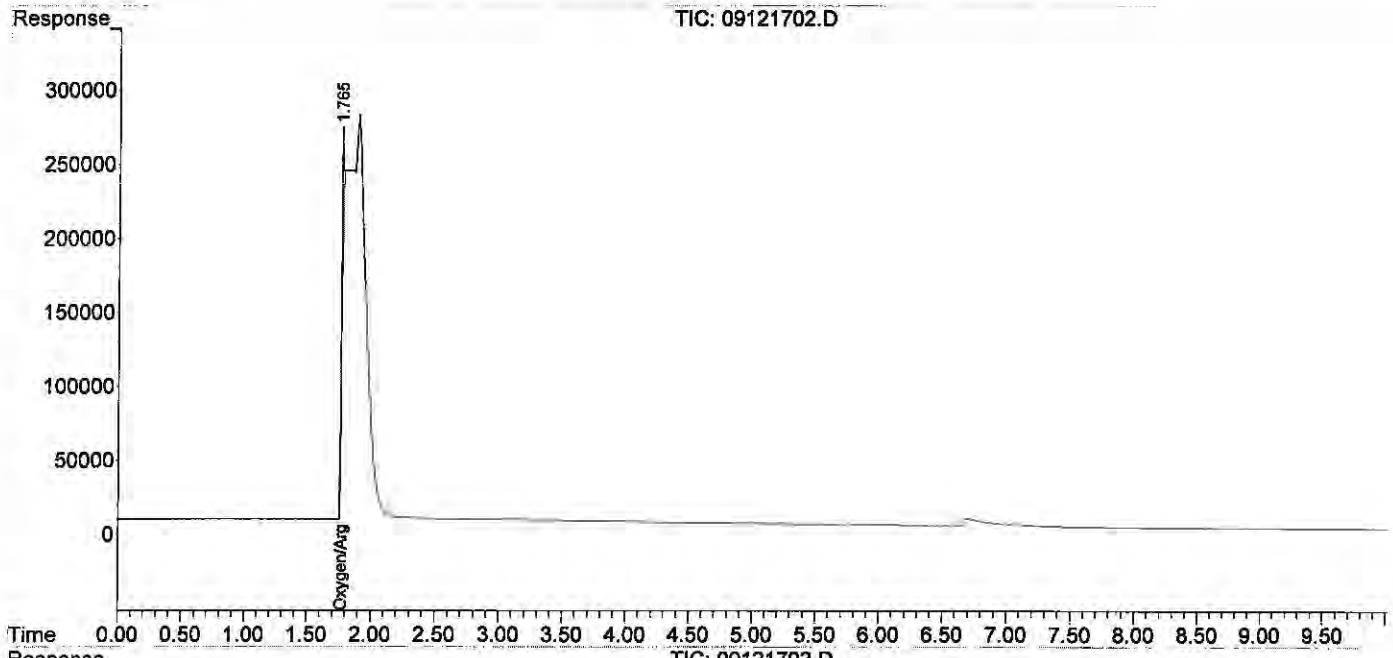
9/13/17

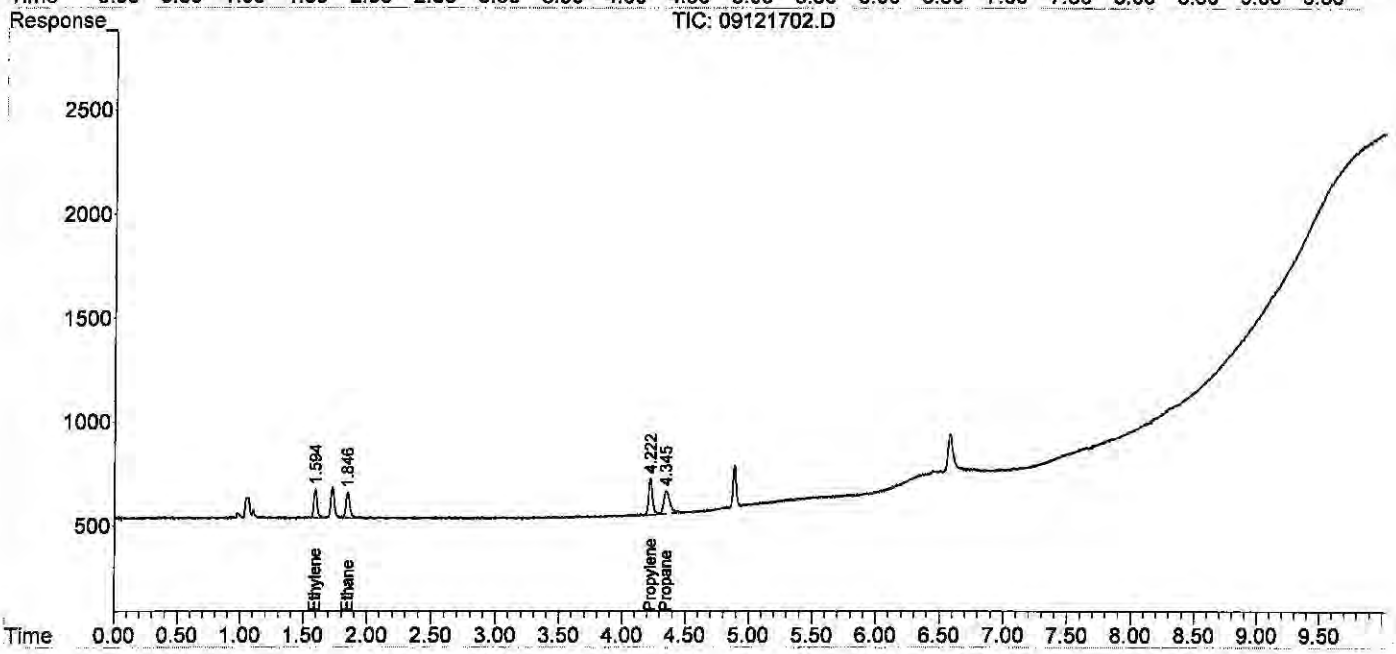
Quantitation Report (QT Reviewed)

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 :





Quantitation Report (QT Reviewed)

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	

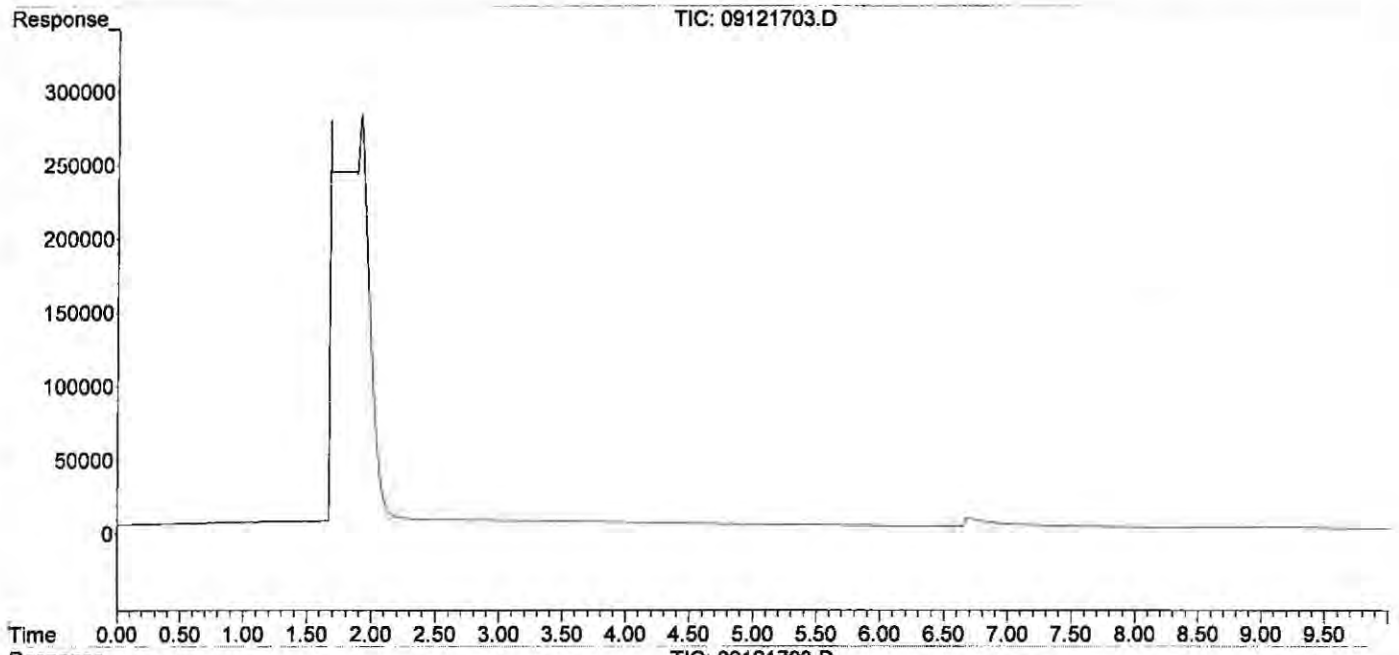
(f)=RT Delta > 1/2 Window (m)=manual int.

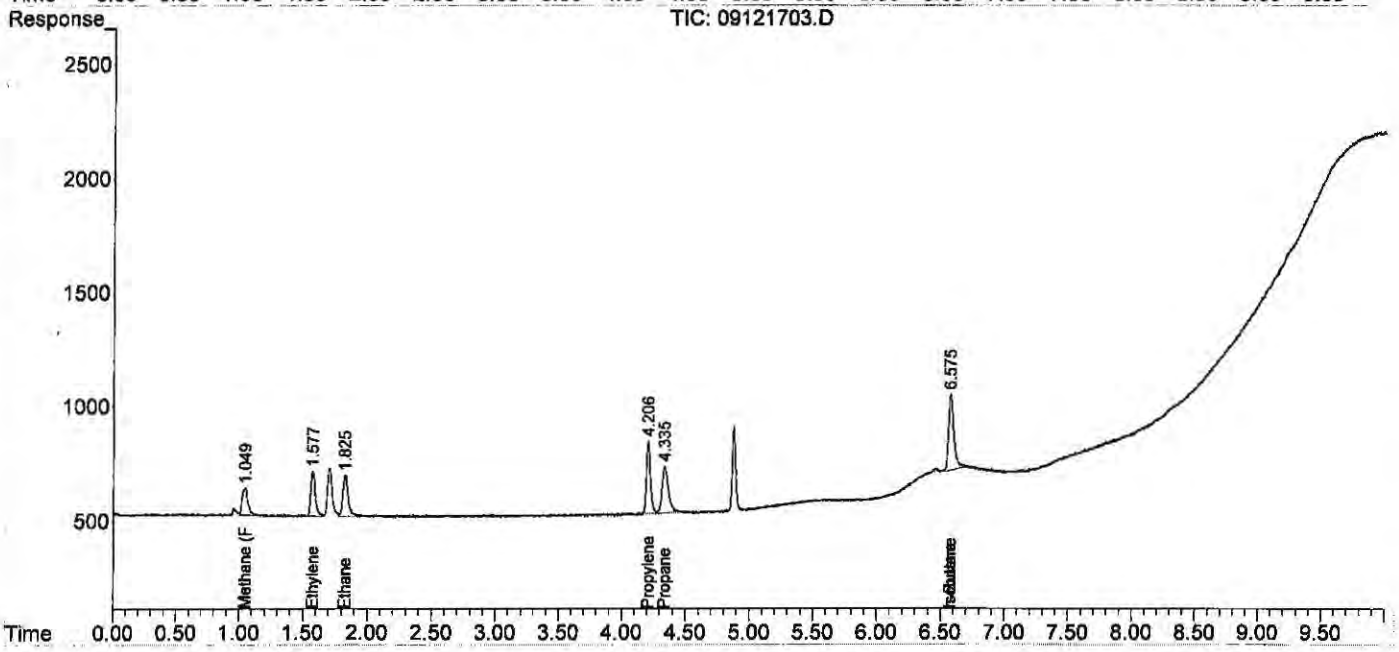
Quantitation Report (QT Reviewed)

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 :



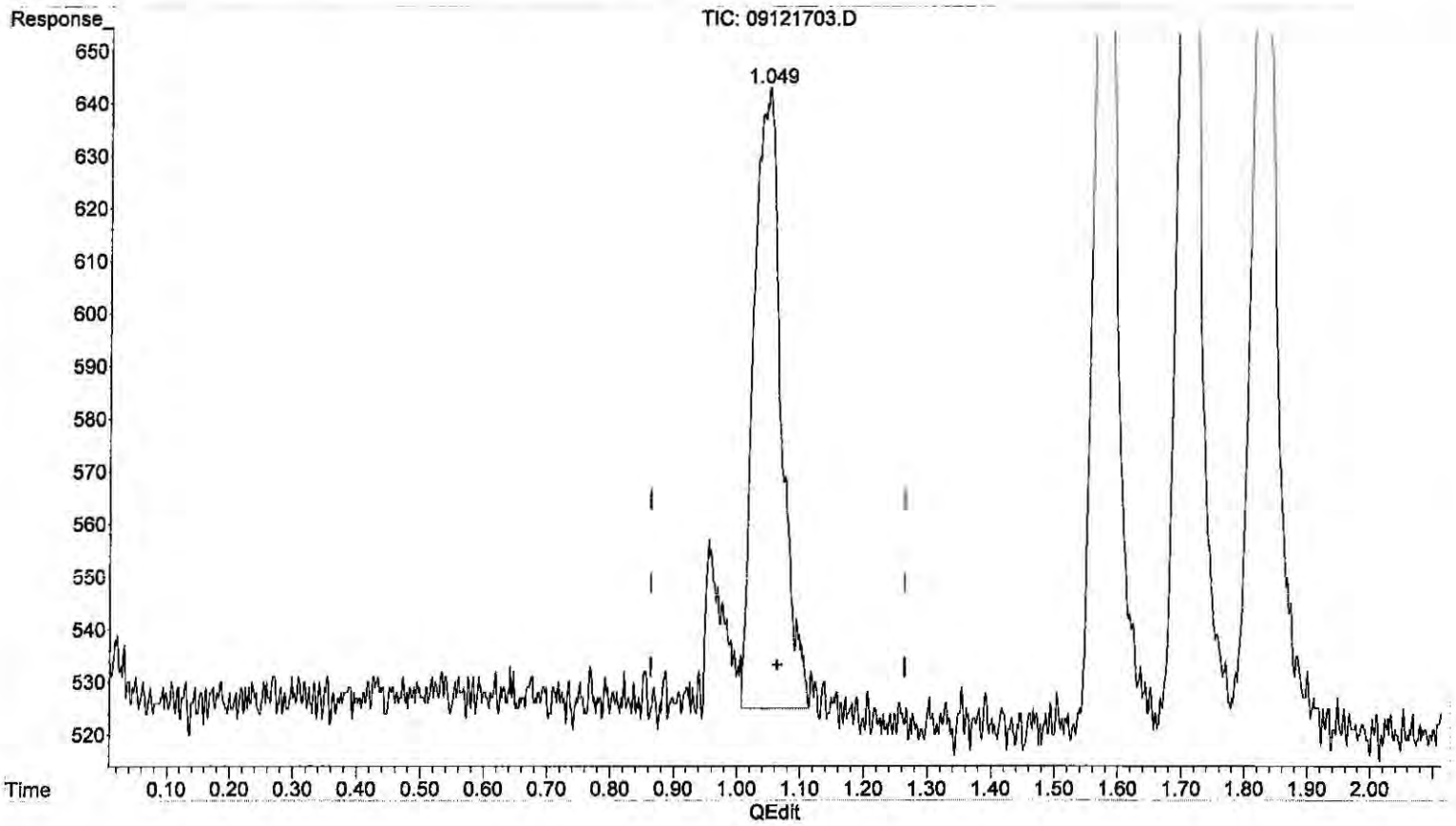


Quantitation Report (Qedit)

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

Quantitation Report (QT Reviewed)

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

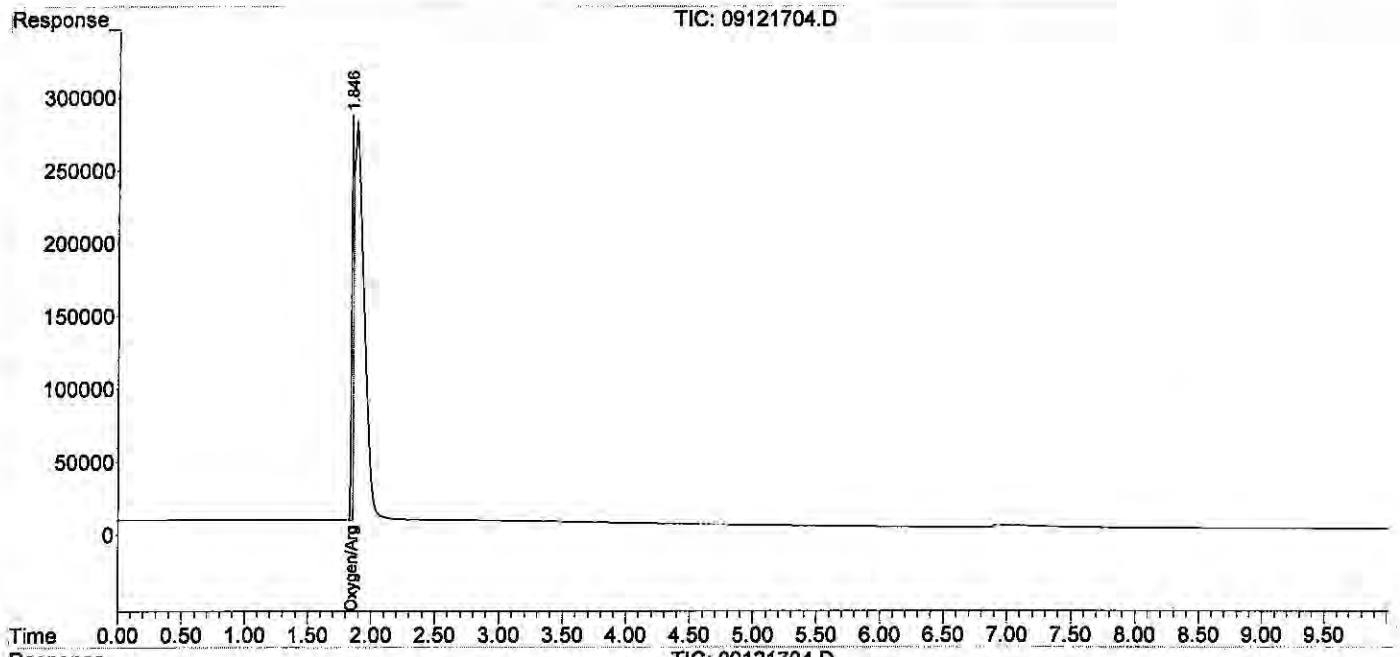
(f)=RT Delta > 1/2 Window (m)=manual int.

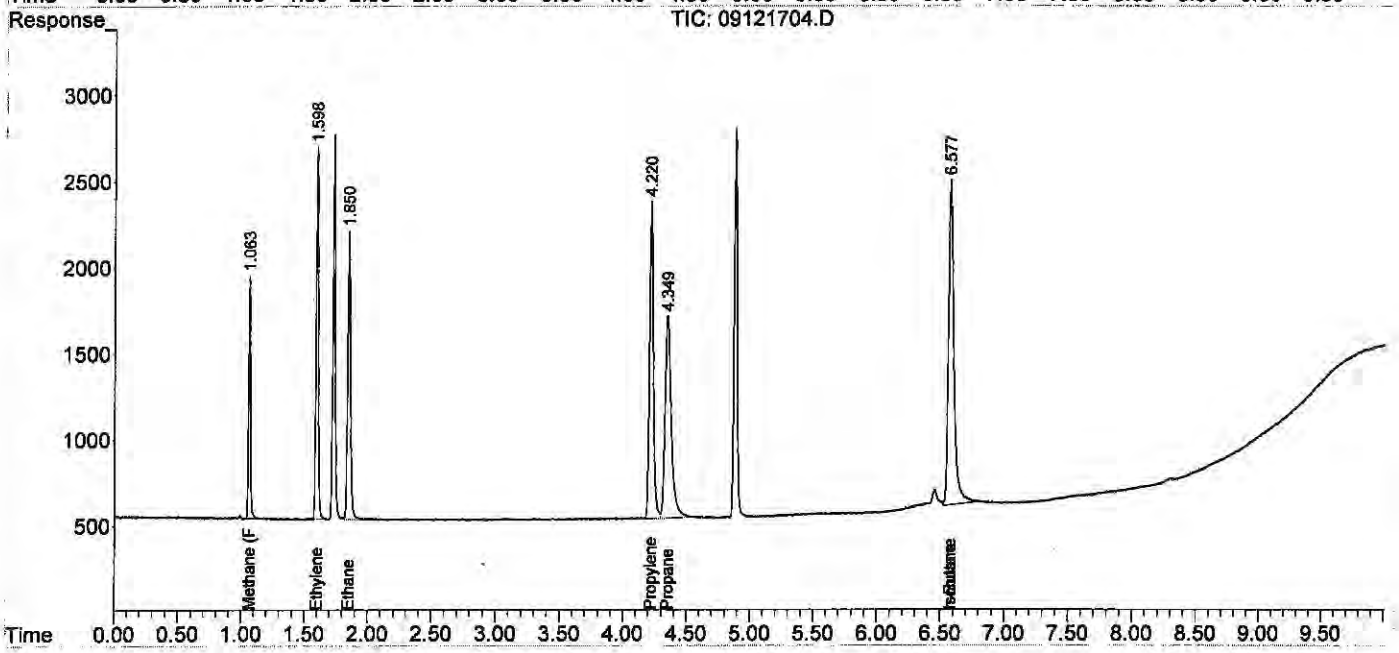
Quantitation Report (QT Reviewed)

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 :





Quantitation Report (QT Reviewed)

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 :

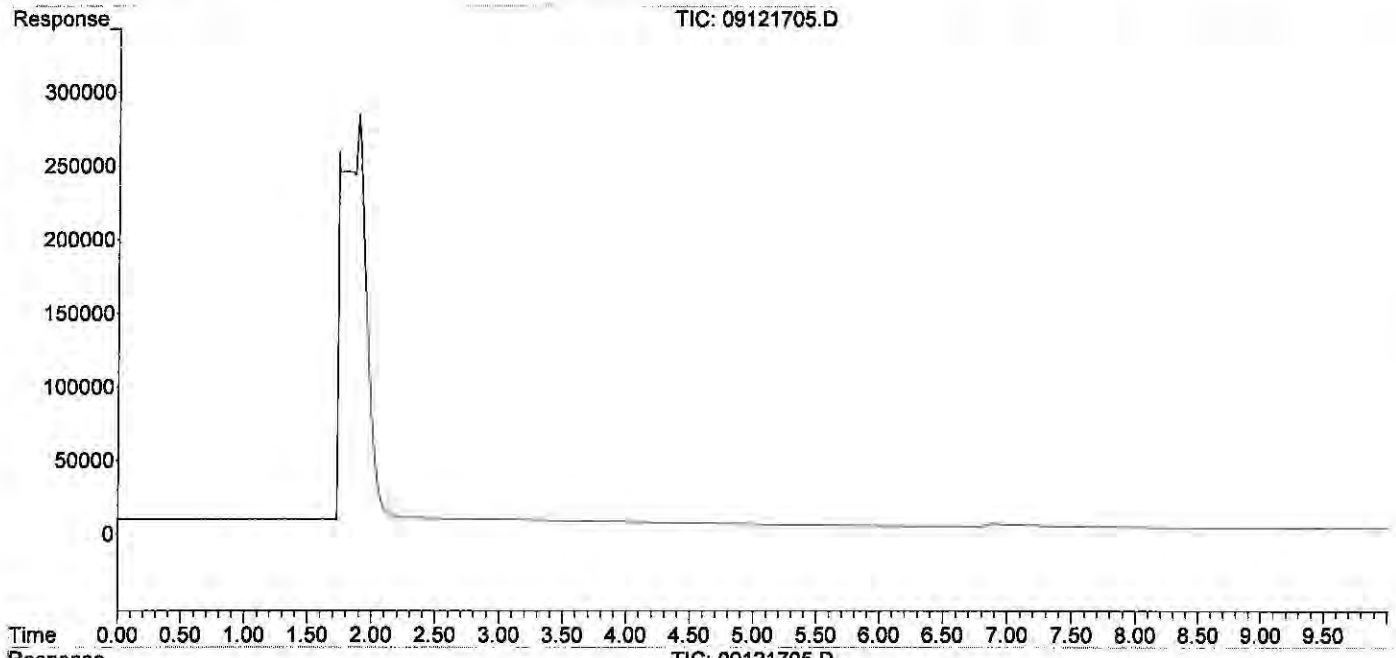
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	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

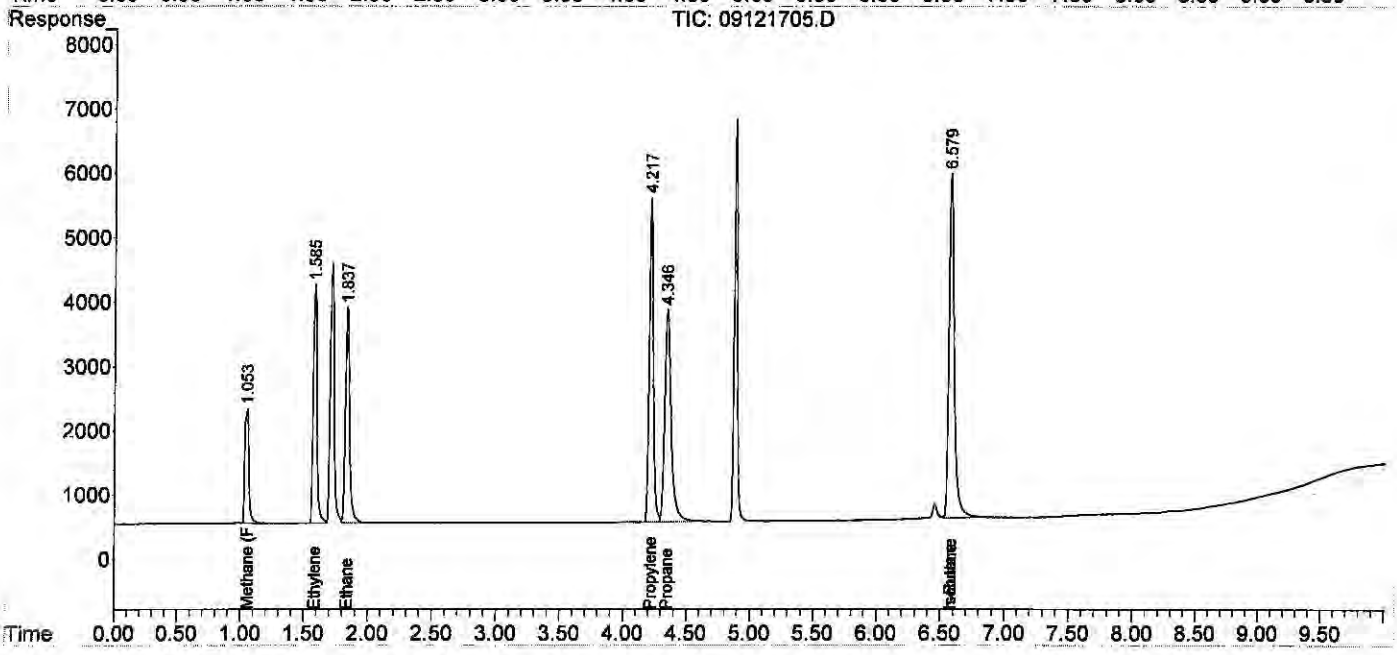
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :





Quantitation Report (QT Reviewed)

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

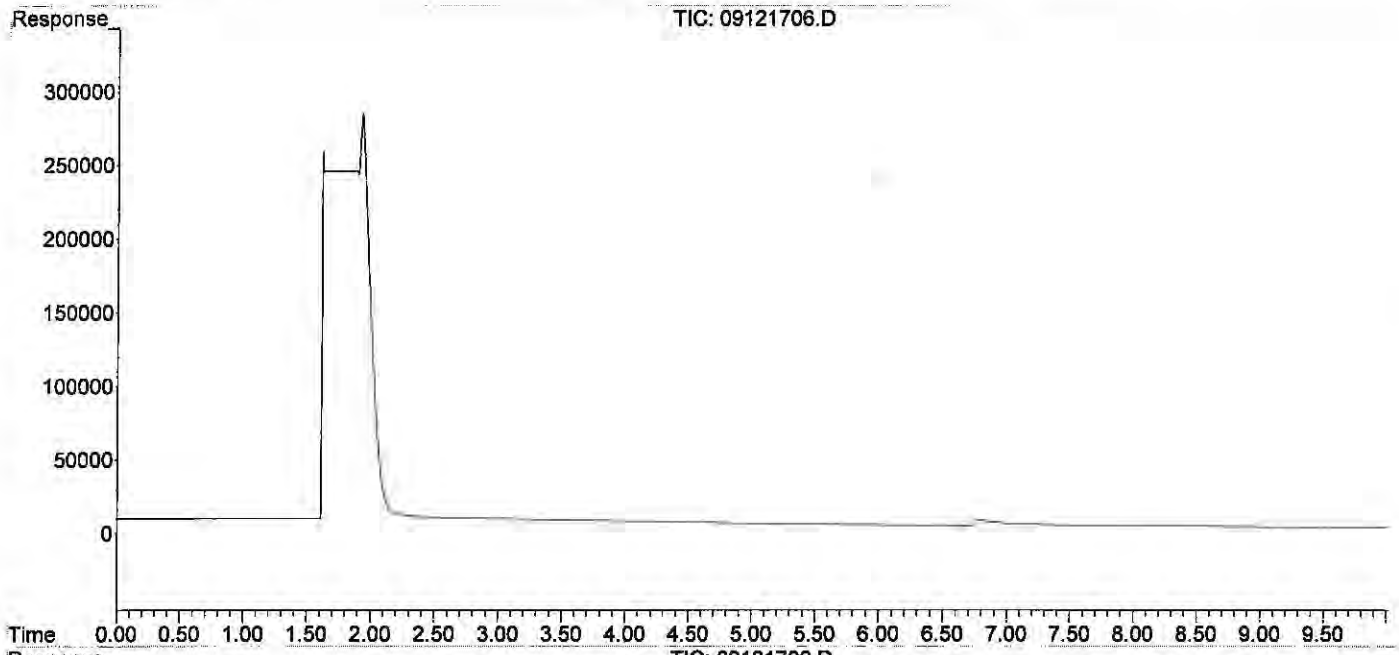
(f)=RT Delta > 1/2 Window (m)=manual int.

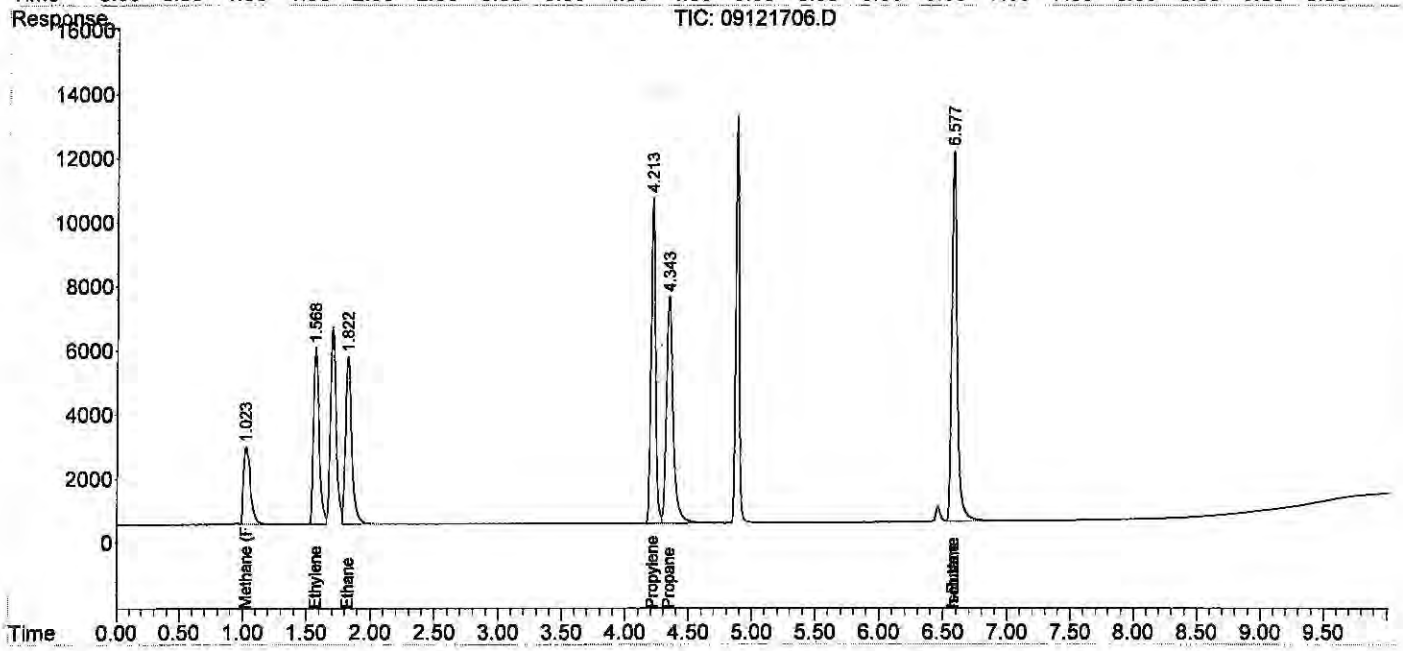
Quantitation Report (QT Reviewed)

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 :





Quantitation Report (QT Reviewed)

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 :

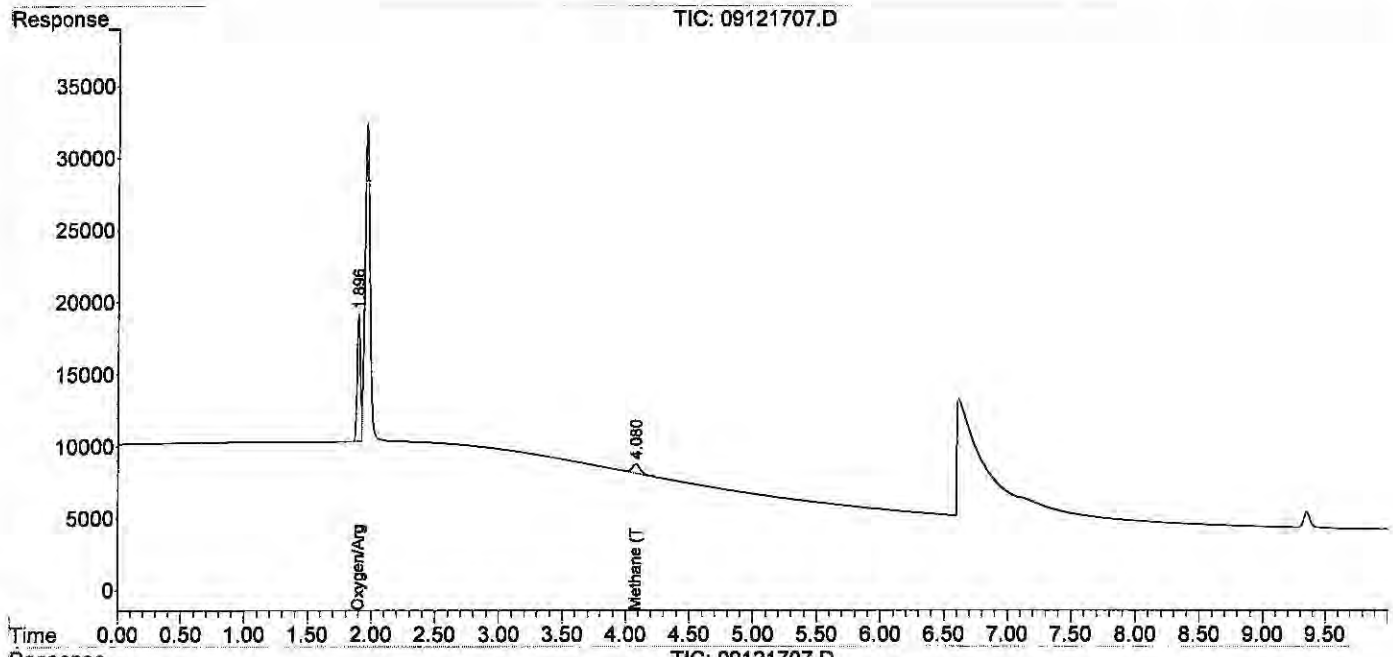
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	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

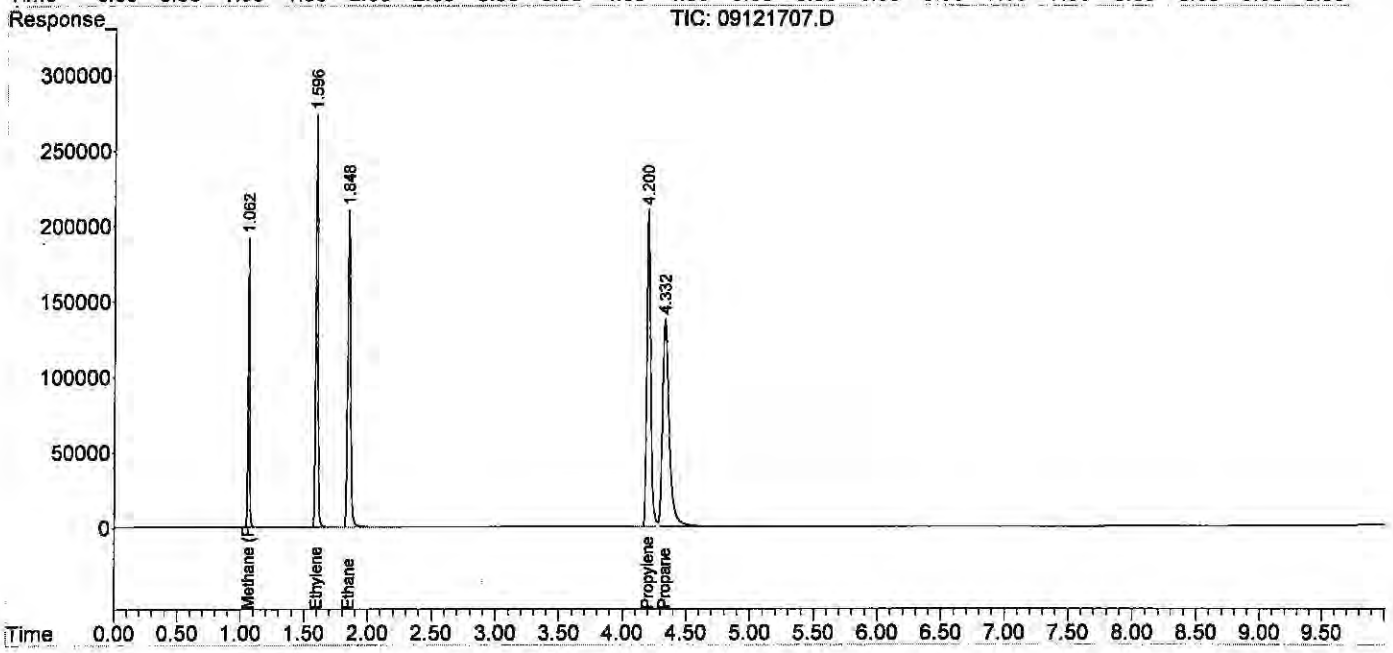
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :





Quantitation Report (QT Reviewed)

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

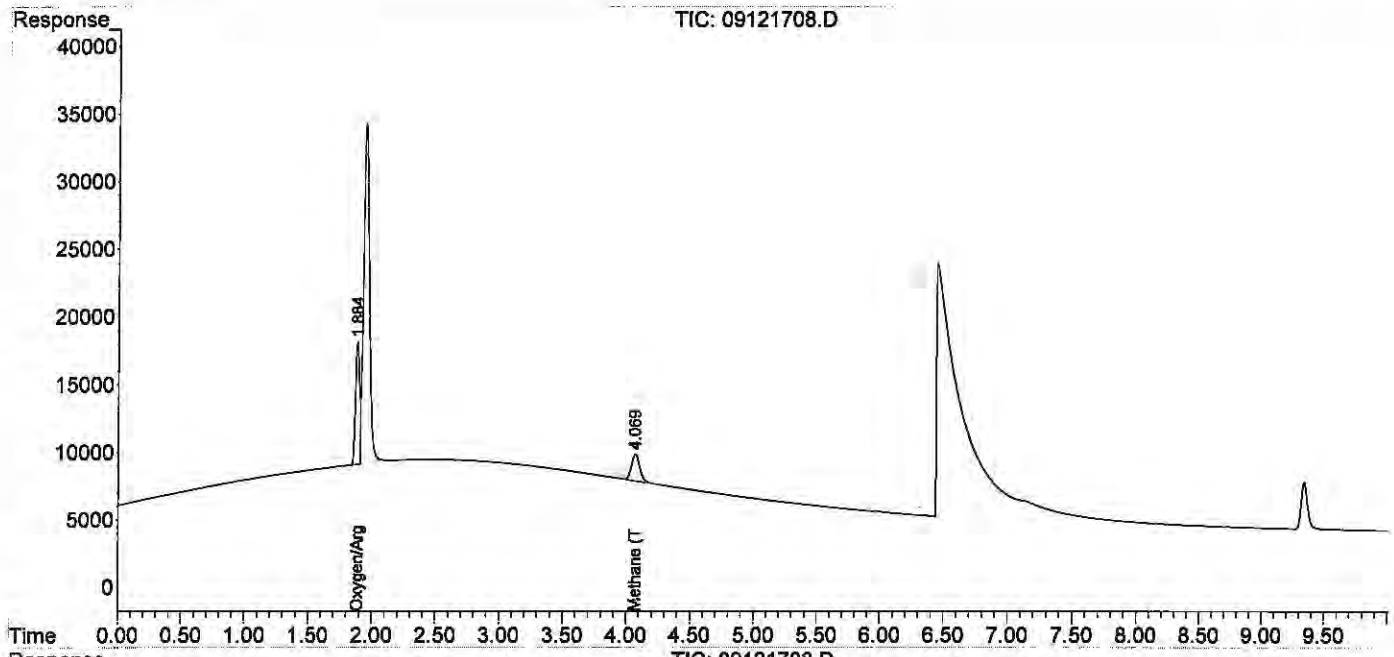
(f)=RT Delta > 1/2 Window (m)=manual int.

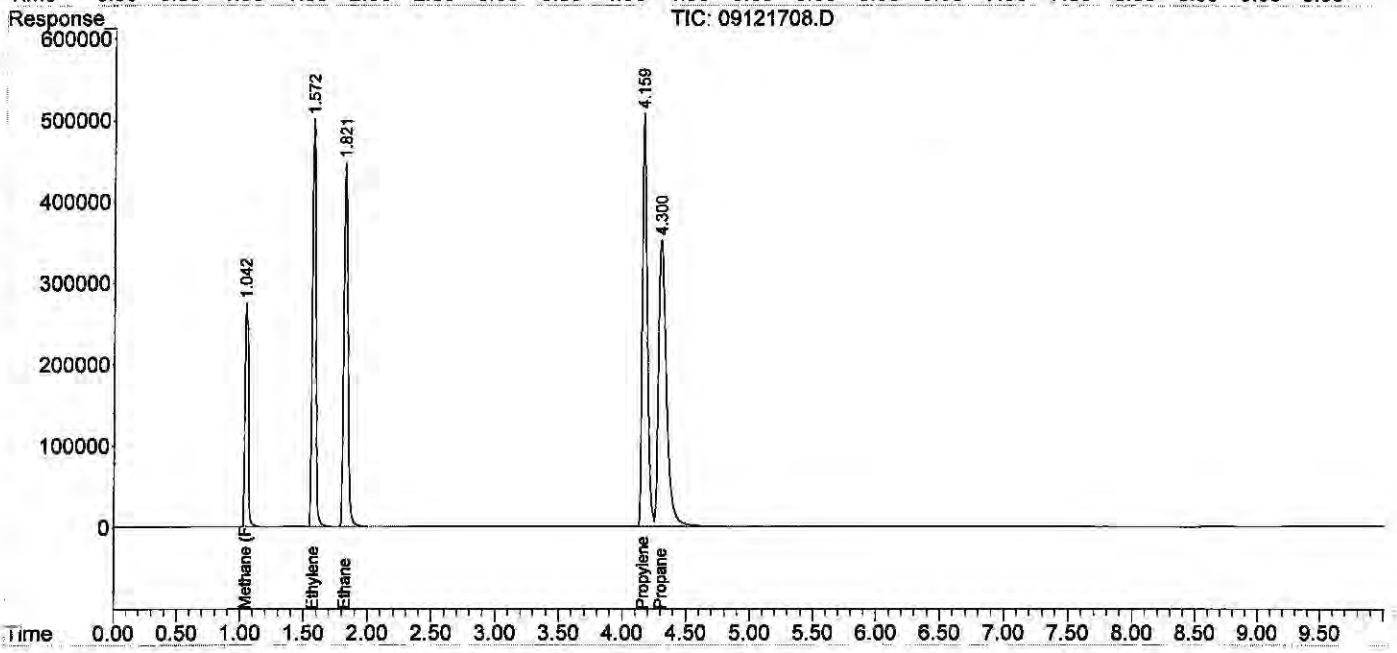
Quantitation Report (QT Reviewed)

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 :





Quantitation Report (QT Reviewed)

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 :

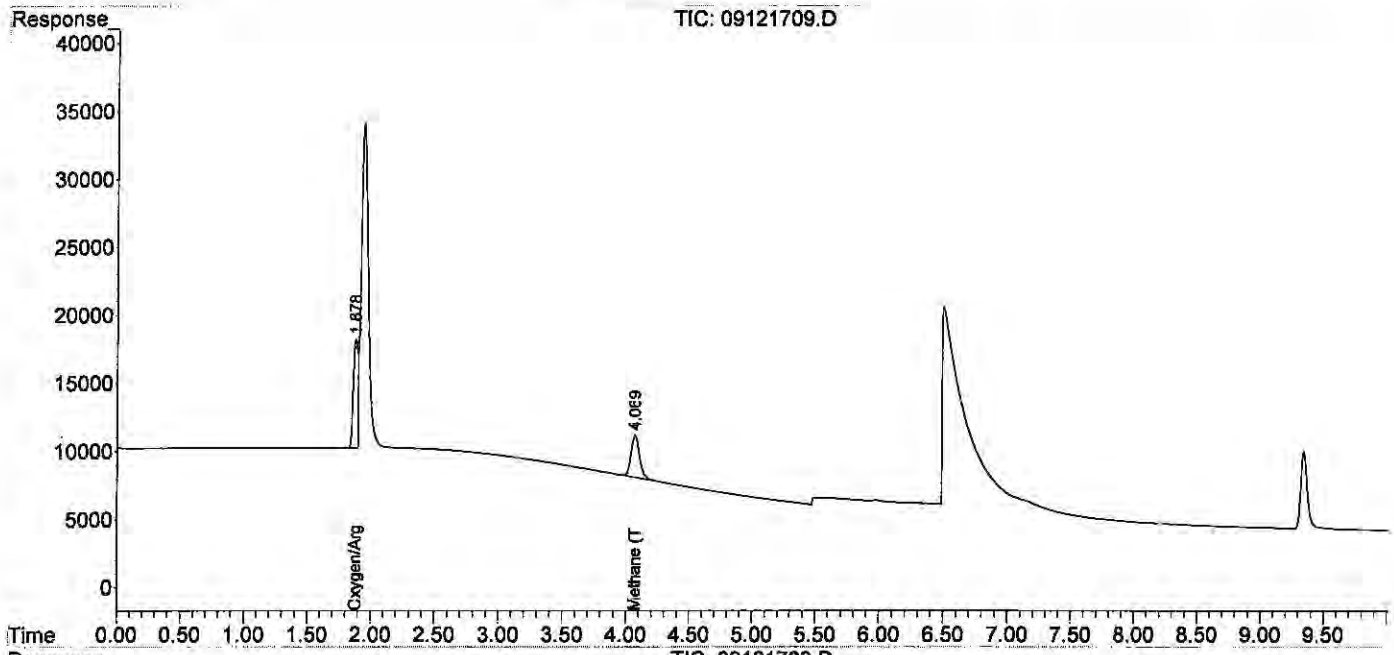
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	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

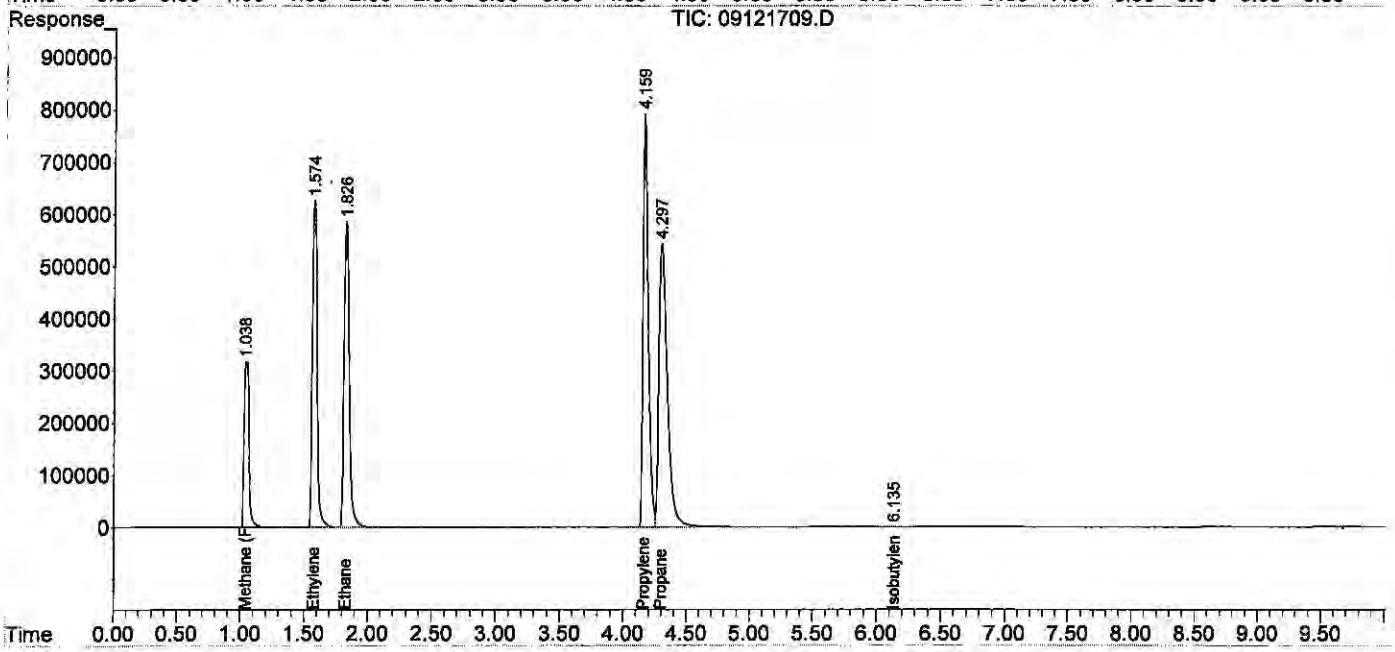
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :





Quantitation Report (QT Reviewed)

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 :

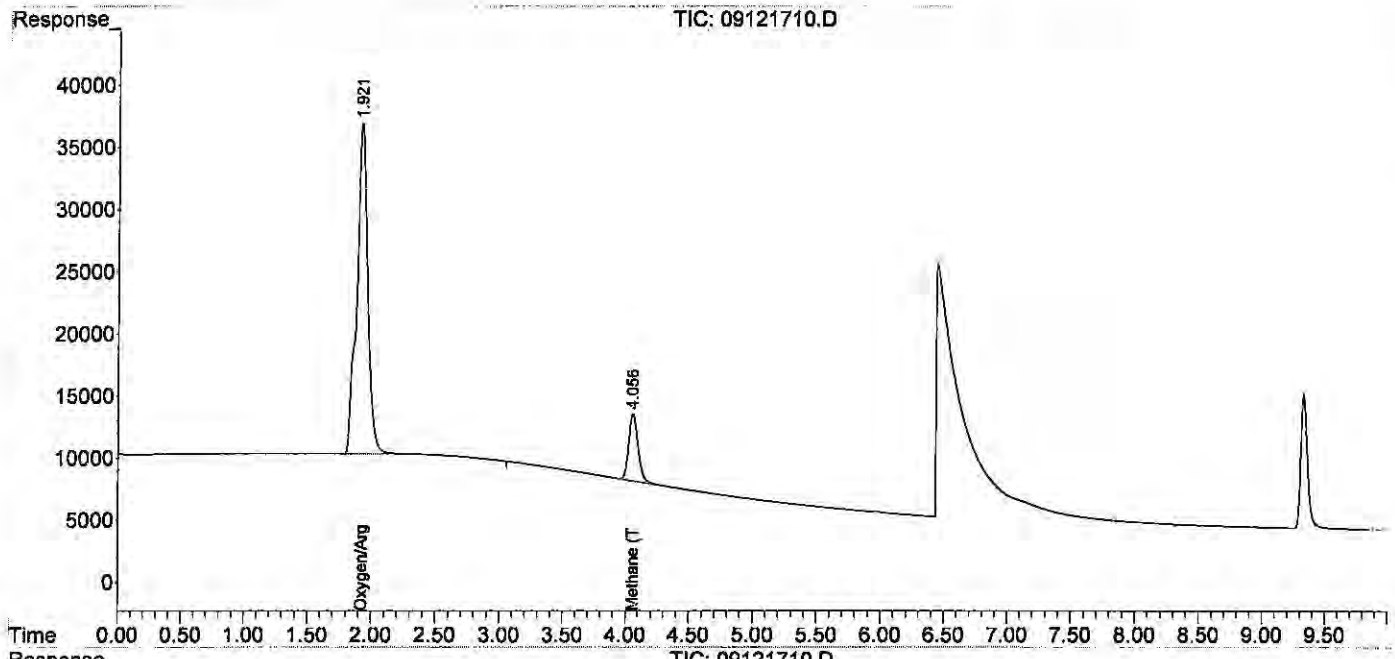
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	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	

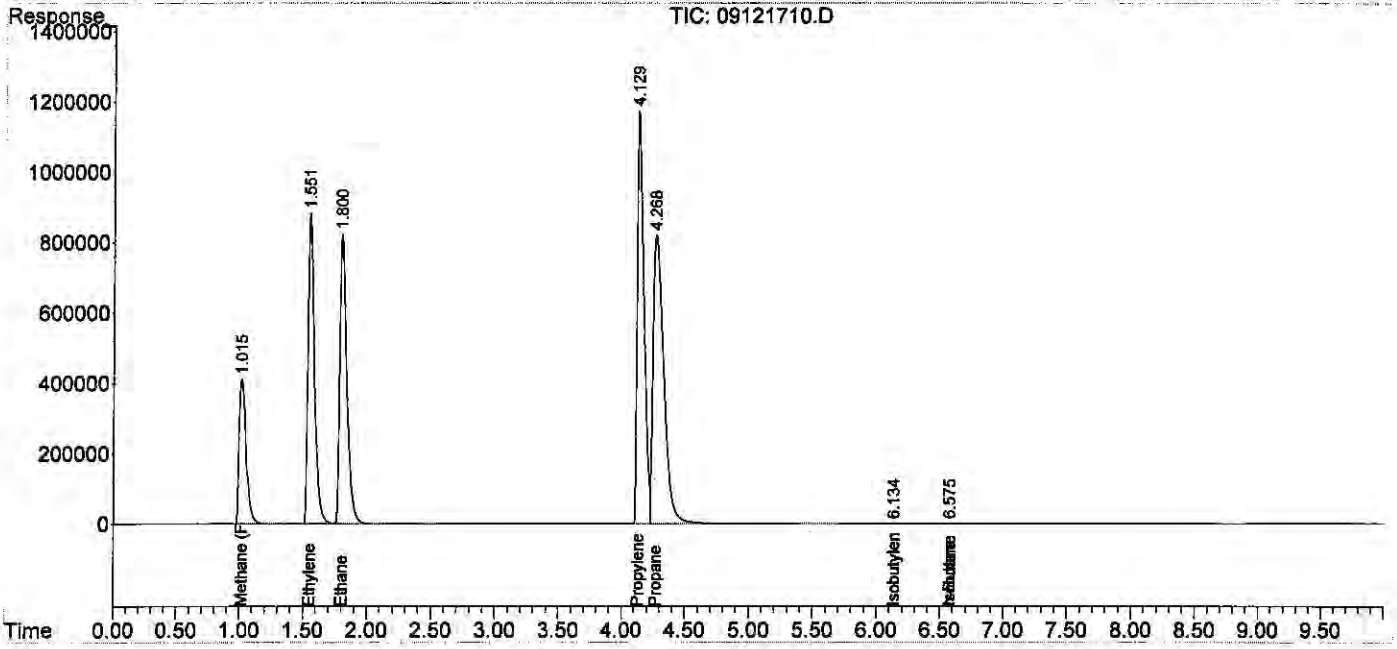
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



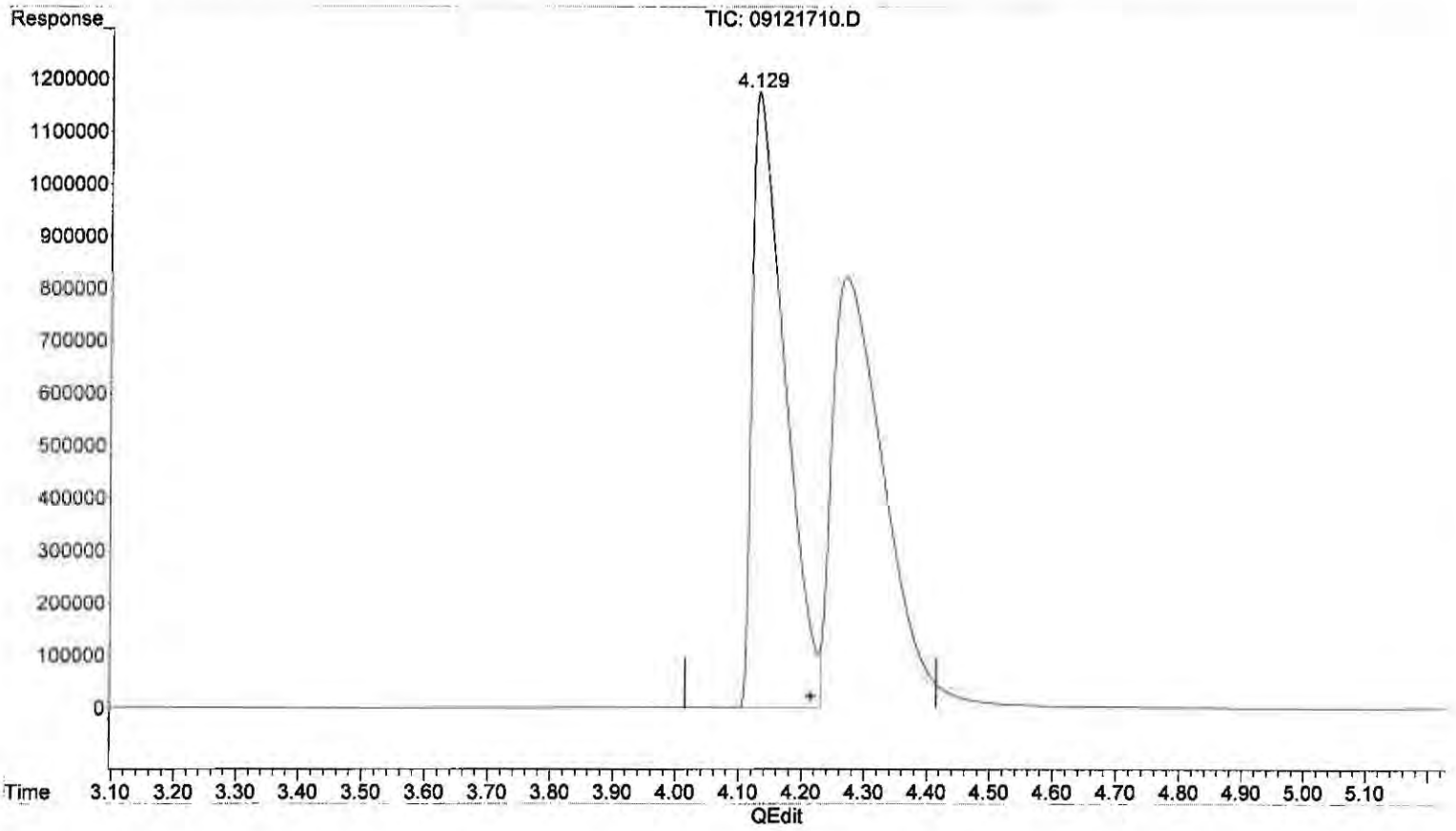


Quantitation Report (Qedit)

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

Quantitation Report (QT Reviewed)

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 :

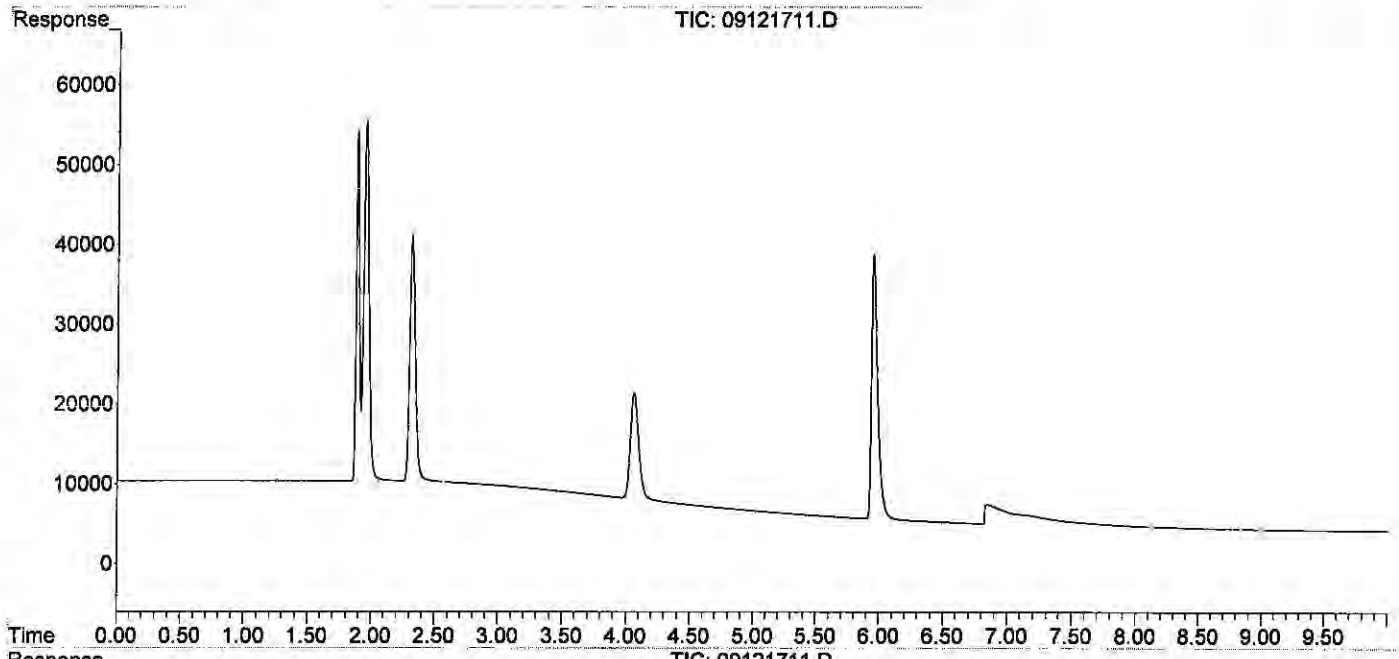
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	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	

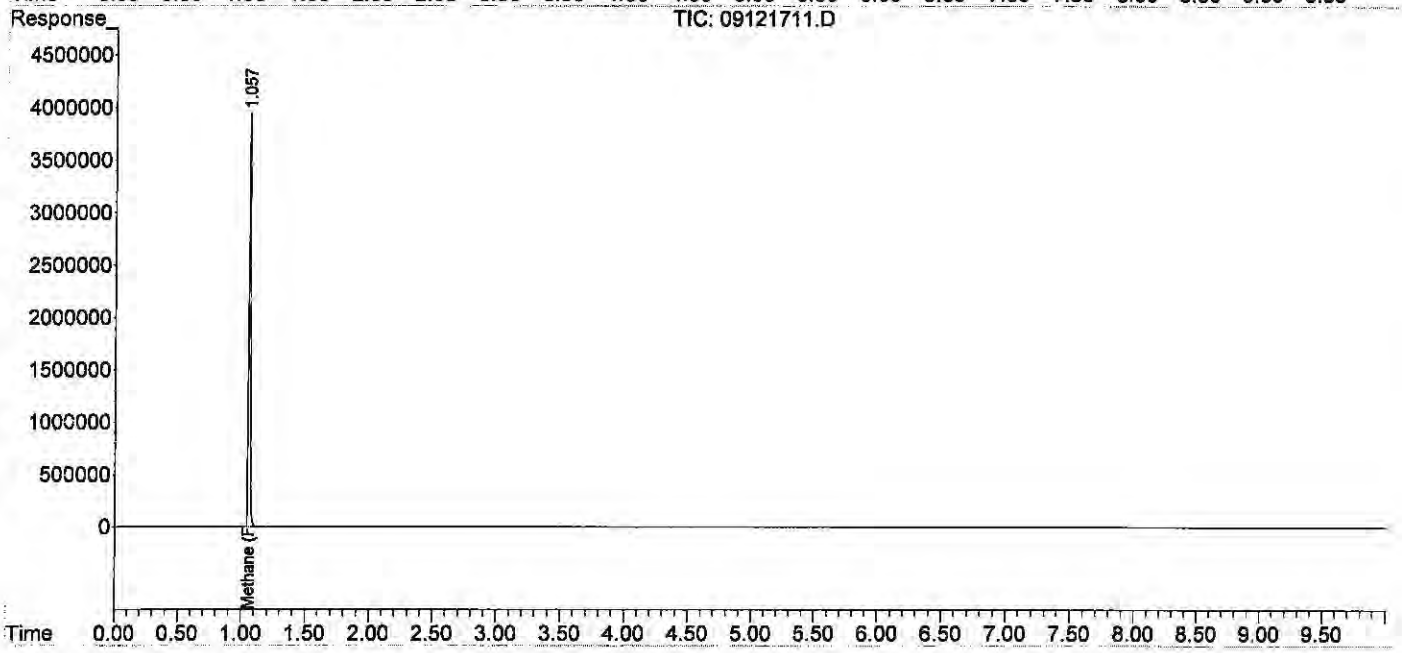
(f)=RT Delta > 1/2 Window (m)=manual int.

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 #1 Info :
Signal #2 Phase:
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 :

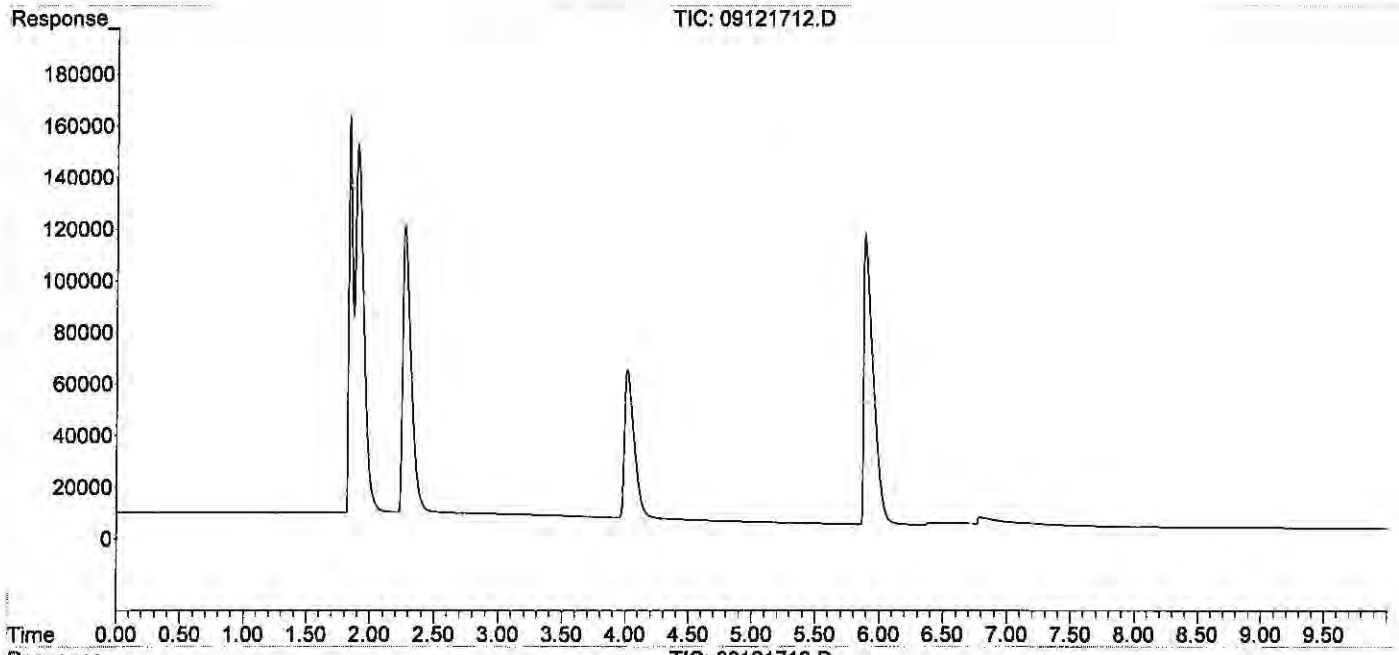
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	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	

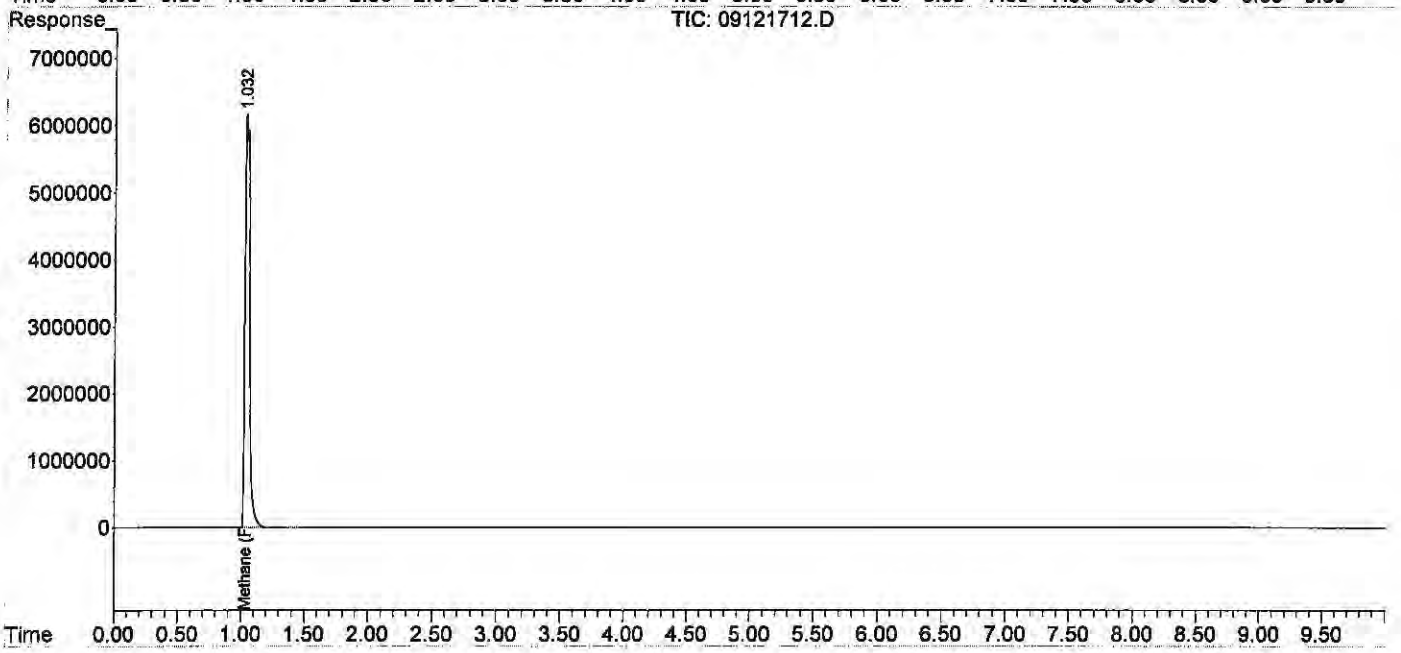
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :





Quantitation Report (QT Reviewed)

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	1.50 101.1
7)	Ethylene	1.598	24153	1.443	ppm	1.50 96.2
8)	Ethane	1.850	24488	1.445	ppm	1.50 96.3
9)	Propylene	4.221	36004	1.537	ppm	1.50 102.5
10)	Propane	4.350	37738	1.517	ppm	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	

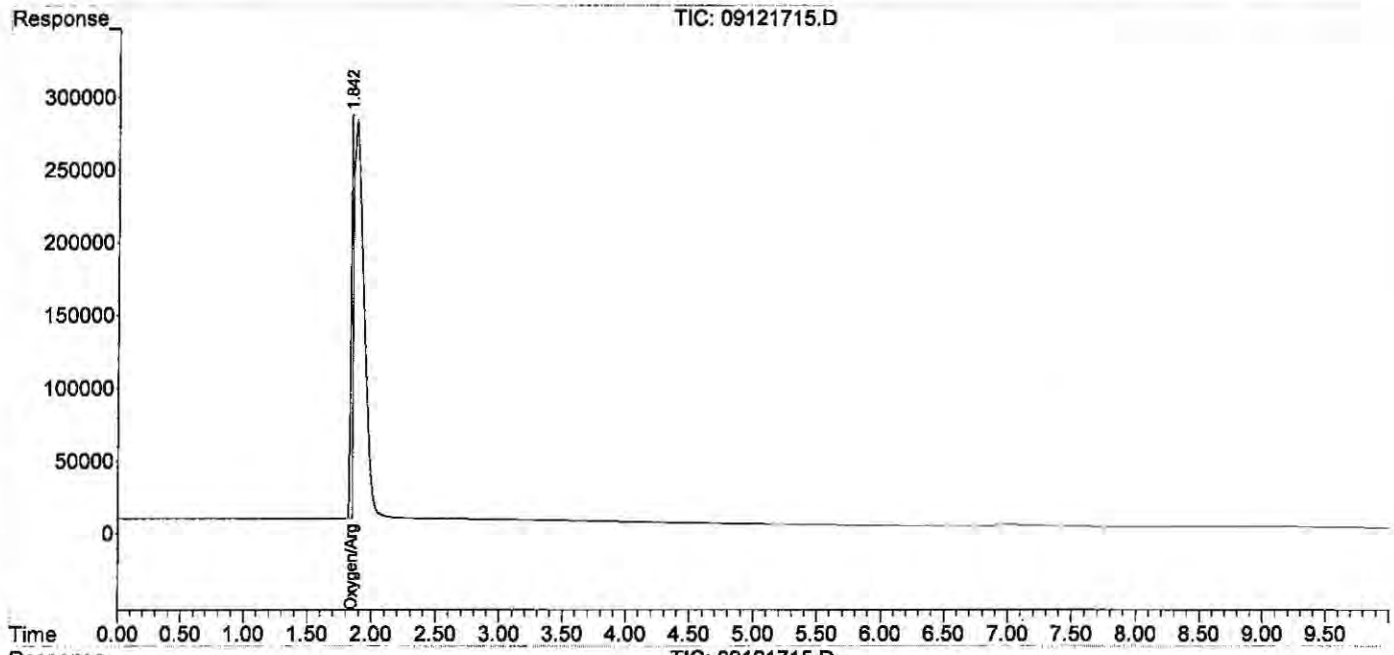
(f)=RT Delta > 1/2 Window (m)=manual int.

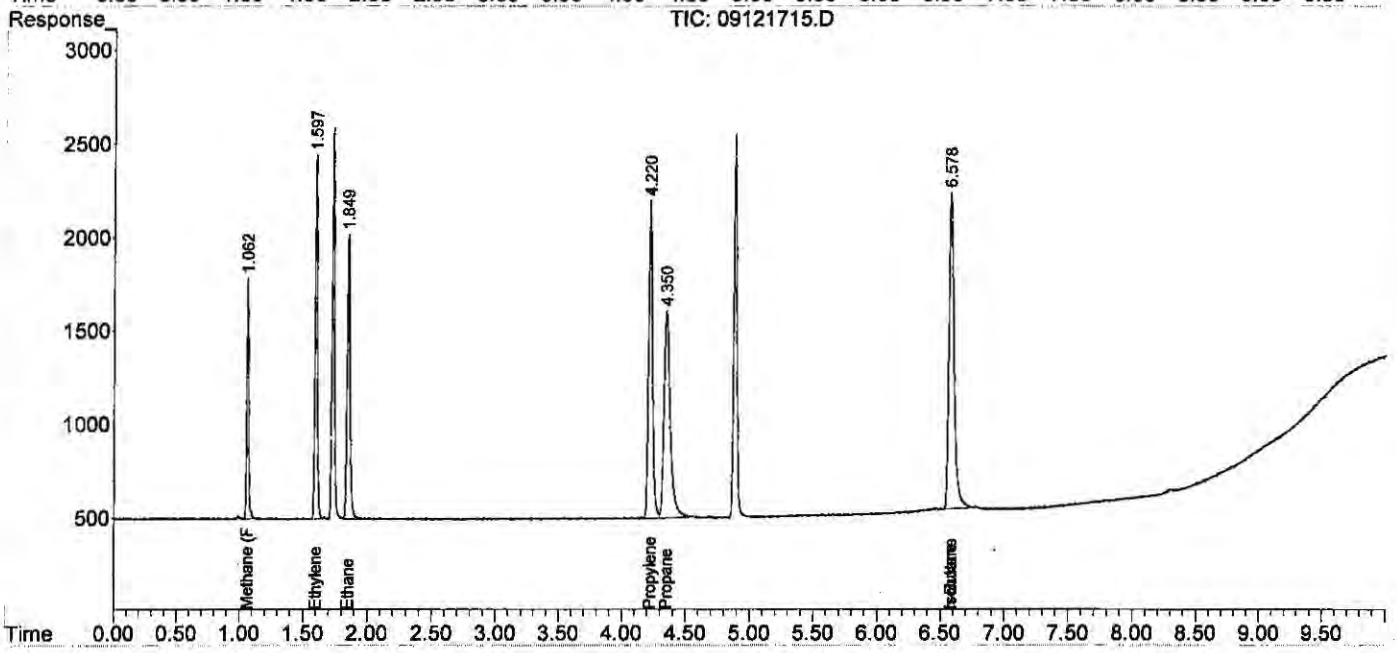
9/14/2017

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: P2003597
Sample Vol. (ml) : 32.00 ml
Analyst : LD
Date Analysis : 07/01/20
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	95.229	101.520	101.160
ACTUAL		101.50	100.90	101.40
%Difference		6.2%	0.6%	0.2%
MCS 0.1ml	0.100	0.000	0.000	0.000
RB 0.1ml	0.100	0.131	0.000	0.000
LCS FID 0.1ml	0.100	1.430	1.054	1.201
LCSD FID 0.1ml	0.100	1.417	1.036	1.165
P2003597-001 0.1ml	0.100	1.586	0.000	0.000
P2003597-002 0.1ml	0.100	134.621	1.249	0.000
P2003597-003 0.1ml	0.100	72.858	0.503	0.000
P2003597-004 0.1ml	0.100	718.406	0.000	0.000
P2003597-005 0.1ml	0.100	669.570	0.000	0.000

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	0.000	0.000	0.000
LCS FID 0.1ml	14.300	10.540	12.010
LCSD FID 0.1ml	14.170	10.360	11.650
P2003597-001 0.1ml	15.860	0.000	0.000
P2003597-002 0.1ml	1346.210	12.490	0.000
P2003597-003 0.1ml	728.580	5.030	0.000
P2003597-004 0.1ml	7184.060	0.000	0.000
P2003597-005 0.1ml	6695.700	0.000	0.000

STD S32-05221901	88.197	93.300	92.540
ACTUAL	101.50	100.90	101.40
%Difference	13.1%	7.5%	8.7%

LP 07/01

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012001.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 12:25:59
Operator : LD
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: Jul 01 12:50:08 2020
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

LD 7/01

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

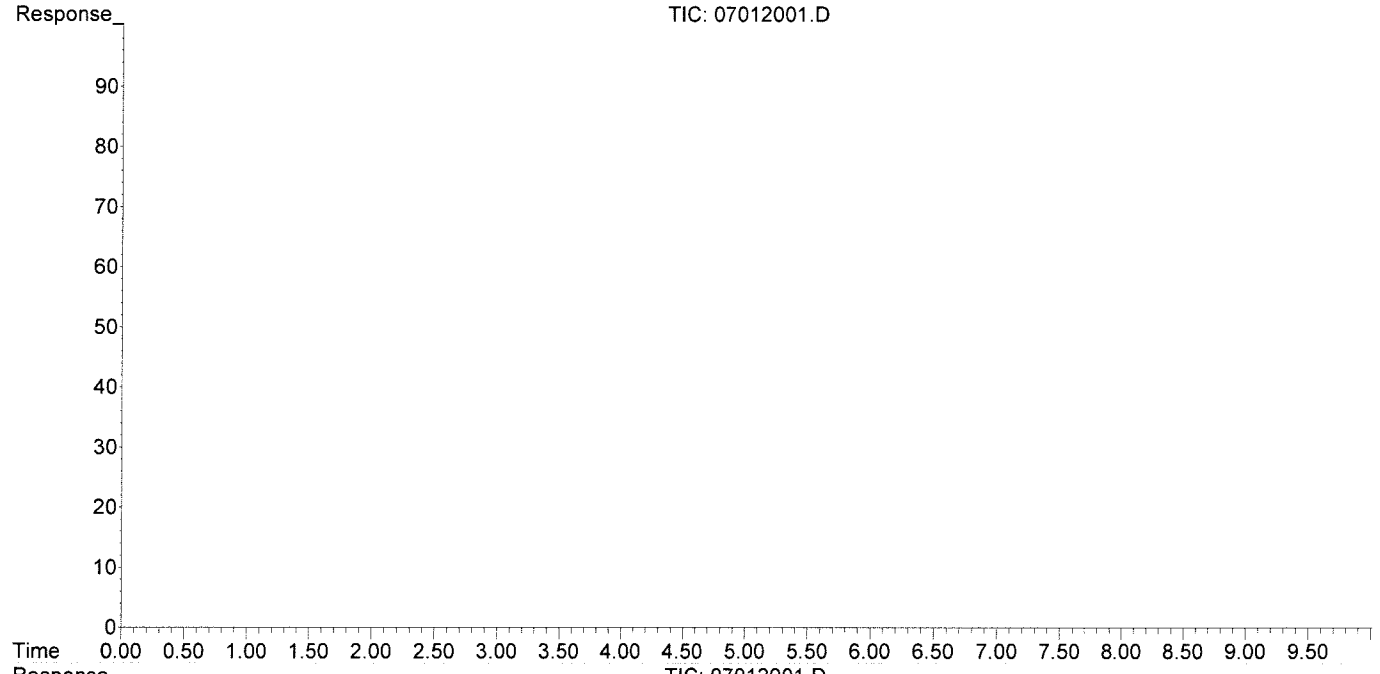
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.094	863792	95.229	ppm
7)	Ethylene	1.657	1698867	101.520	ppm
8)	Ethane	1.920	1714674	101.160	ppm
9)	Propylene	4.305	2500360	106.709	ppm
10)	Propane	4.427	2577356	103.591	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

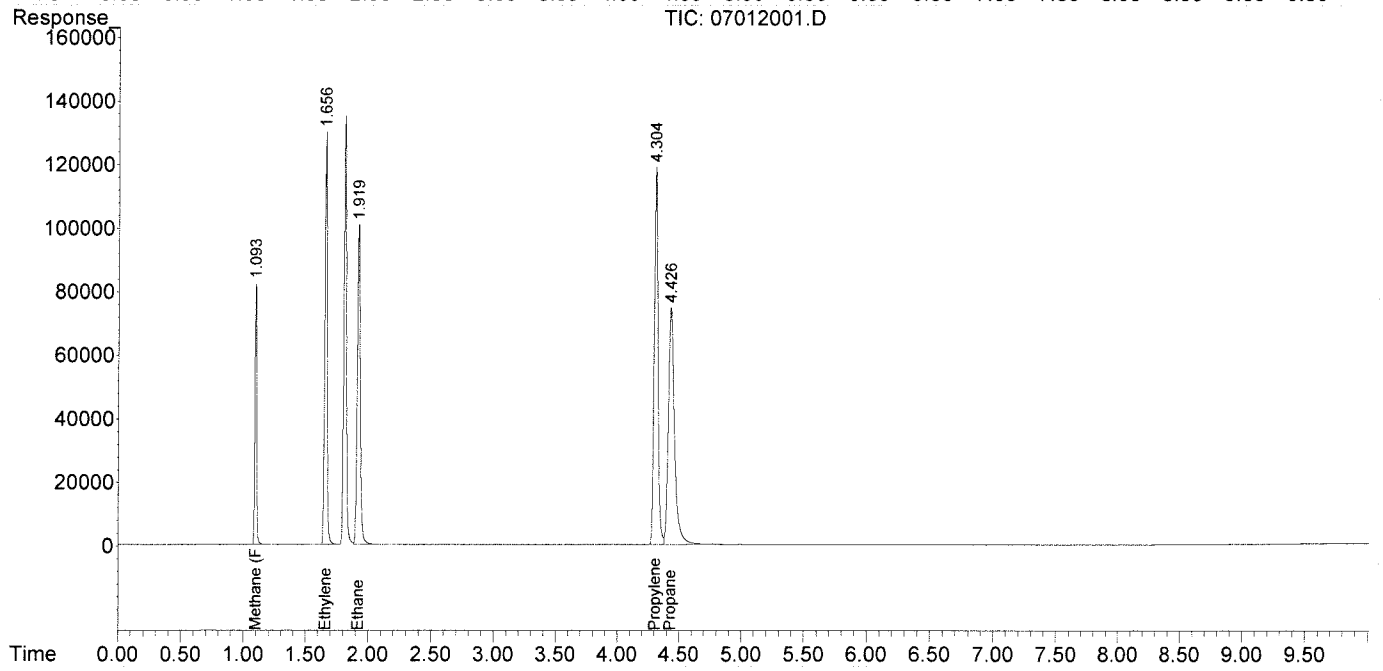
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012001.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 12:25:59
Operator : LD
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: Jul 01 12:50:08 2020
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 : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012015.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 16:56:52
Operator : LD
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: Jul 01 17:17:22 2020
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 :

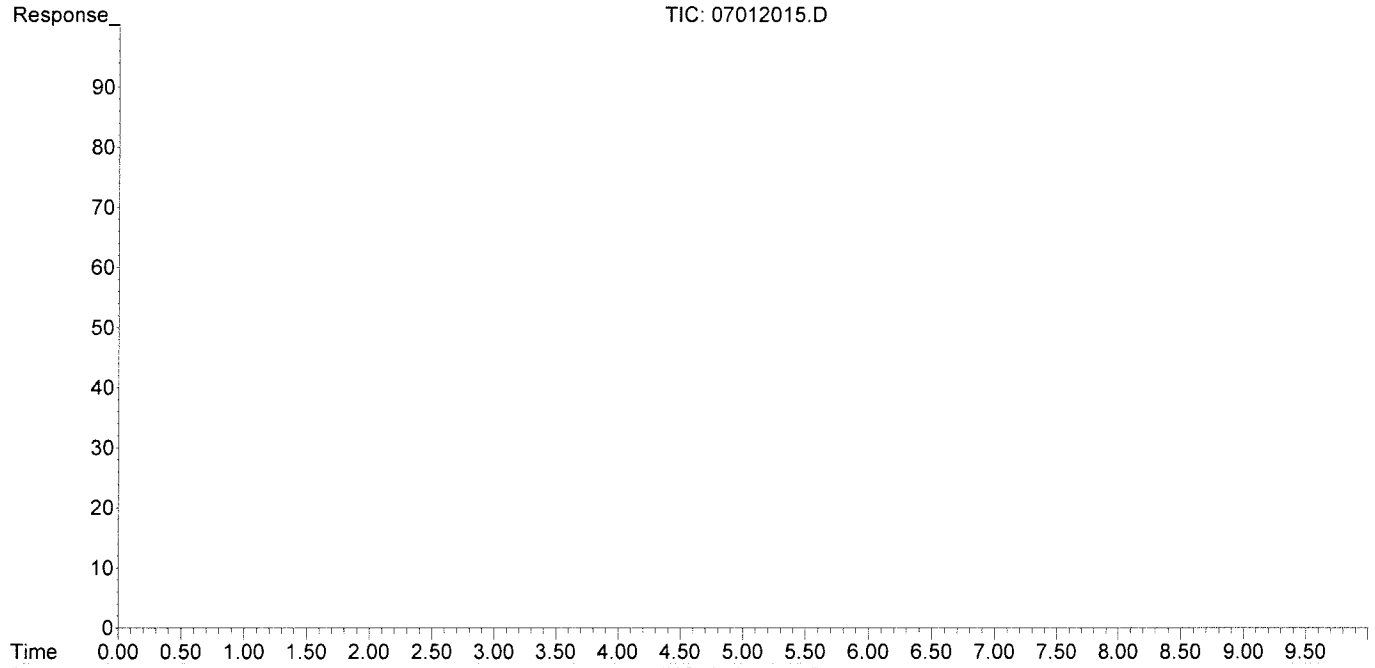
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.100	800006	88.197	ppm
7)	Ethylene	1.666	1561310	93.300	ppm
8)	Ethane	1.929	1568578	92.540	ppm
9)	Propylene	4.305	2269738	96.867	ppm
10)	Propane	4.427	2334081	93.813	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

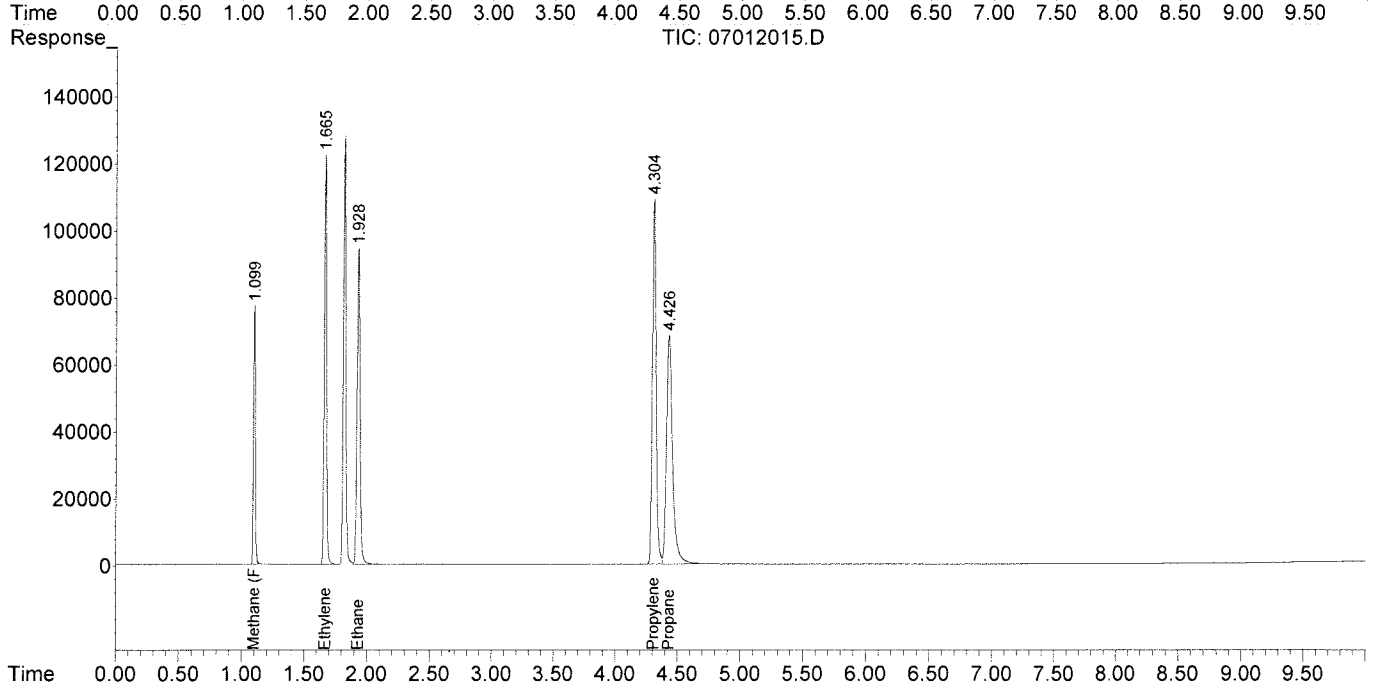
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2020_07\01\
Data File : 07012015.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 01-Jul-2020, 16:56:52
Operator : LD
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: Jul 01 17:17:22 2020
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\2020_07\01\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	01-Jul-20, 12:25:59	07012001.D	STD S32-05221901		LD	RSKBOTH.M	pass
2	01-Jul-20, 12:54:01	07012002.D	RB 0.1ml		LD	RSKBOTH.M	pass
3	01-Jul-20, 13:48:06	07012003.D	MCS 0.1ml		LD	RSKBOTH.M	pass
4	01-Jul-20, 14:01:52	07012004.D	LCS FID 0.1ml		LD	RSKBOTH.M	pass
5	01-Jul-20, 14:21:34	07012005.D	LCSD FID 0.1ml		LD	RSKBOTH.M	pass
6	01-Jul-20, 14:41:02	07012006.D	P2003560-001 0.1ml		LD	RSKBOTH.M	
7	01-Jul-20, 14:54:52	07012007.D	P2003560-002 0.1ml		LD	RSKBOTH.M	
8	01-Jul-20, 15:07:49	07012008.D	P2003560-003 0.1ml		LD	RSKBOTH.M	
9	01-Jul-20, 15:27:11	07012009.D	P2003560-004 0.1ml		LD	RSKBOTH.M	
10	01-Jul-20, 15:43:08	07012010.D	P2003597-001 0.1ml		LD	RSKBOTH.M	
11	01-Jul-20, 15:56:30	07012011.D	P2003597-002 0.1ml		LD	RSKBOTH.M	
12	01-Jul-20, 16:09:40	07012012.D	P2003597-003 0.1ml		LD	RSKBOTH.M	
13	01-Jul-20, 16:22:41	07012013.D	P2003597-004 0.1ml		LD	RSKBOTH.M	
14	01-Jul-20, 16:38:47	07012014.D	P2003597-005 0.1ml		LD	RSKBOTH.M	
15	01-Jul-20, 16:56:52	07012015.D	STD S32-05221901		LD	RSKBOTH.M	pass
16	01-Jul-20, 17:18:36	07012016.D	J2003335-054 0.1ml		LD	RSKBOTH.M	
17	01-Jul-20, 17:34:03	07012017.D	J2003335-055 0.1ml		LD	RSKBOTH.M	
18	01-Jul-20, 17:47:00	07012018.D	J2003335-056 0.1ml		LD	RSKBOTH.M	
19	01-Jul-20, 18:04:34	07012019.D	J2003335-057 0.1ml		LD	RSKBOTH.M	
20	01-Jul-20, 18:17:48	07012020.D	STD S32-05221901		LD	RSKBOTH.M	pass

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Fax: (865) 573-8133

Client: RJ Modashia
ALS Laboratory Group
10450 Stancliff Rd
Suite 210
Houston, TX 77040

Phone: 281-575-2279

Fax:

Identifier: 095RF **Date Rec:** 06/25/2020 **Report Date:** 07/01/2020

Client Project #: NW01312.0150 **Client Project Name:** LHAAP-58

Purchase Order #:

Analysis Requested: CENSUS

Reviewed By:



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10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **ALS Laboratory Group**
Project: LHAAP-58

MI Project Number: **095RF**
Date Received: 06/25/2020

Sample Information

Client Sample ID:		**35AWW19_062420**	**35AWW20_062420**	**LHSMW07_062420**	**35AWW06_062420**	**35AWW23_062420**
Sample Date:		06/24/2020	06/24/2020	06/24/2020	06/24/2020	06/24/2020
Units:		cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		HT	HT	HT	HT	HT
Dechlorinating Bacteria						
Dehalococcoides	*DHC*	**2.00E+00**	**1.15E+05**	**1.09E+03**	**3.50E+00**	**7.65E+02**
tceA Reductase	TCE	<5.00E-01	<5.00E-01	<5.00E-01	**3.00E-01 (J)**	**4.86E+01**
BAV1 Vinyl Chloride Reductase	BVC	<5.00E-01	**1.84E+04**	**9.00E-01**	<6.00E-01	**1.26E+01**
Vinyl Chloride Reductase	VCR	**1.00E-01 (J)**	<5.00E-01	**3.78E+02**	**5.00E-01 (J)**	**1.06E+02**
Dehalobacter spp.	*DHBt*	**1.97E+04**	**3.83E+03**	**4.21E+04**	**1.99E+03**	<5.60E+00

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

Quality Assurance/Quality Control Data

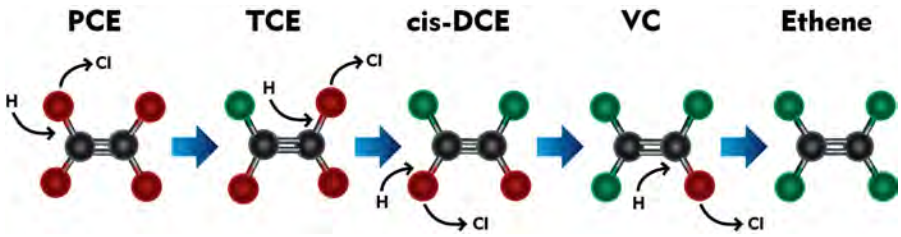
Samples Received **6/25/2020**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	06/25/2020	07/01/2020	0 °C	100%	non-detect	non-detect
BVC	06/25/2020	07/01/2020	0 °C	96%	non-detect	non-detect
TCE	06/25/2020	07/01/2020	0 °C	93%	non-detect	non-detect
VCR	06/25/2020	07/01/2020	0 °C	96%	non-detect	non-detect
DHBt	06/25/2020	07/01/2020	0 °C	101%	non-detect	non-detect

DHC Interpretation

Dehalococcoides 16S rRNA gene (qDHC)

Under anaerobic conditions, tetrachloroethene (PCE) and trichloroethene (TCE) can undergo sequential reductive dechlorination through the daughter products *cis*-dichloroethene (*cis*-DCE) and vinyl chloride to nontoxic ethene (1,2).



While a number of bacterial cultures capable of utilizing PCE and TCE as growth supporting electron acceptors have been isolated (3-7), *Dehalococcoides* spp. may be the most important because they are the only bacterial group that has been isolated to date which is capable of complete reductive dechlorination of PCE to ethene (8). In fact, the presence of *Dehalococcoides* spp. has been associated with complete dechlorination to ethene at sites across North America and Europe (9).

Status	*Dehalococcoides spp.*	Observation
	**≥ 10^4** (cells/mL)	Lu et al. proposed that a concentration of 1 x 10^4 DHC cells/mL could be used as a screening criterion to identify sites where reductive dechlorination will yield a generally useful biodegradation rate (10). Similarly, in an internal study conducted with nearly 1000 groundwater samples obtained from sites across the US, ethene production was observed in approximately 80% of samples in which CENSUS® qDHC results were greater than or equal to 10^4 DHC cells/mL.
	**10^1 to < 10^4** (cells/mL)	When vinyl chloride reductase genes (See DHC functional genes discussion below) are also detected, complete reductive dechlorination of PCE and TCE to ethene may still occur even with moderate DHC concentrations. When the DHC population is below the 10^4 cells/mL criterion proposed by Lu et al. (10), project managers should carefully consider other site-specific data to determine whether subsurface conditions may be limiting reductive dechlorination. For example, the addition of an electron donor may be able to stimulate DHC growth and enhance anaerobic bioremediation.
	**< 10^1** (cells/mL)	DHC concentrations are low suggesting that complete reductive dechlorination of PCE and TCE to ethene is unlikely to occur under existing conditions. Enhanced anaerobic bioremediation options (biostimulation or bioaugmentation) may need to be considered.

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DHC Interpretation

DHC Functional Genes (*tce*A, *bvc*A, *vcr*A)

A "stall" where daughter products *cis*-DCE and vinyl chloride accumulate can occur at PCE- and TCE-impacted sites especially under MNA conditions. The accumulation of vinyl chloride, generally considered more carcinogenic than the parent compounds, is particularly problematic. Although elevated *Dehalococcoides* concentrations correspond to ethene production in numerous studies, the range of chlorinated ethenes metabolized and cometabolized varies among species and strains within the *Dehalococcoides* genus. For example, *Dehalococcoides ethenogenes* str. 195 metabolizes PCE, TCE, and *cis*-DCE and cometabolizes vinyl chloride (8) to produce ethene. Conversely, *Dehalococcoides* sp. CBDB1 utilizes PCE and TCE but does not cometabolize additional chloroethenes (11). Other *Dehalococcoides* strains, such as BAV1, GT and VS, are known to fully dechlorinate cis-DCE and VC to ethene (14,16,19). Quantification of reductive dehalogenase genes is used to more definitively confirm the potential for reductive dechlorination of TCE, cis-DCE, and vinyl chloride (12-15).

Functional Gene	Observation
TCE Reductase	
***tce*A gene**	The *tce*A gene encodes the enzyme responsible for reductive dechlorination of TCE to *cis*-DCE in some strains of *Dehalococcoides*. Absence of *tce*A does not preclude the potential for reductive dechlorination of TCE in the field since the *tce*A gene is not universally distributed among all DHC and is not present in other microorganisms capable of reductive dechlorination of TCE (e.g. *Dehalobacter*). Detection of the *tce*A gene provides an additional line of evidence indicating the potential for dechlorination of TCE.
Vinyl Chloride Reductase	
***bvc*A gene**	The *bvc*A gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of vinyl chloride to ethene by *Dehalococcoides* sp. str. BAV1 (16). Presence of *bvc*A gene indicates the potential for reductive dechlorination of VC to ethene. Absence of both *bvc*A and *vcr*A genes suggests VC may accumulate. An internal study with ~1,000 samples showed ethene production was observed in 80% of the samples that the DHC population was greater than or equal to 10^4 cells/mL. The *bvc*A gene was detected in over 50% of these samples. Van Der Zaan et al (17) noted that the bvcA gene was the only VC reductase gene detected at three of their sites. Alfred Spormann's laboratory at Stanford University (18) reported that the *bvc*A gene was the most abundant and active at the outflow of a PCE fed column study. This section of the column was in the DCE to VC stages of reductive dechlorination thus confirming the importance of the *bvc*A gene for complete reductive dechlorination.
***vcr*A gene**	The *vcr*A gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of *cis*-DCE and vinyl chloride by *Dehalococcoides* sp. strain VS (14). Presence of *vcr*A gene indicates the potential for reductive dechlorination of DCE and/or VC to ethene. Absence of both *bvc*A and *vcr*A genes suggest VC may accumulate. As with the *bvc*A gene, detection of the *vcr*A gene is associated with ethene production in internal studies (67%) and vinyl chloride reduction in independent studies (14, 17).

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DHC Interpretation

Reporting

Microbial Insights can provide a variety of data packages and reporting levels to suit the needs of any project. Data packages range from simple analytical reports with results only to more complex data packages that include a report narrative, analytical results, QC data, and supporting materials including all raw data and chain-of-custody documentation. The figure below shows our standard report and explains the way values are reported.

Microbial Insights, Inc.

2340 Stock Creek Blvd. Rockford, TN 37853-3044
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: Company Name
Project: Your Project Name

MI Project Number: Unique Laboratory Identifier
Date Received: Date Samples Arrived

Sample Information

Client Sample ID:		Sample A	Sample B	Sample C
Sample Date:		00/00/0000	00/00/0000	00/00/0000
Units:		cells/mL	cells/mL	cells/mL
Analyst:		Intials	Intials	Intials
Dechlorinating Bacteria				
Dehalococcoides spp.	DHC	**1.84E+05**	**2.76E+02**	**2.28E+01 (J)**
Functional Genes				
tceA Reductase	TCE	**6.00E+01**	**3.23E+01**	<4.00E-01
bvcA Reductase	BVC	**1.17E+04**	**1.81E+01**	<4.00E-01
vcrA Reducatase	VCR	**8.42E+04**	**1.74E+02**	<4.00E-01

"J" value
Result is an estimated value. This data qualifier (flag) is used when the target gene is detected but at a concentration or abundance below the practical quantification limit (PQL).

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

< value
The target gene was not detected at the limit of quantitation (LOQ) reported for that sample.

"I" value
QA Procedure indicated that the sample may have exhibited PCR inhibition. Although relatively rare, PCR inhibition can occur due to the presence of metals or humic acids at high concentrations in the sample.

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Quality Assurance

Microbial Insights' comprehensive Quality Assurance (QA) Program is the foundation of all laboratory analyses, ensuring that our clients receive high-quality analytical services that are timely, reliable, and meet their intended purpose in a cost effective manner. MI is committed to providing quality data that surpasses regulatory and industry standards, thus enabling the client to make well-informed decisions. MI maintains strict standard operating procedures and QA/QC measures throughout all of the analyses offered. The following Table details specific QA/QC procedures that are used for CENSUS.

QA/QC	Description
Date of Extraction	DNA and RNA extractions are performed the day the samples are received by MI to minimize the possibility of any changes to the microbial community prior to analysis.
Laboratory Method Blanks	An extraction blank (no sample added) is processed alongside each set of field samples from DNA extraction through CENSUS® analysis to ensure that cross contamination has not occurred. Although MI has never experienced this issue, the detection of the CENSUS® target (e.g. *Dehalococcoides*) in an extraction blank is direct evidence of cross contamination with a sample or contamination of a reagent and would invalidate the results. If this were to occur, MI would re-extract the sample. If not possible to re-extract, MI would contact the client immediately and notate it on the laboratory report.
Laboratory Control Samples (LCS)	A laboratory control sample (LCS) or positive control (target DNA) is included with each CENSUS® plate to confirm amplification and as a continuing calibration check.
Negative Controls	A negative control (no DNA) is included with each CENSUS plate to ensure that cross contamination has not occurred during amplification. As with the extraction blank, detection of CENSUS target (e.g. DHC) in a negative control is direct evidence of contamination and would invalidate the results. If this were to occur, MI would rerun the analysis.

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How to Retrieve and Use Estimated Percentile Ranks from the Microbial Insights Database

The MI Database

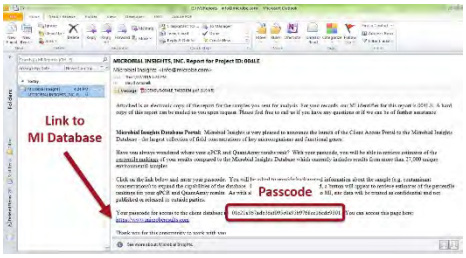
The Microbial Insights Database is the largest collection of field concentrations of key microorganisms and functional genes currently containing qPCR and QuantArray results for more than 40,000 unique groundwater, soil, and sediment samples from all 50 states and 33 countries worldwide.

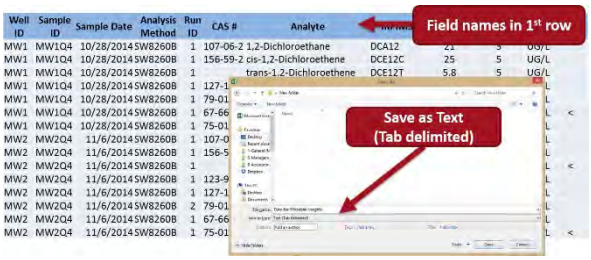
Is that low, medium or high?

In practice, biodegradation depends not just on the presence but the actual concentrations of the contaminant degrading microorganisms. The estimated percentile ranks retrieved from the MI Database answer the question "Is that low, medium or high?" by comparing your results to those of the literally thousands of other environmental samples submitted to MI for analysis over the last 20+ years.

Retrieving Estimated Percentile Ranks

With your report, you were emailed a passcode and link enabling you to login to the Client Portal. Just enter basic information about the sample (e.g. contaminant concentrations) to aid in understanding the links between environmental conditions and microbial populations and you can retrieve estimates of the percentile ranks of your results based on those compiled in the MI database at no additional charge.





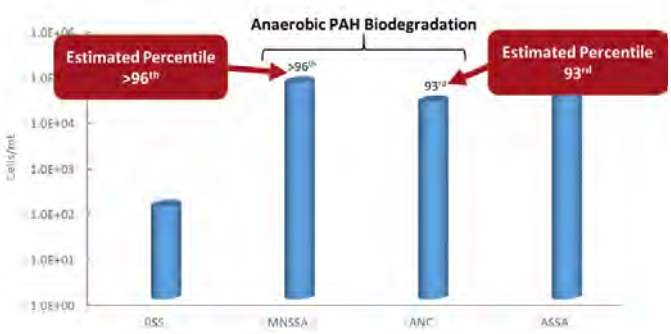
All site specific data will be treated as confidential and uploading is easy.

You can even upload chemical and geochemical data from EDDs. Just save as a Tab Delimited text file.

Example - Using Estimated Percentile for MNA Assessment at an MGP Site

CENSUS® qPCR was performed to quantify anaerobic naphthalene carboxylase (ANC) and naphthyl-2-methylsuccinate synthase (MNSSA) to assess anaerobic biodegradation of naphthalene and methyl-naphthalene under existing site conditions.

- Not only were ANC and MNSSA genes detected, but these functional genes responsible for anaerobic biodegradation of PAHs were present at concentrations "far better than average" based on the estimated percentile ranks.
- Demonstrating high concentrations of ANC and MNSSA gave an additional line of evidence indicating growth substantial populations of anaerobic PAH degraders and suggested a greater probability that monitored natural attenuation (MNA) will be successful.



How to Use Estimated Percentile Ranks from the Microbial Insights Database

The MI Database and Client Portal

The Microbial Insights Database is the largest collection of field concentrations of key microorganisms and functional genes currently containing qPCR and QuantArray results for more than 32,000 unique groundwater, soil, and sediment samples from all 50 states and 33 countries worldwide. Driven by field samples, the database reflects the impacts of common contaminants, geochemical conditions, and site management practices on critical microbial populations.

With your report, you received a passcode enabling you to retrieve estimates of the percentile ranks of your results based on those compiled in the MI database at no additional charge. When accessing the database, you will be asked to provide background information about the sample (e.g. contaminant concentrations) to aid in understanding the links between environmental conditions and microbial populations. As with all client information provided to MI, site specific data will be treated as confidential.

Is that low, medium or high?

In practice, biodegradation depends not just on the presence but the actual concentrations of the contaminant degrading microorganisms. Simply put, qPCR and QuantArray results demonstrating high concentrations of target microorganisms or functional genes suggest in situ selection, enrichment and growth of those specific contaminant degraders and therefore a greater probability that monitored natural attenuation (MNA) or bioremediation will be successful.

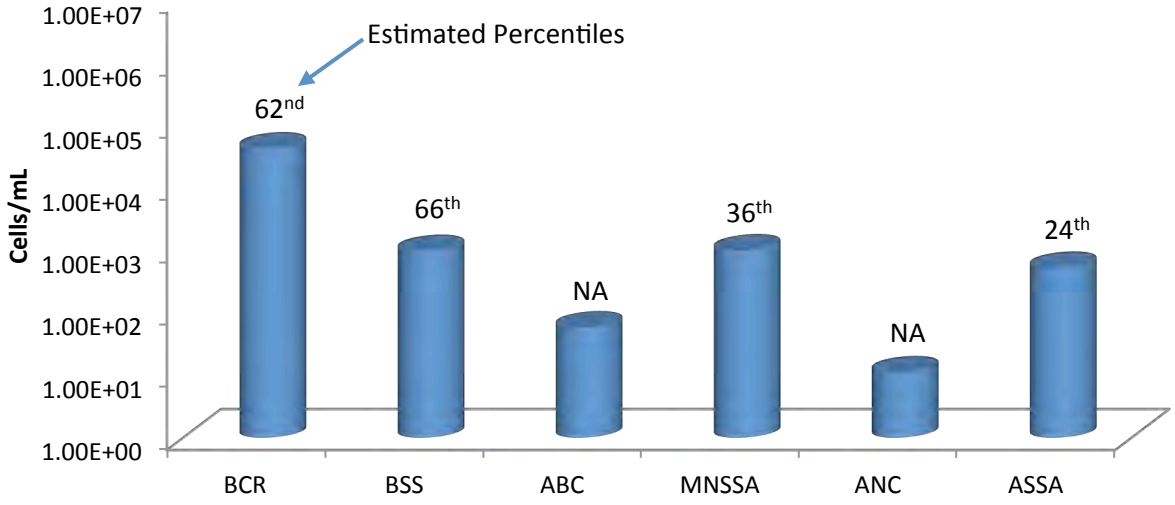
Is that a low, medium, or high concentration? The estimated percentile ranks retrieved from the MI Database answer that question by comparing your qPCR and QuantArray results to those of the literally thousands of other environmental samples submitted to MI for analysis over the last 20+ years.

Using the Estimated Percentile - Interpretation Examples

MNA Assessment – Petroleum Hydrocarbon Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between samples obtained from background and impacted wells. The estimated percentile ranks however provide an additional avenue for comparison and evaluation of treatment options as shown below.

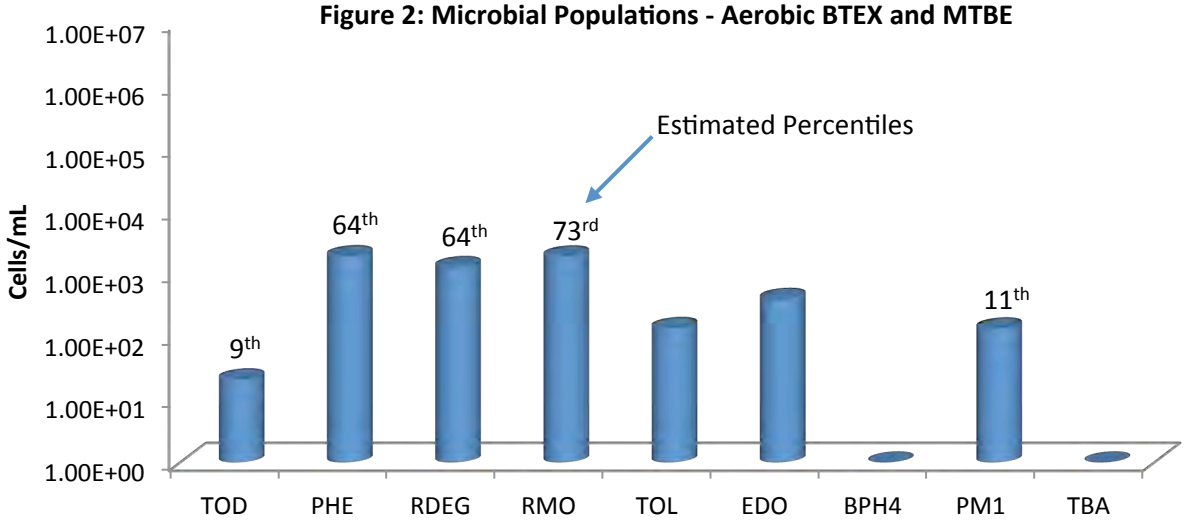
Figure 1: Microbial Populations - Anaerobic BTEX and PAHs



Anaerobic BTEX and PAH Biodegradation (Figure 1):

- With moderate concentrations of functional genes involved in anaerobic BTEX metabolism detected, the QuantArray-Petro® results were encouraging in terms of evaluating biodegradation potential under existing site conditions.
- More specifically, benzylsuccinate synthase (BSS) was detected on the order of nearly 10^3 cells/mL indicating the presence of a substantial population (66^{th} percentile) capable of anaerobic biodegradation of toluene and other alkyl substituted benzenes.
- Naphthyl-2-methylsuccinate synthase (MNSSA) and alkylsuccinate synthase (ASSA) genes were also detected indicating the potential for anaerobic biodegradation of 2-methylnaphthalene and normal alkanes.
- The concentration of MNSSA genes would be considered modest with an estimated percentile of 36^{th}.
- While the percentile rank for MNSSA would be "below average", a number of additional factors should be considered.
    - First, anaerobic hydrocarbon degraders are less prevalent than aerobic BTEX degraders and overall detection frequencies for many genes involved in anaerobic hydrocarbon biodegradation are less than 50%.
    - Therefore, the detection of genes like BSS, MNSSA, ASSA, anaerobic benzene carboxylase (ABC), and anaerobic naphthalene carboxylase (ANC) even at low concentrations is certainly noteworthy and inherently "better than average".
    - The estimated percentiles for all assays are based only on samples where the concentration of the target gene was greater than the practical quantitation limit (PQL).
    - For less commonly detected targets like many of the genes involved in anaerobic hydrocarbon biodegradation this is an especially important consideration.
    - Excluding samples where a gene target is below the PQL ensured that the median concentrations of less commonly detected targets would not be unduly biased low by the fact that the gene is not detected in most samples.
- Anaerobic benzene carboxylase (ABC) and naphthalene carboxylase (ANC) genes were also detected indicating the presence of bacterial populations capable of anaerobic biodegradation of benzene and naphthalene.
- For newly identified genes like ABC and ANC, estimated percentile ranks are not yet available due to the limited number of field samples that have been analyzed to date.
- However, like MNSSA and other genes involved in anaerobic hydrocarbon biodegradation, ABC and ANC detection frequencies are relatively low so the detection of these genes even at low concentrations should be considered when evaluating biodegradation potential under existing site conditions.

Figure 2: Microbial Populations - Aerobic BTEX and MTBE



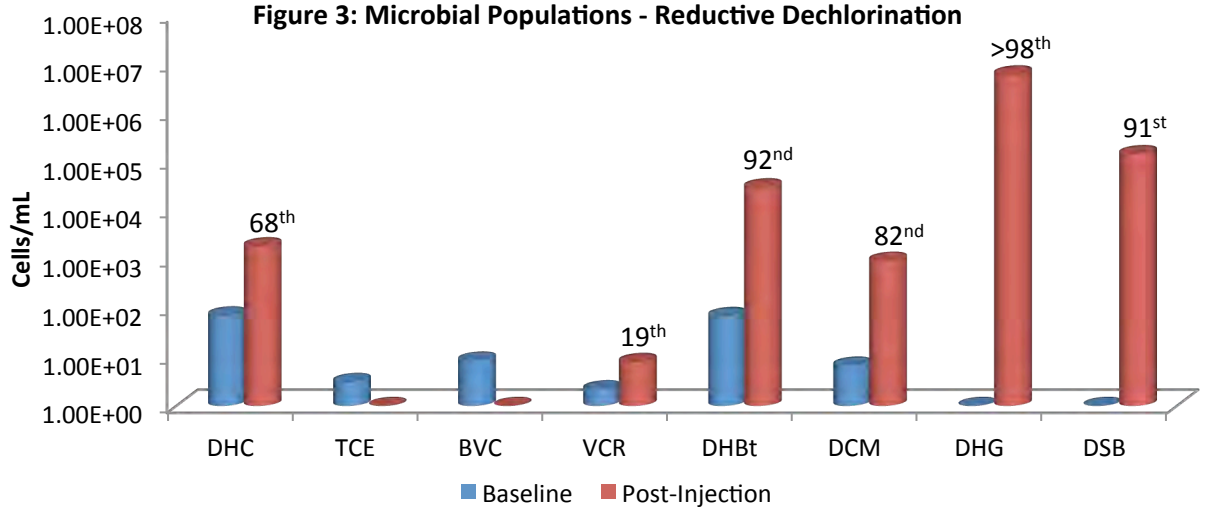
Aerobic BTEX and MTBE Biodegradation (Figure 2):

- With growing evidence that aromatic oxygenases function at low dissolved oxygen concentrations, aerobic BTEX biodegradation pathways should also be evaluated when considering MNA.
- Again, the QuantArray-Petro results were encouraging – genes encoding the first step in multiple pathways for aerobic BTEX biodegradation were detected indicating the presence of a diverse population of aerobic BTEX degraders.
- However, aerobic BTEX degraders are often considered ubiquitous. Therefore answering the question "Is that low, medium or high?" becomes especially important when evaluating aerobic BTEX biodegradation at petroleum hydrocarbon sites.
- In this case, the estimated percentile ranks of the concentrations of toluene/benzene monooxygenase (RMO and RDEG) and phenol hydroxylase (PHE) genes ranged from the 64th to 73rd percentile.
- In other words, the concentrations of RMO, RDEG, and PHE detected in this groundwater sample were greater than the concentrations detected in 64% to 73% of all other groundwater samples where these genes were analyzed and detected above the PQL.
- Aerobic BTEX degraders are common in the environment, but in this sample concentrations of toluene/benzene monooxygenase genes could be viewed as "better than average" when compared to the MI Database.

Biostimulation – Chlorinated Solvent Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between baseline and post-injection monitoring events as shown below (Figure 3). The estimated percentile ranks however provide an additional avenue for comparison and evaluation of remedy performance.

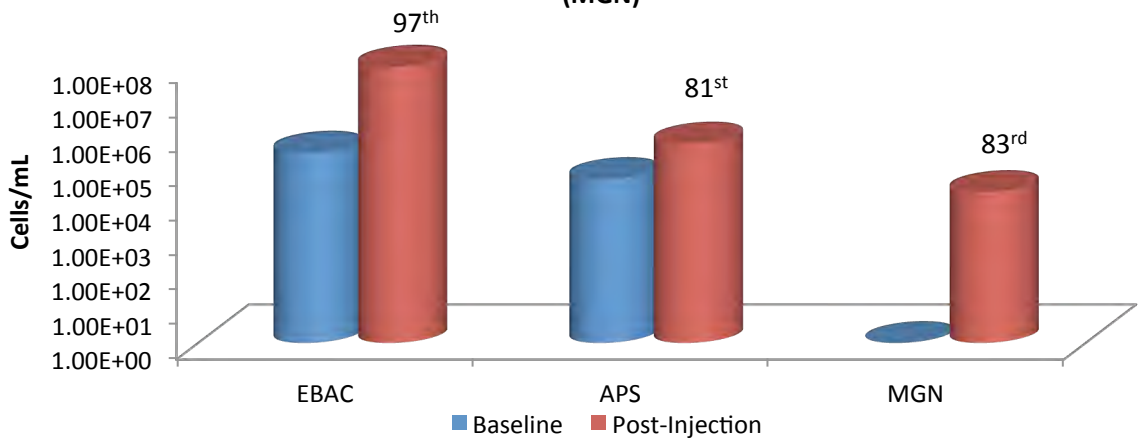
Figure 3: Microbial Populations - Reductive Dechlorination



- During the baseline groundwater sampling event, *Dehalococcoides* and vinyl chloride reductase genes were detected indicating the potential for complete reductive dechlorination of PCE and TCE to ethene.
- However, the *Dehalococcoides* concentration was well below the 10^4 cells/mL recommended by Lu et al. (2006) for generally effective rates of reductive dechlorination.
- Based on qPCR results as well as traditional groundwater monitoring, biostimulation with electron donor addition was selected as the site management plan.
- By the first monitoring event after injection, populations of halorespiring bacteria had increased substantially in response to electron donor addition.
    - *Dehalobacter* populations increased by more than two orders of magnitude to post-injection concentrations greater than 10^4 cells/mL (92^{nd} percentile).
    - *Dehalogenimonas* (10^6 cells/mL) and *Desulfitobacterium* (10^5 cells/mL) which had not been detected prior electron donor addition were present at concentrations greater than observed in over 90% of other groundwater samples where these halorespiring bacteria were detected.
- After injection, *Dehalococcoides* populations increased by more than an order of magnitude to a concentration of over 10^3 cells/mL (68^{th} percentile) demonstrating growth of this key group of halorespiring bacteria.
- Despite a substantial increase and a "better than average" concentration, the *Dehalococcoides* population was still below the 10^4 cells/mL threshold and vinyl chloride reductase gene copies were low (19^{th} percentile).
    - In terms of electron donors and acceptors, the metabolic capabilities of *Dehalococcoides* are rather specialized (hydrogen utilizing obligate halorespiring bacteria) so the median concentration is low. With a low median concentration across the database, a "better than average" *Dehalococcoides* concentration in a given sample may not exceed the 10^4 cells/mL threshold established for effective reductive dechlorination (Lu et al. 2006) and ethene production (Microbial Insights, unpublished data).

- In this case, the initial growth of *Dehalococcoides* was substantial but may have been somewhat hindered by competition with sulfate reducing bacteria (Figure 4 below).
    - The baseline population of sulfate reducing bacteria was moderate (10^4 cells/mL; 63rd percentile). Consistent with an observed decreased in dissolved sulfate concentrations, populations of sulfate reducing bacteria increased and were detected at a relatively high concentration (81st percentile) after electron donor addition.
    - After injection, methanogen populations also increased to a relatively high concentration (83rd percentile) suggesting generation of methanogenic conditions.
- With sulfate depletion and generation of highly anaerobic conditions more conducive to reductive dechlorination, *Dehalococcoides* populations may continue to increase and exceed the 10^4 *Dehalococcoides* cells/mL threshold in subsequent monitoring events.
- Overall, QuantArray analysis conclusively demonstrated that electron donor addition stimulated growth of halorespiring bacteria with the estimated percentiles retrieved from the MI Database providing the "low, medium or high" perspective to the observed changes in microbial populations.

Figure 4: Total Bacteria (EBAC), Sulfate Reducering Bacteria (APS) and Methanogens (MGN)



References

Lu, X., J.T. Wilson, and D.H. Kampbell. 2006. Relationship between *Dehalococcoides* DNA in ground water and rates of reductive dechlorination at field scale. *Water Research* 40 no. 16: 3131-3140.

REPORT TO:
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Project Manager: Kim Nemmers
Project Name: LHAAP
Project No.: NW01312.0150

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Please Check One:
☐ More samples to follow
☒ No Additional Samples

Report Type: ☒ Standard (default) ☐ Microbial Insights Level III raw data(15% surcharge) ☐ Microbial Insights Level IV (25% surcharge) ☐ Comprehensive Interpretive(15%) ☐ Historical Interpretive (30%)
EDD type: ☐ Microbial Insights Standard (default) ☐ All other available EDDs (5% surcharge) Specify EDD Type:

Please contact us with any questions about the analyses or filling out the COC at (865) 573-8188 (9:00 am to 5:00 pm EST, M-F). After hours email: customerservice@microbe.com

Sample Information					Analyses					CENSUS: Please select the target organism/gene																							
MI ID (Laboratory Use Only)	Sample Name	Date Sampled	Time Sampled	Matrix	PLFA	DGGE+3ID	DGGE+5ID	QuantArray Chlor	QuantArray Petro	DHC (Dehalococcoides)	DHC Functional genes (vcr, tce, ver)	DHBt (Dehalobacter)	DSM (Desulfuromonas)	DSB (Desulfitobacterium)	EBAC (Total)	SRB Sulfate Reducing Bacteria-APS)	MGN (Methanogens)	MOB (Methanotrophs)	SMMO	DNF (Denitrifiers-nirS and nirK)	AOB (ammonia oxidizing bacteria)	PM1 (MTBE aerobic)	RMO (Toluene Monooxygenase)	RDEG (Toluene Monooxygenase)	PHE (Phenol Hydroxylase)	NAH (Napthalene-aerobic)	BSSA (Toluene/Xylene-Anaerobic)	add. qPCR:	add. qPCR:	RNA (Expression Option)*	Other:	Other:	Other:
095RF1	35AWW19-062420	6/24/20	0830	WG							X	X																					
2	35AWW20-062420	6/24/20	0925	WG							X	X																					
3	LHSMW07-062420	6/24/20	1015	WG							X	X																					
4	35AWW06-062420	6/24/20	1105	WG							X	X																					
5	35AWW23-062420	6/24/20	1200	WG							X	X																					

Relinquished by: Sean Beesinger 6/24/20 1430
Received by: Date 6/25/2020 930

It is vital that chain of custody is filled out correctly & that all relative information is provided.
Failure to provide sufficient and/or correct information regarding reporting, invoicing & analyses requested information may result in delays for which MI will not be liable.

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July 09, 2020

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS20061390**

Laboratory Results for: **LHAAP-58**

Dear Marcia Olive,

ALS Environmental received 11 sample(s) on Jun 26, 2020 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: DAYNA.FISHER
RJ Modashia
Project Manager

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS20061390

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20061390-01	35AWW01_062520	Groundwater		25-Jun-2020 07:50	26-Jun-2020 09:30	☐
HS20061390-02	35AWW01_062520_a	Groundwater		25-Jun-2020 07:50	26-Jun-2020 09:30	☐
HS20061390-03	35AWW15_062520	Groundwater		25-Jun-2020 08:35	26-Jun-2020 09:30	☐
HS20061390-04	35AWW12_062520	Groundwater		25-Jun-2020 09:30	26-Jun-2020 09:30	☐
HS20061390-05	35AWW16_062520	Groundwater		25-Jun-2020 10:15	26-Jun-2020 09:30	☐
HS20061390-06	35AWW24_062520	Groundwater		25-Jun-2020 11:00	26-Jun-2020 09:30	☐
HS20061390-07	35AWW24_062520_a	Groundwater		25-Jun-2020 11:00	26-Jun-2020 09:30	☐
HS20061390-08	LHSMW06_062520	Groundwater		25-Jun-2020 11:50	26-Jun-2020 09:30	☐
HS20061390-09	35AWW18_062520	Groundwater		25-Jun-2020 12:40	26-Jun-2020 09:30	☐
HS20061390-10	35AWW14_062520	Groundwater		25-Jun-2020 12:55	26-Jun-2020 09:30	☐
HS20061390-11	Trip Blank	Water		25-Jun-2020 00:00	26-Jun-2020 09:30	☐

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS20061390

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R364717

Sample ID: HS20061218-01MS

- MS and MSD are for an unrelated sample

Batch ID: R364746

Sample ID: HS20070055-04MS, HS20070055-03MS

- MS and MSD are for an unrelated sample

Metals by Method SW6020

Batch ID: 154955

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW01_062520
Collection Date: 25-Jun-2020 07:50

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-01
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	08-Jul-2020 01:08
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:08
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:08
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:08
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:08
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:08
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:08
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:08
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:08
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 01:08
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	08-Jul-2020 01:08
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:08
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	08-Jul-2020 01:08
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 01:08
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:08
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:08
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:08
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Jul-2020 01:08
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:08
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW01_062520
Collection Date: 25-Jun-2020 07:50

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Jul-2020 01:08
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Jul-2020 01:08
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 01:08
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 01:08
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:08
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:08
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:08
Surr: 1,2-Dichloroethane-d4	*88.1*			**0**	*81-118*	*%REC*	*1*	*08-Jul-2020 01:08*
Surr: 4-Bromofluorobenzene	*99.8*			**0**	*85-114*	*%REC*	*1*	*08-Jul-2020 01:08*
Surr: Dibromofluoromethane	*92.8*			**0**	*80-119*	*%REC*	*1*	*08-Jul-2020 01:08*
Surr: Toluene-d8	*100*			**0**	*89-112*	*%REC*	*1*	*08-Jul-2020 01:08*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW01_062520_a
Collection Date: 25-Jun-2020 07:50

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-02
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	08-Jul-2020 01:32
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:32
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:32
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:32
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:32
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:32
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:32
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:32
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:32
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 01:32
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	08-Jul-2020 01:32
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:32
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	08-Jul-2020 01:32
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 01:32
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:32
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:32
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:32
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Jul-2020 01:32
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:32
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW01_062520_a
Collection Date: 25-Jun-2020 07:50

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Jul-2020 01:32
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Jul-2020 01:32
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 01:32
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 01:32
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:32
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:32
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:32
Surr: 1,2-Dichloroethane-d4	*87.1*			**0**	*81-118*	*%REC*	*1*	*08-Jul-2020 01:32*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*08-Jul-2020 01:32*
Surr: Dibromofluoromethane	*93.5*			**0**	*80-119*	*%REC*	*1*	*08-Jul-2020 01:32*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*08-Jul-2020 01:32*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW15_062520
Collection Date: 25-Jun-2020 08:35

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-03
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	08-Jul-2020 01:56
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:56
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:56
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:56
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:56
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:56
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:56
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:56
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:56
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 01:56
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	08-Jul-2020 01:56
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:56
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	08-Jul-2020 01:56
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 01:56
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:56
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:56
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:56
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Jul-2020 01:56
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 01:56
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW15_062520
Collection Date: 25-Jun-2020 08:35

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Jul-2020 01:56
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Jul-2020 01:56
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 01:56
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 01:56
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 01:56
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 01:56
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 01:56
Surr: 1,2-Dichloroethane-d4	*89.1*			**0**	*81-118*	*%REC*	*1*	*08-Jul-2020 01:56*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*08-Jul-2020 01:56*
Surr: Dibromofluoromethane	*93.2*			**0**	*80-119*	*%REC*	*1*	*08-Jul-2020 01:56*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*08-Jul-2020 01:56*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW12_062520
Collection Date: 25-Jun-2020 09:30

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-04
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	08-Jul-2020 02:20
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 02:20
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 02:20
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 02:20
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 02:20
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 02:20
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 02:20
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 02:20
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 02:20
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 02:20
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	08-Jul-2020 02:20
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 02:20
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	08-Jul-2020 02:20
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 02:20
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 02:20
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 02:20
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 02:20
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Jul-2020 02:20
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 02:20
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW12_062520
Collection Date: 25-Jun-2020 09:30

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Jul-2020 02:20
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Jul-2020 02:20
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 02:20
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 02:20
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 02:20
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:20
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:20
Surr: 1,2-Dichloroethane-d4	*88.8*			**0**	*81-118*	*%REC*	*1*	*08-Jul-2020 02:20*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*08-Jul-2020 02:20*
Surr: Dibromofluoromethane	*93.0*			**0**	*80-119*	*%REC*	*1*	*08-Jul-2020 02:20*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*08-Jul-2020 02:20*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW16_062520
Collection Date: 25-Jun-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-05
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	08-Jul-2020 02:44
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 02:44
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
1,1-Dichloroethane	**0.43**	J	**0.20**	**0.50**	**1.0**	**UG/L**	1	08-Jul-2020 02:44
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 02:44
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 02:44
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 02:44
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 02:44
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 02:44
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 02:44
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 02:44
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 02:44
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	08-Jul-2020 02:44
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 02:44
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	08-Jul-2020 02:44
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 02:44
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 02:44
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 02:44
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 02:44
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Jul-2020 02:44
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 02:44
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW16_062520
Collection Date: 25-Jun-2020 10:15

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Jul-2020 02:44
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Jul-2020 02:44
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 02:44
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 02:44
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 02:44
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 02:44
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 02:44
Surr: 1,2-Dichloroethane-d4	*89.7*			**0**	*81-118*	*%REC*	*1*	*08-Jul-2020 02:44*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*08-Jul-2020 02:44*
Surr: Dibromofluoromethane	*93.1*			**0**	*80-119*	*%REC*	*1*	*08-Jul-2020 02:44*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*08-Jul-2020 02:44*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW24_062520
Collection Date: 25-Jun-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-06
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	08-Jul-2020 03:08
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:08
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:08
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:08
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:08
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:08
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:08
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:08
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:08
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 03:08
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	08-Jul-2020 03:08
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:08
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	08-Jul-2020 03:08
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 03:08
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:08
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:08
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:08
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Jul-2020 03:08
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:08
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW24_062520
Collection Date: 25-Jun-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Jul-2020 03:08
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Jul-2020 03:08
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 03:08
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 03:08
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:08
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:08
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:08
Surr: 1,2-Dichloroethane-d4	*87.6*			**0**	*81-118*	*%REC*	*1*	*08-Jul-2020 03:08*
Surr: 4-Bromofluorobenzene	*97.4*			**0**	*85-114*	*%REC*	*1*	*08-Jul-2020 03:08*
Surr: Dibromofluoromethane	*94.0*			**0**	*80-119*	*%REC*	*1*	*08-Jul-2020 03:08*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*08-Jul-2020 03:08*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW24_062520_a
Collection Date: 25-Jun-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-07
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	08-Jul-2020 03:32
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:32
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:32
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:32
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:32
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:32
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:32
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:32
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:32
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 03:32
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	08-Jul-2020 03:32
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:32
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	08-Jul-2020 03:32
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 03:32
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:32
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:32
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:32
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Jul-2020 03:32
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:32
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW24_062520_a
Collection Date: 25-Jun-2020 11:00

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Jul-2020 03:32
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Jul-2020 03:32
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 03:32
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 03:32
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:32
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:32
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:32
Surr: 1,2-Dichloroethane-d4	*88.3*			**0**	*81-118*	*%REC*	*1*	*08-Jul-2020 03:32*
Surr: 4-Bromofluorobenzene	*98.6*			**0**	*85-114*	*%REC*	*1*	*08-Jul-2020 03:32*
Surr: Dibromofluoromethane	*93.3*			**0**	*80-119*	*%REC*	*1*	*08-Jul-2020 03:32*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*08-Jul-2020 03:32*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW06_062520
Collection Date: 25-Jun-2020 11:50

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-08
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	08-Jul-2020 03:56
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:56
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:56
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
1,1-Dichloroethane	**7.0**		**0.20**	**0.50**	**1.0**	**UG/L**	1	08-Jul-2020 03:56
1,1-Dichloroethene	**22**		**0.20**	**0.50**	**1.0**	**UG/L**	1	08-Jul-2020 03:56
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:56
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:56
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:56
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:56
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:56
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:56
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:56
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:56
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:56
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:56
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:56
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 03:56
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	08-Jul-2020 03:56
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:56
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	08-Jul-2020 03:56
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 03:56
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:56
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:56
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:56
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:56
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:56
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:56
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Jul-2020 03:56
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 03:56
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:56

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW06_062520
Collection Date: 25-Jun-2020 11:50

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:56
cis-1,2-Dichloroethene	**65**		**0.20**	**0.50**	**1.0**	**UG/L**	1	08-Jul-2020 03:56
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Jul-2020 03:56
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:56
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Jul-2020 03:56
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 03:56
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 03:56
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 03:56
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
Tetrachloroethene	**2.1**		**0.30**	**1.0**	**1.0**	**UG/L**	1	08-Jul-2020 03:56
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:56
trans-1,2-Dichloroethene	**1.4**		**0.20**	**0.50**	**1.0**	**UG/L**	1	08-Jul-2020 03:56
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 03:56
Trichloroethene	**16**		**0.20**	**0.50**	**1.0**	**UG/L**	1	08-Jul-2020 03:56
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 03:56
Vinyl chloride	**5.5**		**0.20**	**0.50**	**1.0**	**UG/L**	1	08-Jul-2020 03:56
Surr: 1,2-Dichloroethane-d4	*88.8*			**0**	*81-118*	*%REC*	*1*	*08-Jul-2020 03:56*
Surr: 4-Bromofluorobenzene	*99.2*			**0**	*85-114*	*%REC*	*1*	*08-Jul-2020 03:56*
Surr: Dibromofluoromethane	*93.3*			**0**	*80-119*	*%REC*	*1*	*08-Jul-2020 03:56*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*08-Jul-2020 03:56*
METALS BY ICPMS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 29-Jun-2020		Analyst: JHD
Arsenic	0.000500	U	0.000400	0.000500	0.00500	mg/L	1	02-Jul-2020 13:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW18_062520
Collection Date: 25-Jun-2020 12:40

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-09
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	08-Jul-2020 04:20
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 04:20
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 04:20
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
1,1-Dichloroethane	**2.8**		**0.20**	**0.50**	**1.0**	**UG/L**	1	08-Jul-2020 04:20
1,1-Dichloroethene	**18**		**0.20**	**0.50**	**1.0**	**UG/L**	1	08-Jul-2020 04:20
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 04:20
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 04:20
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 04:20
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 04:20
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 04:20
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 04:20
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 04:20
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 04:20
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 04:20
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 04:20
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 04:20
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 04:20
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	08-Jul-2020 04:20
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 04:20
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	08-Jul-2020 04:20
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 04:20
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 04:20
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 04:20
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 04:20
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 04:20
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 04:20
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 04:20
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Jul-2020 04:20
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 04:20
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 04:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW18_062520
Collection Date: 25-Jun-2020 12:40

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 04:20
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 04:20
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Jul-2020 04:20
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 04:20
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Jul-2020 04:20
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 04:20
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 04:20
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 04:20
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 04:20
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 04:20
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 04:20
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 04:20
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 04:20
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 04:20
Surr: 1,2-Dichloroethane-d4	*87.2*			**0**	*81-118*	*%REC*	*1*	*08-Jul-2020 04:20*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*08-Jul-2020 04:20*
Surr: Dibromofluoromethane	*93.2*			**0**	*80-119*	*%REC*	*1*	*08-Jul-2020 04:20*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*08-Jul-2020 04:20*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW14_062520
Collection Date: 25-Jun-2020 12:55

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-10
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	08-Jul-2020 14:37
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 14:37
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 14:37
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
1,1-Dichloroethane	**12**		**0.20**	**0.50**	**1.0**	**UG/L**	1	08-Jul-2020 14:37
1,1-Dichloroethene	**9.3**		**0.20**	**0.50**	**1.0**	**UG/L**	1	08-Jul-2020 14:37
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 14:37
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 14:37
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 14:37
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 14:37
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 14:37
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 14:37
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 14:37
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 14:37
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 14:37
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 14:37
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 14:37
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 14:37
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	08-Jul-2020 14:37
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 14:37
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	08-Jul-2020 14:37
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 14:37
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 14:37
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 14:37
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 14:37
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 14:37
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 14:37
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 14:37
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Jul-2020 14:37
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 14:37
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 14:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW14_062520
Collection Date: 25-Jun-2020 12:55

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 14:37
cis-1,2-Dichloroethene	**4.6**		**0.20**	**0.50**	**1.0**	**UG/L**	1	08-Jul-2020 14:37
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Jul-2020 14:37
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 14:37
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Jul-2020 14:37
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 14:37
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 14:37
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 14:37
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 14:37
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 14:37
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 14:37
Trichloroethene	**11**		**0.20**	**0.50**	**1.0**	**UG/L**	1	08-Jul-2020 14:37
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 14:37
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 14:37
Surr: 1,2-Dichloroethane-d4	*88.2*			**0**	*81-118*	*%REC*	*1*	*08-Jul-2020 14:37*
Surr: 4-Bromofluorobenzene	*100.0*			**0**	*85-114*	*%REC*	*1*	*08-Jul-2020 14:37*
Surr: Dibromofluoromethane	*92.6*			**0**	*80-119*	*%REC*	*1*	*08-Jul-2020 14:37*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*1*	*08-Jul-2020 14:37*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 25-Jun-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-11
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	07-Jul-2020 21:07
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 21:07
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:07
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 21:07
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 21:07
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 21:07
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 21:07
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:07
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:07
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	07-Jul-2020 21:07
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	07-Jul-2020 21:07
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:07
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	07-Jul-2020 21:07
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	07-Jul-2020 21:07
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:07
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:07
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:07
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	07-Jul-2020 21:07
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	07-Jul-2020 21:07
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 25-Jun-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20061390
Lab ID:HS20061390-11
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	07-Jul-2020 21:07
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	07-Jul-2020 21:07
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	07-Jul-2020 21:07
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	07-Jul-2020 21:07
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	07-Jul-2020 21:07
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	07-Jul-2020 21:07
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	07-Jul-2020 21:07
Surr: 1,2-Dichloroethane-d4	*88.3*			**0**	*81-118*	*%REC*	*1*	*07-Jul-2020 21:07*
Surr: 4-Bromofluorobenzene	*100*			**0**	*85-114*	*%REC*	*1*	*07-Jul-2020 21:07*
Surr: Dibromofluoromethane	*93.5*			**0**	*80-119*	*%REC*	*1*	*07-Jul-2020 21:07*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*07-Jul-2020 21:07*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 09-Jul-20

Weight / Prep Log

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

Batch ID: 154955 **Start Date:** 29 Jun 2020 10:30 **End Date:** 29 Jun 2020 14:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS20061390-08		10 (mL)	10 (mL)	1

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 154955 (0)	**Test Name :** METALS BY ICPMS BY SW6020A				**Matrix:** Groundwater	
HS20061390-08	LHSMW06_062520	25 Jun 2020 11:50		29 Jun 2020 14:30	02 Jul 2020 13:00	1
Batch ID: R364717 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS20061390-11	Trip Blank	25 Jun 2020 00:00			07 Jul 2020 21:07	1
Batch ID: R364717 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20061390-01	35AWW01_062520	25 Jun 2020 07:50			08 Jul 2020 01:08	1
HS20061390-02	35AWW01_062520_a	25 Jun 2020 07:50			08 Jul 2020 01:32	1
HS20061390-03	35AWW15_062520	25 Jun 2020 08:35			08 Jul 2020 01:56	1
HS20061390-04	35AWW12_062520	25 Jun 2020 09:30			08 Jul 2020 02:20	1
HS20061390-05	35AWW16_062520	25 Jun 2020 10:15			08 Jul 2020 02:44	1
HS20061390-06	35AWW24_062520	25 Jun 2020 11:00			08 Jul 2020 03:08	1
HS20061390-07	35AWW24_062520_a	25 Jun 2020 11:00			08 Jul 2020 03:32	1
HS20061390-08	LHSMW06_062520	25 Jun 2020 11:50			08 Jul 2020 03:56	1
HS20061390-09	35AWW18_062520	25 Jun 2020 12:40			08 Jul 2020 04:20	1
Batch ID: R364746 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20061390-10	35AWW14_062520	25 Jun 2020 12:55			08 Jul 2020 14:37	1

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: 154955 (0) **Instrument: ICPMS06** **Method: METALS BY ICPMS BY SW6020A**

MBLK Sample ID: **MBLK-154955** Units: **mg/L** Analysis Date: **02-Jul-2020 12:25**
Client ID: Run ID: **ICPMS06_364391** SeqNo: **5648603** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.000500	0.00500								U

LCS Sample ID: **LCS-154955** Units: **mg/L** Analysis Date: **02-Jul-2020 12:27**
Client ID: Run ID: **ICPMS06_364391** SeqNo: **5648604** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04816	0.00500	0.05	0	96.3	84 - 116				

MS Sample ID: **HS20061218-02MS** Units: **mg/L** Analysis Date: **02-Jul-2020 12:37**
Client ID: Run ID: **ICPMS06_364391** SeqNo: **5648607** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04966	0.00500	0.05	0.001189	96.9	84 - 116				

MSD Sample ID: **HS20061218-02MSD** Units: **mg/L** Analysis Date: **02-Jul-2020 12:39**
Client ID: Run ID: **ICPMS06_364391** SeqNo: **5648608** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04875	0.00500	0.05	0.001189	95.1	84 - 116	0.04966	1.85	20	

PDS Sample ID: **HS20061218-02PDS** Units: **mg/L** Analysis Date: **02-Jul-2020 12:41**
Client ID: Run ID: **ICPMS06_364391** SeqNo: **5648609** PrepDate: **29-Jun-2020** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1122	0.00500	0.1	0.001189	111	80 - 120				

SD Sample ID: **HS20061218-02SD** Units: **mg/L** Analysis Date: **02-Jul-2020 12:35**
Client ID: Run ID: **ICPMS06_364391** SeqNo: **5648606** PrepDate: **29-Jun-2020** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.00250	0.0250					0.001189	0	10	U

The following samples were analyzed in this batch: HS20061390-08

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364717 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-200707** Units: **UG/L** Analysis Date: **07-Jul-2020 20:19**
Client ID: Run ID: **VOA6_364717** SeqNo: **5654689** 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-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	1.0	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
Bromomethane	1.0	1.0								U

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364717 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200707** Units: **UG/L** Analysis Date: **07-Jul-2020 20:19**
Client ID: Run ID: **VOA6_364717** SeqNo: **5654689** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	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	1.0	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	*45.09*	*1.0*	*50*	*0*	*90.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.93*	*1.0*	*50*	*0*	*99.9*	*85 - 114*				
Surr: Dibromofluoromethane	*47.53*	*1.0*	*50*	*0*	*95.1*	*80 - 119*				
Surr: Toluene-d8	*52.44*	*1.0*	*50*	*0*	*105*	*89 - 112*				

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364717 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200707** Units: **UG/L** Analysis Date: **07-Jul-2020 19:07**
Client ID: Run ID: **VOA6_364717** SeqNo: **5654688** 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	19.11	1.0	20	0	95.6	78 - 124				
1,1,1-Trichloroethane	19.23	1.0	20	0	96.2	74 - 131				
1,1,2,2-Tetrachloroethane	17.51	1.0	20	0	87.5	71 - 121				
1,1,2-Trichloroethane	19.46	1.0	20	0	97.3	80 - 119				
1,1-Dichloroethane	18.92	1.0	20	0	94.6	77 - 125				
1,1-Dichloroethene	18.58	1.0	20	0	92.9	71 - 131				
1,1-Dichloropropene	18.5	1.0	20	0	92.5	78 - 125				
1,2,3-Trichlorobenzene	21.89	1.0	20	0	109	69 - 129				
1,2,3-Trichloropropane	17.75	1.0	20	0	88.8	73 - 122				
1,2,4-Trichlorobenzene	21.7	1.0	20	0	109	69 - 130				
1,2,4-Trimethylbenzene	19.22	1.0	20	0	96.1	76 - 124				
1,2-Dibromo-3-chloropropane	17	1.0	20	0	85.0	62 - 128				
1,2-Dibromoethane	18.84	1.0	20	0	94.2	77 - 121				
1,2-Dichlorobenzene	18.58	1.0	20	0	92.9	80 - 119				
1,2-Dichloroethane	19.27	1.0	20	0	96.4	73 - 128				
1,2-Dichloropropane	19.62	1.0	20	0	98.1	78 - 122				
1,3,5-Trimethylbenzene	19.61	1.0	20	0	98.0	75 - 124				
1,3-Dichlorobenzene	19.23	1.0	20	0	96.2	80 - 119				
1,3-Dichloropropane	18.7	1.0	20	0	93.5	80 - 119				
1,4-Dichlorobenzene	19.46	1.0	20	0	97.3	79 - 118				
2,2-Dichloropropane	19.54	1.0	20	0	97.7	60 - 139				
2-Butanone	33.92	2.0	40	0	84.8	56 - 143				
2-Chlorotoluene	19.36	1.0	20	0	96.8	79 - 122				
2-Hexanone	33.58	2.0	40	0	83.9	57 - 139				
4-Chlorotoluene	19.74	1.0	20	0	98.7	78 - 122				
4-Isopropyltoluene	19.67	1.0	20	0	98.3	77 - 127				
4-Methyl-2-pentanone	35.65	2.0	40	0	89.1	67 - 130				
Acetone	29.57	2.0	40	0	73.9	39 - 160				
Benzene	19.33	1.0	20	0	96.7	79 - 120				
Bromobenzene	19.57	1.0	20	0	97.8	80 - 120				
Bromochloromethane	18.46	1.0	20	0	92.3	78 - 123				
Bromodichloromethane	19.55	1.0	20	0	97.7	79 - 125				
Bromoform	18.49	1.0	20	0	92.5	66 - 130				
Bromomethane	22.4	1.0	20	0	112	53 - 141				

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364717 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200707** Units: **UG/L** Analysis Date: **07-Jul-2020 19:07**
Client ID: Run ID: **VOA6_364717** SeqNo: **5654688** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	39.21	2.0	40	0	98.0	64 - 133				
Carbon tetrachloride	19.04	1.0	20	0	95.2	72 - 136				
Chlorobenzene	19.09	1.0	20	0	95.5	82 - 118				
Chloroethane	20.35	1.0	20	0	102	60 - 138				
Chloroform	18.97	1.0	20	0	94.9	79 - 124				
Chloromethane	20.38	1.0	20	0	102	50 - 139				
cis-1,2-Dichloroethene	19.5	1.0	20	0	97.5	78 - 123				
cis-1,3-Dichloropropene	19.34	1.0	20	0	96.7	75 - 124				
Dibromochloromethane	18.78	1.0	20	0	93.9	74 - 126				
Dibromomethane	19.11	1.0	20	0	95.6	79 - 123				
Dichlorodifluoromethane	18.5	1.0	20	0	92.5	32 - 152				
Ethylbenzene	19.2	1.0	20	0	96.0	79 - 121				
Hexachlorobutadiene	24.19	1.0	20	0	121	66 - 134				
Isopropylbenzene	19.4	1.0	20	0	97.0	72 - 131				
m,p-Xylene	38.14	2.0	40	0	95.3	80 - 121				
Methylene chloride	23.44	2.0	20	0	117	74 - 124				
Naphthalene	19.05	1.0	20	0	95.2	61 - 128				
n-Butylbenzene	19.47	1.0	20	0	97.3	75 - 128				
n-Propylbenzene	19.55	1.0	20	0	97.8	76 - 126				
o-Xylene	19.04	1.0	20	0	95.2	78 - 122				
sec-Butylbenzene	19.73	1.0	20	0	98.6	77 - 126				
Styrene	19.49	1.0	20	0	97.5	78 - 123				
tert-Butylbenzene	20	1.0	20	0	100.0	78 - 124				
Tetrachloroethene	19.63	1.0	20	0	98.2	74 - 129				
Toluene	19.44	1.0	20	0	97.2	80 - 121				
trans-1,2-Dichloroethene	19.93	1.0	20	0	99.7	75 - 124				
trans-1,3-Dichloropropene	19.75	1.0	20	0	98.7	73 - 127				
Trichloroethene	19.25	1.0	20	0	96.2	79 - 123				
Trichlorofluoromethane	19.16	1.0	20	0	95.8	65 - 141				
Vinyl chloride	18.79	1.0	20	0	93.9	58 - 137				
Surr: 1,2-Dichloroethane-d4	*50.46*	*1.0*	*50*	*0*	*101*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.76*	*1.0*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*51.48*	*1.0*	*50*	*0*	*103*	*80 - 119*				
Surr: Toluene-d8	*48.46*	*1.0*	*50*	*0*	*96.9*	*89 - 112*				

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364717 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20061218-01MS** Units: **UG/L** Analysis Date: **07-Jul-2020 22:19**
Client ID: Run ID: **VOA6_364717** SeqNo: **5654694** 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	19.74	1.0	20	0	98.7	78 - 124				
1,1,1-Trichloroethane	19.26	1.0	20	0	96.3	74 - 131				
1,1,2,2-Tetrachloroethane	19	1.0	20	0	95.0	71 - 121				
1,1,2-Trichloroethane	19.78	1.0	20	0	98.9	80 - 119				
1,1-Dichloroethane	19.12	1.0	20	0.8538	91.3	77 - 125				
1,1-Dichloroethene	23.4	1.0	20	4.618	93.9	71 - 131				
1,1-Dichloropropene	19.53	1.0	20	0	97.7	78 - 125				
1,2,3-Trichlorobenzene	14.27	1.0	20	0	71.3	69 - 129				
1,2,3-Trichloropropane	18.12	1.0	20	0	90.6	73 - 122				
1,2,4-Trichlorobenzene	17.18	1.0	20	0	85.9	69 - 130				
1,2,4-Trimethylbenzene	20.96	1.0	20	0	105	76 - 124				
1,2-Dibromo-3-chloropropane	13.77	1.0	20	0	68.9	62 - 128				
1,2-Dibromoethane	18.98	1.0	20	0	94.9	77 - 121				
1,2-Dichlorobenzene	19.82	1.0	20	0	99.1	80 - 119				
1,2-Dichloroethane	19.74	1.0	20	0	98.7	73 - 128				
1,2-Dichloropropane	19.73	1.0	20	0	98.6	78 - 122				
1,3,5-Trimethylbenzene	21.64	1.0	20	0	108	75 - 124				
1,3-Dichlorobenzene	20.47	1.0	20	0	102	80 - 119				
1,3-Dichloropropane	19.06	1.0	20	0	95.3	80 - 119				
1,4-Dichlorobenzene	21.19	1.0	20	0	106	79 - 118				
2,2-Dichloropropane	18.11	1.0	20	0	90.6	60 - 139				
2-Butanone	25.18	2.0	40	0	63.0	56 - 143				
2-Chlorotoluene	21.04	1.0	20	0	105	79 - 122				
2-Hexanone	32.79	2.0	40	0	82.0	57 - 139				
4-Chlorotoluene	21.22	1.0	20	0	106	78 - 122				
4-Isopropyltoluene	21.9	1.0	20	0	110	77 - 127				
4-Methyl-2-pentanone	35.96	2.0	40	0	89.9	67 - 130				
Acetone	4.724	2.0	40	0	11.8	39 - 160				S
Benzene	19.73	1.0	20	0	98.6	79 - 120				
Bromobenzene	21.18	1.0	20	0	106	80 - 120				
Bromochloromethane	17.28	1.0	20	0	86.4	78 - 123				
Bromodichloromethane	19.33	1.0	20	0	96.7	79 - 125				
Bromoform	18.25	1.0	20	0	91.2	66 - 130				
Bromomethane	19.87	1.0	20	0	99.4	53 - 141				

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364717 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20061218-01MS** Units: **UG/L** Analysis Date: **07-Jul-2020 22:19**
Client ID: Run ID: **VOA6_364717** SeqNo: **5654694** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	37.91	2.0	40	0	94.8	64 - 133				
Carbon tetrachloride	20.34	1.0	20	0	102	72 - 136				
Chlorobenzene	20.12	1.0	20	0	101	82 - 118				
Chloroethane	18.33	1.0	20	0	91.6	60 - 138				
Chloroform	18.63	1.0	20	0	93.2	79 - 124				
Chloromethane	19.59	1.0	20	0	98.0	50 - 139				
cis-1,2-Dichloroethene	18.4	1.0	20	0	92.0	78 - 123				
cis-1,3-Dichloropropene	18.6	1.0	20	0	93.0	75 - 124				
Dibromochloromethane	18.92	1.0	20	0	94.6	74 - 126				
Dibromomethane	18.45	1.0	20	0	92.2	79 - 123				
Dichlorodifluoromethane	16.58	1.0	20	0	82.9	32 - 152				
Ethylbenzene	20.88	1.0	20	0	104	79 - 121				
Hexachlorobutadiene	21.93	1.0	20	0	110	66 - 134				
Isopropylbenzene	20.56	1.0	20	0	103	72 - 131				
m,p-Xylene	40.6	2.0	40	0	101	80 - 121				
Methylene chloride	18.18	2.0	20	0	90.9	74 - 124				
Naphthalene	13.74	1.0	20	0	68.7	61 - 128				
n-Butylbenzene	21.53	1.0	20	0	108	75 - 128				
n-Propylbenzene	22.04	1.0	20	0	110	76 - 126				
o-Xylene	20.12	1.0	20	0	101	78 - 122				
sec-Butylbenzene	21.75	1.0	20	0	109	77 - 126				
Styrene	20.26	1.0	20	0	101	78 - 123				
tert-Butylbenzene	22.26	1.0	20	0	111	78 - 124				
Tetrachloroethene	21.31	1.0	20	0	107	74 - 129				
Toluene	20.62	1.0	20	0	103	80 - 121				
trans-1,2-Dichloroethene	19.34	1.0	20	0	96.7	75 - 124				
trans-1,3-Dichloropropene	18.68	1.0	20	0	93.4	73 - 127				
Trichloroethene	19.87	1.0	20	0	99.4	79 - 123				
Trichlorofluoromethane	20.56	1.0	20	0	103	65 - 141				
Vinyl chloride	19.44	1.0	20	0	97.2	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.28*	*1.0*	*50*	*0*	*88.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.92*	*1.0*	*50*	*0*	*99.8*	*85 - 114*				
Surr: Dibromofluoromethane	*46.44*	*1.0*	*50*	*0*	*92.9*	*80 - 119*				
Surr: Toluene-d8	*50.61*	*1.0*	*50*	*0*	*101*	*89 - 112*				

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364717 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS20061218-01MSD** Units: **UG/L** Analysis Date: **07-Jul-2020 22:43**
Client ID: Run ID: **VOA6_364717** SeqNo: **5654695** 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	19.81	1.0	20	0	99.0	78 - 124	19.74	0.33	20	
1,1,1-Trichloroethane	19.13	1.0	20	0	95.7	74 - 131	19.26	0.678	20	
1,1,2,2-Tetrachloroethane	19.21	1.0	20	0	96.0	71 - 121	19	1.08	20	
1,1,2-Trichloroethane	19.26	1.0	20	0	96.3	80 - 119	19.78	2.66	20	
1,1-Dichloroethane	19	1.0	20	0.8538	90.7	77 - 125	19.12	0.632	20	
1,1-Dichloroethene	23.33	1.0	20	4.618	93.6	71 - 131	23.4	0.284	20	
1,1-Dichloropropene	19.18	1.0	20	0	95.9	78 - 125	19.53	1.79	20	
1,2,3-Trichlorobenzene	16.66	1.0	20	0	83.3	69 - 129	14.27	15.5	20	
1,2,3-Trichloropropane	18.75	1.0	20	0	93.7	73 - 122	18.12	3.42	20	
1,2,4-Trichlorobenzene	17.41	1.0	20	0	87.1	69 - 130	17.18	1.36	20	
1,2,4-Trimethylbenzene	21.14	1.0	20	0	106	76 - 124	20.96	0.864	20	
1,2-Dibromo-3-chloropropane	12.98	1.0	20	0	64.9	62 - 128	13.77	5.95	20	
1,2-Dibromoethane	18.53	1.0	20	0	92.6	77 - 121	18.98	2.41	20	
1,2-Dichlorobenzene	17.03	1.0	20	0	85.1	80 - 119	19.82	15.2	20	
1,2-Dichloroethane	19.29	1.0	20	0	96.5	73 - 128	19.74	2.3	20	
1,2-Dichloropropane	19.33	1.0	20	0	96.6	78 - 122	19.73	2.04	20	
1,3,5-Trimethylbenzene	20.19	1.0	20	0	101	75 - 124	21.64	6.96	20	
1,3-Dichlorobenzene	20.4	1.0	20	0	102	80 - 119	20.47	0.379	20	
1,3-Dichloropropane	19.05	1.0	20	0	95.3	80 - 119	19.06	0.0465	20	
1,4-Dichlorobenzene	21.15	1.0	20	0	106	79 - 118	21.19	0.222	20	
2,2-Dichloropropane	17.43	1.0	20	0	87.2	60 - 139	18.11	3.84	20	
2-Butanone	25.18	2.0	40	0	62.9	56 - 143	25.18	0.0162	20	
2-Chlorotoluene	21.54	1.0	20	0	108	79 - 122	21.04	2.35	20	
2-Hexanone	32.8	2.0	40	0	82.0	57 - 139	32.79	0.0413	20	
4-Chlorotoluene	19.82	1.0	20	0	99.1	78 - 122	21.22	6.8	20	
4-Isopropyltoluene	21.98	1.0	20	0	110	77 - 127	21.9	0.369	20	
4-Methyl-2-pentanone	35.68	2.0	40	0	89.2	67 - 130	35.96	0.792	20	
Acetone	4.338	2.0	40	0	10.8	39 - 160	4.724	8.52	20	S
Benzene	19.18	1.0	20	0	95.9	79 - 120	19.73	2.83	20	
Bromobenzene	21.41	1.0	20	0	107	80 - 120	21.18	1.06	20	
Bromochloromethane	16.95	1.0	20	0	84.8	78 - 123	17.28	1.93	20	
Bromodichloromethane	19.02	1.0	20	0	95.1	79 - 125	19.33	1.61	20	
Bromoform	18.09	1.0	20	0	90.5	66 - 130	18.25	0.867	20	
Bromomethane	20.33	1.0	20	0	102	53 - 141	19.87	2.28	20	

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364717 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS20061218-01MSD** Units: **UG/L** Analysis Date: **07-Jul-2020 22:43**
Client ID: Run ID: **VOA6_364717** SeqNo: **5654695** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	38.28	2.0	40	0	95.7	64 - 133	37.91	0.97	20	
Carbon tetrachloride	20.03	1.0	20	0	100	72 - 136	20.34	1.54	20	
Chlorobenzene	20.1	1.0	20	0	100	82 - 118	20.12	0.128	20	
Chloroethane	17.97	1.0	20	0	89.9	60 - 138	18.33	1.96	20	
Chloroform	18.26	1.0	20	0	91.3	79 - 124	18.63	2.04	20	
Chloromethane	18.81	1.0	20	0	94.1	50 - 139	19.59	4.08	20	
cis-1,2-Dichloroethene	18.16	1.0	20	0	90.8	78 - 123	18.4	1.31	20	
cis-1,3-Dichloropropene	18.46	1.0	20	0	92.3	75 - 124	18.6	0.752	20	
Dibromochloromethane	19.04	1.0	20	0	95.2	74 - 126	18.92	0.645	20	
Dibromomethane	18.1	1.0	20	0	90.5	79 - 123	18.45	1.89	20	
Dichlorodifluoromethane	15.8	1.0	20	0	79.0	32 - 152	16.58	4.82	20	
Ethylbenzene	20.14	1.0	20	0	101	79 - 121	20.88	3.62	20	
Hexachlorobutadiene	19.58	1.0	20	0	97.9	66 - 134	21.93	11.3	20	
Isopropylbenzene	20.51	1.0	20	0	103	72 - 131	20.56	0.239	20	
m,p-Xylene	39.81	2.0	40	0	99.5	80 - 121	40.6	1.96	20	
Methylene chloride	17.98	2.0	20	0	89.9	74 - 124	18.18	1.1	20	
Naphthalene	14.78	1.0	20	0	73.9	61 - 128	13.74	7.29	20	
n-Butylbenzene	18.05	1.0	20	0	90.2	75 - 128	21.53	17.6	20	
n-Propylbenzene	22.38	1.0	20	0	112	76 - 126	22.04	1.51	20	
o-Xylene	20.34	1.0	20	0	102	78 - 122	20.12	1.1	20	
sec-Butylbenzene	21.2	1.0	20	0	106	77 - 126	21.75	2.58	20	
Styrene	19.92	1.0	20	0	99.6	78 - 123	20.26	1.71	20	
tert-Butylbenzene	22.88	1.0	20	0	114	78 - 124	22.26	2.74	20	
Tetrachloroethene	20.5	1.0	20	0	103	74 - 129	21.31	3.87	20	
Toluene	20.49	1.0	20	0	102	80 - 121	20.62	0.595	20	
trans-1,2-Dichloroethene	18.89	1.0	20	0	94.4	75 - 124	19.34	2.4	20	
trans-1,3-Dichloropropene	18.37	1.0	20	0	91.8	73 - 127	18.68	1.67	20	
Trichloroethene	19.07	1.0	20	0	95.4	79 - 123	19.87	4.11	20	
Trichlorofluoromethane	19.22	1.0	20	0	96.1	65 - 141	20.56	6.73	20	
Vinyl chloride	19.27	1.0	20	0	96.3	58 - 137	19.44	0.887	20	
Surr: 1,2-Dichloroethane-d4	*44.88*	*1.0*	*50*	*0*	*89.8*	*81 - 118*	*44.28*	*1.35*	*20*	
Surr: 4-Bromofluorobenzene	*48.86*	*1.0*	*50*	*0*	*97.7*	*85 - 114*	*49.92*	*2.15*	*20*	
Surr: Dibromofluoromethane	*46.47*	*1.0*	*50*	*0*	*92.9*	*80 - 119*	*46.44*	*0.0659*	*20*	
Surr: Toluene-d8	*50.21*	*1.0*	*50*	*0*	*100*	*89 - 112*	*50.61*	*0.785*	*20*	

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364717 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

The following samples were analyzed in this batch:

HS20061390-01	HS20061390-02	HS20061390-03	HS20061390-04
HS20061390-05	HS20061390-06	HS20061390-07	HS20061390-08
HS20061390-09	HS20061390-11		

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-200708** Units: **UG/L** Analysis Date: **08-Jul-2020 13:49**
Client ID: Run ID: **VOA6_364746** SeqNo: **5655577** 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-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	1.0	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
Bromomethane	1.0	1.0								U

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200708** Units: **UG/L** Analysis Date: **08-Jul-2020 13:49**
Client ID: Run ID: **VOA6_364746** SeqNo: **5655577** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	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	1.0	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	*44.73*	*1.0*	*50*	*0*	*89.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.31*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*47.03*	*1.0*	*50*	*0*	*94.1*	*80 - 119*				
Surr: Toluene-d8	*52.05*	*1.0*	*50*	*0*	*104*	*89 - 112*				

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200708** Units: **UG/L** Analysis Date: **08-Jul-2020 12:36**
Client ID: Run ID: **VOA6_364746** SeqNo: **5655576** 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	19.38	1.0	20	0	96.9	78 - 124				
1,1,1-Trichloroethane	19.17	1.0	20	0	95.9	74 - 131				
1,1,2,2-Tetrachloroethane	17.67	1.0	20	0	88.4	71 - 121				
1,1,2-Trichloroethane	18.86	1.0	20	0	94.3	80 - 119				
1,1-Dichloroethane	18.55	1.0	20	0	92.8	77 - 125				
1,1-Dichloroethene	19.51	1.0	20	0	97.5	71 - 131				
1,1-Dichloropropene	18.73	1.0	20	0	93.7	78 - 125				
1,2,3-Trichlorobenzene	21.47	1.0	20	0	107	69 - 129				
1,2,3-Trichloropropane	17.83	1.0	20	0	89.2	73 - 122				
1,2,4-Trichlorobenzene	21.55	1.0	20	0	108	69 - 130				
1,2,4-Trimethylbenzene	19.14	1.0	20	0	95.7	76 - 124				
1,2-Dibromo-3-chloropropane	14.77	1.0	20	0	73.8	62 - 128				
1,2-Dibromoethane	18.65	1.0	20	0	93.2	77 - 121				
1,2-Dichlorobenzene	18.07	1.0	20	0	90.3	80 - 119				
1,2-Dichloroethane	19.73	1.0	20	0	98.6	73 - 128				
1,2-Dichloropropane	19.8	1.0	20	0	99.0	78 - 122				
1,3,5-Trimethylbenzene	19.58	1.0	20	0	97.9	75 - 124				
1,3-Dichlorobenzene	19.11	1.0	20	0	95.5	80 - 119				
1,3-Dichloropropane	18.9	1.0	20	0	94.5	80 - 119				
1,4-Dichlorobenzene	19.88	1.0	20	0	99.4	79 - 118				
2,2-Dichloropropane	20.66	1.0	20	0	103	60 - 139				
2-Butanone	33.67	2.0	40	0	84.2	56 - 143				
2-Chlorotoluene	18.84	1.0	20	0	94.2	79 - 122				
2-Hexanone	34.66	2.0	40	0	86.6	57 - 139				
4-Chlorotoluene	19.51	1.0	20	0	97.6	78 - 122				
4-Isopropyltoluene	19.47	1.0	20	0	97.4	77 - 127				
4-Methyl-2-pentanone	35.68	2.0	40	0	89.2	67 - 130				
Acetone	18.47	2.0	40	0	46.2	39 - 160				
Benzene	19.21	1.0	20	0	96.1	79 - 120				
Bromobenzene	19.39	1.0	20	0	97.0	80 - 120				
Bromochloromethane	17.34	1.0	20	0	86.7	78 - 123				
Bromodichloromethane	19.84	1.0	20	0	99.2	79 - 125				
Bromoform	17.78	1.0	20	0	88.9	66 - 130				
Bromomethane	20.32	1.0	20	0	102	53 - 141				

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200708** Units: **UG/L** Analysis Date: **08-Jul-2020 12:36**
Client ID: Run ID: **VOA6_364746** SeqNo: **5655576** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	38.58	2.0	40	0	96.5	64 - 133				
Carbon tetrachloride	19.08	1.0	20	0	95.4	72 - 136				
Chlorobenzene	19.12	1.0	20	0	95.6	82 - 118				
Chloroethane	16.68	1.0	20	0	83.4	60 - 138				
Chloroform	19.06	1.0	20	0	95.3	79 - 124				
Chloromethane	18.29	1.0	20	0	91.5	50 - 139				
cis-1,2-Dichloroethene	19.13	1.0	20	0	95.6	78 - 123				
cis-1,3-Dichloropropene	19.51	1.0	20	0	97.6	75 - 124				
Dibromochloromethane	19.13	1.0	20	0	95.6	74 - 126				
Dibromomethane	19.46	1.0	20	0	97.3	79 - 123				
Dichlorodifluoromethane	18.49	1.0	20	0	92.4	32 - 152				
Ethylbenzene	19.12	1.0	20	0	95.6	79 - 121				
Hexachlorobutadiene	24.39	1.0	20	0	122	66 - 134				
Isopropylbenzene	18.99	1.0	20	0	94.9	72 - 131				
m,p-Xylene	38.39	2.0	40	0	96.0	80 - 121				
Methylene chloride	20.43	2.0	20	0	102	74 - 124				
Naphthalene	18.3	1.0	20	0	91.5	61 - 128				
n-Butylbenzene	19.63	1.0	20	0	98.1	75 - 128				
n-Propylbenzene	19.36	1.0	20	0	96.8	76 - 126				
o-Xylene	19.01	1.0	20	0	95.1	78 - 122				
sec-Butylbenzene	19.09	1.0	20	0	95.4	77 - 126				
Styrene	18.62	1.0	20	0	93.1	78 - 123				
tert-Butylbenzene	19.8	1.0	20	0	99.0	78 - 124				
Tetrachloroethene	19.31	1.0	20	0	96.5	74 - 129				
Toluene	19.54	1.0	20	0	97.7	80 - 121				
trans-1,2-Dichloroethene	19.43	1.0	20	0	97.1	75 - 124				
trans-1,3-Dichloropropene	19.05	1.0	20	0	95.2	73 - 127				
Trichloroethene	19.06	1.0	20	0	95.3	79 - 123				
Trichlorofluoromethane	18.38	1.0	20	0	91.9	65 - 141				
Vinyl chloride	16.8	1.0	20	0	84.0	58 - 137				
Surr: 1,2-Dichloroethane-d4	*49.73*	*1.0*	*50*	*0*	*99.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.44*	*1.0*	*50*	*0*	*98.9*	*85 - 114*				
Surr: Dibromofluoromethane	*49.6*	*1.0*	*50*	*0*	*99.2*	*80 - 119*				
Surr: Toluene-d8	*48.05*	*1.0*	*50*	*0*	*96.1*	*89 - 112*				

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20070055-04MS** Units: **UG/L** Analysis Date: **08-Jul-2020 18:13**
Client ID: Run ID: **VOA6_364746** SeqNo: **5655587** 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	20.39	1.0	20	0	102	78 - 124				
1,1,1-Trichloroethane	19.24	1.0	20	0	96.2	74 - 131				
1,1,2,2-Tetrachloroethane	18.97	1.0	20	0	94.9	71 - 121				
1,1,2-Trichloroethane	19.72	1.0	20	0	98.6	80 - 119				
1,1-Dichloroethane	17.81	1.0	20	0	89.0	77 - 125				
1,1-Dichloroethene	16.61	1.0	20	0	83.1	71 - 131				
1,1-Dichloropropene	19.86	1.0	20	0	99.3	78 - 125				
1,2,3-Trichlorobenzene	20.66	1.0	20	0	103	69 - 129				
1,2,3-Trichloropropane	18.53	1.0	20	0	92.7	73 - 122				
1,2,4-Trichlorobenzene	20.9	1.0	20	0	104	69 - 130				
1,2,4-Trimethylbenzene	21.6	1.0	20	0	108	76 - 124				
1,2-Dibromo-3-chloropropane	16.53	1.0	20	0	82.7	62 - 128				
1,2-Dibromoethane	19	1.0	20	0	95.0	77 - 121				
1,2-Dichlorobenzene	20.15	1.0	20	0	101	80 - 119				
1,2-Dichloroethane	18.61	1.0	20	0	93.0	73 - 128				
1,2-Dichloropropane	19.65	1.0	20	0	98.3	78 - 122				
1,3,5-Trimethylbenzene	22.19	1.0	20	0	111	75 - 124				
1,3-Dichlorobenzene	20.99	1.0	20	0	105	80 - 119				
1,3-Dichloropropane	19.2	1.0	20	0	96.0	80 - 119				
1,4-Dichlorobenzene	22.37	1.0	20	0	112	79 - 118				
2,2-Dichloropropane	19.88	1.0	20	0	99.4	60 - 139				
2-Butanone	25.56	2.0	40	0	63.9	56 - 143				
2-Chlorotoluene	21.63	1.0	20	0	108	79 - 122				
2-Hexanone	32.93	2.0	40	0	82.3	57 - 139				
4-Chlorotoluene	21.42	1.0	20	0	107	78 - 122				
4-Isopropyltoluene	22.42	1.0	20	0	112	77 - 127				
4-Methyl-2-pentanone	35.92	2.0	40	0	89.8	67 - 130				
Acetone	61.84	2.0	40	0	155	39 - 160				
Benzene	19.74	1.0	20	0	98.7	79 - 120				
Bromobenzene	21.34	1.0	20	0	107	80 - 120				
Bromochloromethane	17.11	1.0	20	0	85.5	78 - 123				
Bromodichloromethane	19.2	1.0	20	0	96.0	79 - 125				
Bromoform	18.28	1.0	20	0	91.4	66 - 130				
Bromomethane	17.71	1.0	20	0	88.5	53 - 141				

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20070055-04MS** Units: **UG/L** Analysis Date: **08-Jul-2020 18:13**
Client ID: Run ID: **VOA6_364746** SeqNo: **5655587** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	31.17	2.0	40	0	77.9	64 - 133				
Carbon tetrachloride	20.26	1.0	20	0	101	72 - 136				
Chlorobenzene	20.11	1.0	20	0	101	82 - 118				
Chloroethane	15.56	1.0	20	0	77.8	60 - 138				
Chloroform	18.58	1.0	20	0	92.9	79 - 124				
Chloromethane	19.21	1.0	20	0	96.0	50 - 139				
cis-1,2-Dichloroethene	18.36	1.0	20	0	91.8	78 - 123				
cis-1,3-Dichloropropene	19.11	1.0	20	0	95.6	75 - 124				
Dibromochloromethane	19.23	1.0	20	0	96.1	74 - 126				
Dibromomethane	18.44	1.0	20	0	92.2	79 - 123				
Dichlorodifluoromethane	17.05	1.0	20	0	85.2	32 - 152				
Ethylbenzene	20.9	1.0	20	0	105	79 - 121				
Hexachlorobutadiene	23.26	1.0	20	0	116	66 - 134				
Isopropylbenzene	20.93	1.0	20	0	105	72 - 131				
m,p-Xylene	41.34	2.0	40	0	103	80 - 121				
Methylene chloride	14.79	2.0	20	0	74.0	74 - 124				S
Naphthalene	19.27	1.0	20	0	96.3	61 - 128				
n-Butylbenzene	22.36	1.0	20	0	112	75 - 128				
n-Propylbenzene	22.58	1.0	20	0	113	76 - 126				
o-Xylene	20.39	1.0	20	0	102	78 - 122				
sec-Butylbenzene	22.15	1.0	20	0	111	77 - 126				
Styrene	20.27	1.0	20	0	101	78 - 123				
tert-Butylbenzene	22.48	1.0	20	0	112	78 - 124				
Tetrachloroethene	21.65	1.0	20	0	108	74 - 129				
Toluene	20.99	1.0	20	0	105	80 - 121				
trans-1,2-Dichloroethene	19.07	1.0	20	0	95.3	75 - 124				
trans-1,3-Dichloropropene	18.58	1.0	20	0	92.9	73 - 127				
Trichloroethene	20	1.0	20	0	100	79 - 123				
Trichlorofluoromethane	17.5	1.0	20	0	87.5	65 - 141				
Vinyl chloride	18.59	1.0	20	0	92.9	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.82*	*1.0*	*50*	*0*	*89.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.52*	*1.0*	*50*	*0*	*99.0*	*85 - 114*				
Surr: Dibromofluoromethane	*46.72*	*1.0*	*50*	*0*	*93.4*	*80 - 119*				
Surr: Toluene-d8	*50.75*	*1.0*	*50*	*0*	*102*	*89 - 112*				

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20070055-03MS** Units: **UG/L** Analysis Date: **08-Jul-2020 17:25**
Client ID: Run ID: **VOA6_364746** SeqNo: **5655585** 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	19.89	1.0	20	0	99.5	78 - 124				
1,1,1-Trichloroethane	19.34	1.0	20	0	96.7	74 - 131				
1,1,2,2-Tetrachloroethane	20.58	1.0	20	0	103	71 - 121				
1,1,2-Trichloroethane	19.52	1.0	20	0	97.6	80 - 119				
1,1-Dichloroethane	18.25	1.0	20	0	91.3	77 - 125				
1,1-Dichloroethene	19.32	1.0	20	0	96.6	71 - 131				
1,1-Dichloropropene	19.67	1.0	20	0	98.3	78 - 125				
1,2,3-Trichlorobenzene	18.24	1.0	20	0	91.2	69 - 129				
1,2,3-Trichloropropane	20	1.0	20	0	100	73 - 122				
1,2,4-Trichlorobenzene	20.41	1.0	20	0	102	69 - 130				
1,2,4-Trimethylbenzene	19.41	1.0	20	0	97.0	76 - 124				
1,2-Dibromo-3-chloropropane	17.64	1.0	20	0	88.2	62 - 128				
1,2-Dibromoethane	18.48	1.0	20	0	92.4	77 - 121				
1,2-Dichlorobenzene	21.38	1.0	20	0	107	80 - 119				
1,2-Dichloroethane	18.47	1.0	20	0	92.3	73 - 128				
1,2-Dichloropropane	19.73	1.0	20	0	98.7	78 - 122				
1,3,5-Trimethylbenzene	23.36	1.0	20	0	117	75 - 124				
1,3-Dichlorobenzene	19.68	1.0	20	0	98.4	80 - 119				
1,3-Dichloropropane	19.32	1.0	20	0	96.6	80 - 119				
1,4-Dichlorobenzene	20.53	1.0	20	0	103	79 - 118				
2,2-Dichloropropane	20.49	1.0	20	0	102	60 - 139				
2-Butanone	26.69	2.0	40	0	66.7	56 - 143				
2-Chlorotoluene	23	1.0	20	0	115	79 - 122				
2-Hexanone	33.24	2.0	40	0	83.1	57 - 139				
4-Chlorotoluene	22.7	1.0	20	0	113	78 - 122				
4-Isopropyltoluene	21.13	1.0	20	0	106	77 - 127				
4-Methyl-2-pentanone	36.52	2.0	40	0	91.3	67 - 130				
Acetone	8.695	2.0	40	0	21.7	39 - 160				S
Benzene	19.46	1.0	20	0	97.3	79 - 120				
Bromobenzene	23.16	1.0	20	0	116	80 - 120				
Bromochloromethane	16.99	1.0	20	0	84.9	78 - 123				
Bromodichloromethane	19.4	1.0	20	0	97.0	79 - 125				
Bromoform	17.83	1.0	20	0	89.2	66 - 130				
Bromomethane	20.16	1.0	20	0	101	53 - 141				

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20070055-03MS** Units: **UG/L** Analysis Date: **08-Jul-2020 17:25**
Client ID: Run ID: **VOA6_364746** SeqNo: **5655585** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	39.68	2.0	40	0	99.2	64 - 133				
Carbon tetrachloride	20.19	1.0	20	0	101	72 - 136				
Chlorobenzene	19.7	1.0	20	0	98.5	82 - 118				
Chloroethane	17.03	1.0	20	0	85.1	60 - 138				
Chloroform	18.42	1.0	20	0	92.1	79 - 124				
Chloromethane	19.23	1.0	20	0	96.1	50 - 139				
cis-1,2-Dichloroethene	18.92	1.0	20	0	94.6	78 - 123				
cis-1,3-Dichloropropene	19.2	1.0	20	0	96.0	75 - 124				
Dibromochloromethane	19.07	1.0	20	0	95.3	74 - 126				
Dibromomethane	18.38	1.0	20	0	91.9	79 - 123				
Dichlorodifluoromethane	17.83	1.0	20	0	89.2	32 - 152				
Ethylbenzene	20.27	1.0	20	0	101	79 - 121				
Hexachlorobutadiene	25.4	1.0	20	0	127	66 - 134				
Isopropylbenzene	20.53	1.0	20	0	103	72 - 131				
m,p-Xylene	40.28	2.0	40	0	101	80 - 121				
Methylene chloride	17.8	2.0	20	0	89.0	74 - 124				
Naphthalene	16.18	1.0	20	0	80.9	61 - 128				
n-Butylbenzene	23.91	1.0	20	0	120	75 - 128				
n-Propylbenzene	23.83	1.0	20	0	119	76 - 126				
o-Xylene	19.93	1.0	20	0	99.7	78 - 122				
sec-Butylbenzene	20.02	1.0	20	0	100	77 - 126				
Styrene	19.56	1.0	20	0	97.8	78 - 123				
tert-Butylbenzene	20.41	1.0	20	0	102	78 - 124				
Tetrachloroethene	21.77	1.0	20	0	109	74 - 129				
Toluene	21	1.0	20	0	105	80 - 121				
trans-1,2-Dichloroethene	19.64	1.0	20	0	98.2	75 - 124				
trans-1,3-Dichloropropene	18.8	1.0	20	0	94.0	73 - 127				
Trichloroethene	19.78	1.0	20	0	98.9	79 - 123				
Trichlorofluoromethane	19.08	1.0	20	0	95.4	65 - 141				
Vinyl chloride	19.63	1.0	20	0	98.1	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.6*	*1.0*	*50*	*0*	*89.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.69*	*1.0*	*50*	*0*	*97.4*	*85 - 114*				
Surr: Dibromofluoromethane	*46.96*	*1.0*	*50*	*0*	*93.9*	*80 - 119*				
Surr: Toluene-d8	*50.94*	*1.0*	*50*	*0*	*102*	*89 - 112*				

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS20070055-04MSD** Units: **UG/L** Analysis Date: **08-Jul-2020 18:37**
Client ID: Run ID: **VOA6_364746** SeqNo: **5655588** 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	19.59	1.0	20	0	97.9	78 - 124	20.39	4	20	
1,1,1-Trichloroethane	18.74	1.0	20	0	93.7	74 - 131	19.24	2.63	20	
1,1,2,2-Tetrachloroethane	17.66	1.0	20	0	88.3	71 - 121	18.97	7.15	20	
1,1,2-Trichloroethane	19.12	1.0	20	0	95.6	80 - 119	19.72	3.06	20	
1,1-Dichloroethane	17.88	1.0	20	0	89.4	77 - 125	17.81	0.388	20	
1,1-Dichloroethene	16.87	1.0	20	0	84.4	71 - 131	16.61	1.55	20	
1,1-Dichloropropene	18.73	1.0	20	0	93.6	78 - 125	19.86	5.87	20	
1,2,3-Trichlorobenzene	19.4	1.0	20	0	97.0	69 - 129	20.66	6.29	20	
1,2,3-Trichloropropane	17.75	1.0	20	0	88.8	73 - 122	18.53	4.31	20	
1,2,4-Trichlorobenzene	19.72	1.0	20	0	98.6	69 - 130	20.9	5.78	20	
1,2,4-Trimethylbenzene	20.13	1.0	20	0	101	76 - 124	21.6	7.09	20	
1,2-Dibromo-3-chloropropane	15.47	1.0	20	0	77.3	62 - 128	16.53	6.65	20	
1,2-Dibromoethane	18.69	1.0	20	0	93.4	77 - 121	19	1.68	20	
1,2-Dichlorobenzene	18.81	1.0	20	0	94.0	80 - 119	20.15	6.91	20	
1,2-Dichloroethane	18.44	1.0	20	0	92.2	73 - 128	18.61	0.869	20	
1,2-Dichloropropane	19	1.0	20	0	95.0	78 - 122	19.65	3.36	20	
1,3,5-Trimethylbenzene	20.15	1.0	20	0	101	75 - 124	22.19	9.64	20	
1,3-Dichlorobenzene	19.35	1.0	20	0	96.8	80 - 119	20.99	8.13	20	
1,3-Dichloropropane	18.87	1.0	20	0	94.4	80 - 119	19.2	1.74	20	
1,4-Dichlorobenzene	20.24	1.0	20	0	101	79 - 118	22.37	10	20	
2,2-Dichloropropane	19	1.0	20	0	95.0	60 - 139	19.88	4.52	20	
2-Butanone	25.76	2.0	40	0	64.4	56 - 143	25.56	0.774	20	
2-Chlorotoluene	19.4	1.0	20	0	97.0	79 - 122	21.63	10.9	20	
2-Hexanone	33.01	2.0	40	0	82.5	57 - 139	32.93	0.236	20	
4-Chlorotoluene	19.8	1.0	20	0	99.0	78 - 122	21.42	7.86	20	
4-Isopropyltoluene	20.31	1.0	20	0	102	77 - 127	22.42	9.87	20	
4-Methyl-2-pentanone	35.57	2.0	40	0	88.9	67 - 130	35.92	0.978	20	
Acetone	6.938	2.0	40	0	17.3	39 - 160	61.84	160	20	SR
Benzene	18.81	1.0	20	0	94.1	79 - 120	19.74	4.79	20	
Bromobenzene	19.38	1.0	20	0	96.9	80 - 120	21.34	9.63	20	
Bromochloromethane	16.72	1.0	20	0	83.6	78 - 123	17.11	2.26	20	
Bromodichloromethane	18.96	1.0	20	0	94.8	79 - 125	19.2	1.27	20	
Bromoform	17.81	1.0	20	0	89.1	66 - 130	18.28	2.58	20	
Bromomethane	18.55	1.0	20	0	92.7	53 - 141	17.71	4.64	20	

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS20070055-04MSD** Units: **UG/L** Analysis Date: **08-Jul-2020 18:37**
Client ID: Run ID: **VOA6_364746** SeqNo: **5655588** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	33.88	2.0	40	0	84.7	64 - 133	31.17	8.32	20	
Carbon tetrachloride	19.39	1.0	20	0	96.9	72 - 136	20.26	4.39	20	
Chlorobenzene	19.36	1.0	20	0	96.8	82 - 118	20.11	3.8	20	
Chloroethane	15.9	1.0	20	0	79.5	60 - 138	15.56	2.16	20	
Chloroform	17.92	1.0	20	0	89.6	79 - 124	18.58	3.59	20	
Chloromethane	17.42	1.0	20	0	87.1	50 - 139	19.21	9.78	20	
cis-1,2-Dichloroethene	17.88	1.0	20	0	89.4	78 - 123	18.36	2.65	20	
cis-1,3-Dichloropropene	18.47	1.0	20	0	92.3	75 - 124	19.11	3.43	20	
Dibromochloromethane	19	1.0	20	0	95.0	74 - 126	19.23	1.21	20	
Dibromomethane	17.85	1.0	20	0	89.3	79 - 123	18.44	3.21	20	
Dichlorodifluoromethane	15.94	1.0	20	0	79.7	32 - 152	17.05	6.71	20	
Ethylbenzene	19.78	1.0	20	0	98.9	79 - 121	20.9	5.51	20	
Hexachlorobutadiene	21.15	1.0	20	0	106	66 - 134	23.26	9.52	20	
Isopropylbenzene	19.96	1.0	20	0	99.8	72 - 131	20.93	4.75	20	
m,p-Xylene	39.24	2.0	40	0	98.1	80 - 121	41.34	5.2	20	
Methylene chloride	17.7	2.0	20	0	88.5	74 - 124	14.79	17.9	20	
Naphthalene	16.74	1.0	20	0	83.7	61 - 128	19.27	14	20	
n-Butylbenzene	20.51	1.0	20	0	103	75 - 128	22.36	8.66	20	
n-Propylbenzene	20.31	1.0	20	0	102	76 - 126	22.58	10.5	20	
o-Xylene	19.52	1.0	20	0	97.6	78 - 122	20.39	4.35	20	
sec-Butylbenzene	20.14	1.0	20	0	101	77 - 126	22.15	9.52	20	
Styrene	19.3	1.0	20	0	96.5	78 - 123	20.27	4.89	20	
tert-Butylbenzene	20.63	1.0	20	0	103	78 - 124	22.48	8.57	20	
Tetrachloroethene	20.55	1.0	20	0	103	74 - 129	21.65	5.23	20	
Toluene	20.05	1.0	20	0	100	80 - 121	20.99	4.58	20	
trans-1,2-Dichloroethene	18.69	1.0	20	0	93.4	75 - 124	19.07	2.01	20	
trans-1,3-Dichloropropene	18.48	1.0	20	0	92.4	73 - 127	18.58	0.558	20	
Trichloroethene	19.23	1.0	20	0	96.1	79 - 123	20	3.97	20	
Trichlorofluoromethane	17.6	1.0	20	0	88.0	65 - 141	17.5	0.55	20	
Vinyl chloride	16.49	1.0	20	0	82.5	58 - 137	18.59	11.9	20	
Surr: 1,2-Dichloroethane-d4	*43.77*	*1.0*	*50*	*0*	*87.5*	*81 - 118*	*44.82*	*2.38*	*20*	
Surr: 4-Bromofluorobenzene	*50.68*	*1.0*	*50*	*0*	*101*	*85 - 114*	*49.52*	*2.33*	*20*	
Surr: Dibromofluoromethane	*46.38*	*1.0*	*50*	*0*	*92.8*	*80 - 119*	*46.72*	*0.724*	*20*	
Surr: Toluene-d8	*50.16*	*1.0*	*50*	*0*	*100*	*89 - 112*	*50.75*	*1.17*	*20*	

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS20070055-03MSD** Units: **UG/L** Analysis Date: **08-Jul-2020 17:49**
Client ID: Run ID: **VOA6_364746** SeqNo: **5655586** 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	19.6	1.0	20	0	98.0	78 - 124	19.89	1.46	20	
1,1,1-Trichloroethane	18.76	1.0	20	0	93.8	74 - 131	19.34	3.02	20	
1,1,2,2-Tetrachloroethane	18.25	1.0	20	0	91.2	71 - 121	20.58	12	20	
1,1,2-Trichloroethane	19.51	1.0	20	0	97.6	80 - 119	19.52	0.00862	20	
1,1-Dichloroethane	17.54	1.0	20	0	87.7	77 - 125	18.25	3.97	20	
1,1-Dichloroethene	17.88	1.0	20	0	89.4	71 - 131	19.32	7.73	20	
1,1-Dichloropropene	18.94	1.0	20	0	94.7	78 - 125	19.67	3.79	20	
1,2,3-Trichlorobenzene	17.91	1.0	20	0	89.5	69 - 129	18.24	1.84	20	
1,2,3-Trichloropropane	18.07	1.0	20	0	90.4	73 - 122	20	10.1	20	
1,2,4-Trichlorobenzene	19.69	1.0	20	0	98.5	69 - 130	20.41	3.56	20	
1,2,4-Trimethylbenzene	19.46	1.0	20	0	97.3	76 - 124	19.41	0.268	20	
1,2-Dibromo-3-chloropropane	16.41	1.0	20	0	82.0	62 - 128	17.64	7.23	20	
1,2-Dibromoethane	18.37	1.0	20	0	91.9	77 - 121	18.48	0.57	20	
1,2-Dichlorobenzene	16.68	1.0	20	0	83.4	80 - 119	21.38	24.7	20	R
1,2-Dichloroethane	18.64	1.0	20	0	93.2	73 - 128	18.47	0.943	20	
1,2-Dichloropropane	19.58	1.0	20	0	97.9	78 - 122	19.73	0.762	20	
1,3,5-Trimethylbenzene	21.44	1.0	20	0	107	75 - 124	23.36	8.57	20	
1,3-Dichlorobenzene	19.62	1.0	20	0	98.1	80 - 119	19.68	0.305	20	
1,3-Dichloropropane	18.91	1.0	20	0	94.5	80 - 119	19.32	2.19	20	
1,4-Dichlorobenzene	20.9	1.0	20	0	105	79 - 118	20.53	1.79	20	
2,2-Dichloropropane	19.88	1.0	20	0	99.4	60 - 139	20.49	3.05	20	
2-Butanone	25.42	2.0	40	0	63.6	56 - 143	26.69	4.88	20	
2-Chlorotoluene	20.54	1.0	20	0	103	79 - 122	23	11.3	20	
2-Hexanone	33.25	2.0	40	0	83.1	57 - 139	33.24	0.0178	20	
4-Chlorotoluene	20.91	1.0	20	0	105	78 - 122	22.7	8.18	20	
4-Isopropyltoluene	21.42	1.0	20	0	107	77 - 127	21.13	1.4	20	
4-Methyl-2-pentanone	34.27	2.0	40	0	85.7	67 - 130	36.52	6.38	20	
Acetone	8.021	2.0	40	0	20.1	39 - 160	8.695	8.06	20	S
Benzene	19.02	1.0	20	0	95.1	79 - 120	19.46	2.28	20	
Bromobenzene	20.39	1.0	20	0	102	80 - 120	23.16	12.7	20	
Bromochloromethane	16.66	1.0	20	0	83.3	78 - 123	16.99	1.95	20	
Bromodichloromethane	18.46	1.0	20	0	92.3	79 - 125	19.4	4.97	20	
Bromoform	17.88	1.0	20	0	89.4	66 - 130	17.83	0.301	20	
Bromomethane	19.39	1.0	20	0	96.9	53 - 141	20.16	3.93	20	

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20061390

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS20070055-03MSD** Units: **UG/L** Analysis Date: **08-Jul-2020 17:49**
Client ID: Run ID: **VOA6_364746** SeqNo: **5655586** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	37.63	2.0	40	0	94.1	64 - 133	39.68	5.3	20	
Carbon tetrachloride	19.56	1.0	20	0	97.8	72 - 136	20.19	3.2	20	
Chlorobenzene	19.67	1.0	20	0	98.3	82 - 118	19.7	0.139	20	
Chloroethane	15.53	1.0	20	0	77.7	60 - 138	17.03	9.19	20	
Chloroform	18.08	1.0	20	0	90.4	79 - 124	18.42	1.89	20	
Chloromethane	18.32	1.0	20	0	91.6	50 - 139	19.23	4.85	20	
cis-1,2-Dichloroethene	17.95	1.0	20	0	89.8	78 - 123	18.92	5.27	20	
cis-1,3-Dichloropropene	18.52	1.0	20	0	92.6	75 - 124	19.2	3.57	20	
Dibromochloromethane	18.51	1.0	20	0	92.6	74 - 126	19.07	2.96	20	
Dibromomethane	18.21	1.0	20	0	91.1	79 - 123	18.38	0.935	20	
Dichlorodifluoromethane	16.99	1.0	20	0	85.0	32 - 152	17.83	4.83	20	
Ethylbenzene	20.15	1.0	20	0	101	79 - 121	20.27	0.631	20	
Hexachlorobutadiene	21.74	1.0	20	0	109	66 - 134	25.4	15.5	20	
Isopropylbenzene	20.25	1.0	20	0	101	72 - 131	20.53	1.36	20	
m,p-Xylene	40.02	2.0	40	0	100	80 - 121	40.28	0.642	20	
Methylene chloride	17.33	2.0	20	0	86.6	74 - 124	17.8	2.72	20	
Naphthalene	16.57	1.0	20	0	82.9	61 - 128	16.18	2.43	20	
n-Butylbenzene	18.32	1.0	20	0	91.6	75 - 128	23.91	26.5	20	R
n-Propylbenzene	21.49	1.0	20	0	107	76 - 126	23.83	10.3	20	
o-Xylene	19.8	1.0	20	0	99.0	78 - 122	19.93	0.653	20	
sec-Butylbenzene	21.13	1.0	20	0	106	77 - 126	20.02	5.41	20	
Styrene	19.46	1.0	20	0	97.3	78 - 123	19.56	0.534	20	
tert-Butylbenzene	21.59	1.0	20	0	108	78 - 124	20.41	5.62	20	
Tetrachloroethene	20.67	1.0	20	0	103	74 - 129	21.77	5.18	20	
Toluene	20.28	1.0	20	0	101	80 - 121	21	3.51	20	
trans-1,2-Dichloroethene	18.76	1.0	20	0	93.8	75 - 124	19.64	4.57	20	
trans-1,3-Dichloropropene	18.68	1.0	20	0	93.4	73 - 127	18.8	0.645	20	
Trichloroethene	18.9	1.0	20	0	94.5	79 - 123	19.78	4.55	20	
Trichlorofluoromethane	18.28	1.0	20	0	91.4	65 - 141	19.08	4.29	20	
Vinyl chloride	17.94	1.0	20	0	89.7	58 - 137	19.63	8.97	20	
Surr: 1,2-Dichloroethane-d4	*44.66*	*1.0*	*50*	*0*	*89.3*	*81 - 118*	*44.6*	*0.142*	*20*	
Surr: 4-Bromofluorobenzene	*48.96*	*1.0*	*50*	*0*	*97.9*	*85 - 114*	*48.69*	*0.546*	*20*	
Surr: Dibromofluoromethane	*46.85*	*1.0*	*50*	*0*	*93.7*	*80 - 119*	*46.96*	*0.242*	*20*	
Surr: Toluene-d8	*50.65*	*1.0*	*50*	*0*	*101*	*89 - 112*	*50.94*	*0.588*	*20*	

ALS Houston, US Date: 09-Jul-20

Client:	Bhate Environmental Associates, Inc.
Project:	LHAAP-58
WorkOrder:	HS20061390

QC BATCH REPORT

Batch ID:	**R364746 (0)**	**Instrument:**	**VOA6**	**Method:**	**VOLATILES ORGANICS BY METHOD 8260C**

The following samples were analyzed in this batch: HS20061390-10

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: **HS20061390**

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

ALS Houston, US Date: 09-Jul-20

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2019-2020	31-Jul-2020
North Carolina	624-2020	31-Dec-2020
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

ALS Houston, US Date: 09-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS20061390

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS20061390-01	35AWW01_062520	Login	6/28/2020 9:12:33 AM	NDR	Sub
HS20061390-01	35AWW01_062520	Login	6/28/2020 9:12:33 AM	NDR	Sub
HS20061390-01	35AWW01_062520	Login	6/28/2020 9:12:33 AM	NDR	WET301
HS20061390-01	35AWW01_062520	Login	6/28/2020 9:12:33 AM	NDR	VOA224
HS20061390-01	35AWW01_062520	Login	6/28/2020 9:12:33 AM	NDR	Sub
HS20061390-01	35AWW01_062520	Login	6/28/2020 9:12:33 AM	NDR	Sub

00999026

ALS Houston, US Date: 09-Jul-20

Sample Receipt Checklist

Work Order ID: HS20061390 **Date/Time Received:** **26-Jun-2020 09:30**

Client Name: Bhate Environmental **Received by:** **Jared R. Makan**

Completed By:	/S/ Nilesh D. Ranchod	28-Jun-2020 09:19	**Reviewed by:**	/S/ RJ Modashia	29-Jun-2020 14:11
	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 ☐	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):	0.7c UC/C	IR25
Cooler(s)/Kit(s):	44980	
Date/Time sample(s) sent to storage:	06/26/2020 18:00	

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:

00999027

bhate

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: of

Project/Phase No: NWO1312.0150

COC Number(1):

LIMS Number:

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	Sample Analysis Requested (5): VOC	MEE	TOC	Carbon Dioxide	Anions	Aqsanic					Quality Assurance Samples (6): Ambient Blank Lot Control Number	Equipment Control
35AwW01_062520	25Jun2020	0750	-	N		WG	3	X											
35AwW01_062520_a	25Jun2020	0750	-	FD		WG	3	X											
35AWW15_062520	25Jun2020	0835	-	N		WG	3	X											
35AwW12_062520	25Jun2020	0930		N		WG	3	X											
35AWW16_062520	25Jun2020	1015		N		WG	3	X											
35AWW24_062520	25Jun2020	1100	-	N		WG	3	X											
35AWW24_062520_a	25Jun2020	1100	-	FD		WG	3	X											
LHSMW06_062520	25Jun2020	1150	-	N		WG	4	X					X						
35AWW18_06250	25Jun2020	1240	-	N		WG	3	X											
35AWW14_062520	25Jun2020	1255	-	N		WG	3	X											
TRIP BLANK	25Jun2020		-	TB		W	2	X											

HS20061390

Bhate Environmental Associates, Inc.
LHAAP-58

COMMENTS:

Cooler 44980 1225
Temp 0-7°C CF 0.0

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	6/25/20	1430	1. J. Hamm	6/26/20	09:30
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Shipped No.:

Method of Shipment:

Fed Ex Airbill Number:

Analytical Lab: ALS 10450 Stanslift Rd, Suite 210, Houston, TX 77099 (281) 530-5656

ATTN: SONIA WEST Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

00999028

ALS
10450 Stancliff [illegible]te 210
Houston, Texas 77099
Tel. +1 281 530 5556
Fax. +1 281 530 5887

44980

CUSTODY SEAL

Date: 6/25/20 Time: 1430
Name: Scott BEESINGER
Company: BHATE

Seal Broken By: SM
Date: 06/26/20

44980

Must Deliver Next Business Day
Time and Tempature Sensitive!

ALS

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINER
BHATE ENVIRONMENTAL ASSOCIATES
1209-B EAST GRAND AVE. PMB202

MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 27NOV19
ACTWGT: 1.00 LB MAN
CAD: 3001307/CAFE3211
DIMS: 26x14x14 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-58 -- BD 68898 -- BJ
RMA: [illegible]

FedEx Express

FedEx.
TRK# 0221 1251 0292 3751

FRI - 26 JUN 10:30A
PRIORITY OVERNIGHT

77099
TX-US
IAH

AB SGRA

FIO 162765 25JUN20 GGGA 559C1/C700/05AV

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

July 13, 2020

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS20070055**

Laboratory Results for: **LHAAP-58**

Dear Marcia Olive,

ALS Environmental received 6 sample(s) on Jul 01, 2020 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: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS20070055

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS20070055-01	35AWW21_062920	Groundwater		29-Jun-2020 07:55	01-Jul-2020 09:40	☐
HS20070055-02	35AWW21_062920_a	Groundwater		29-Jun-2020 07:55	01-Jul-2020 09:40	☐
HS20070055-03	35AWW13_062920	Groundwater		29-Jun-2020 08:50	01-Jul-2020 09:40	☐
HS20070055-04	35AWW10_062920	Groundwater		29-Jun-2020 09:40	01-Jul-2020 09:40	☐
HS20070055-05	35AWW17_062920	Groundwater		29-Jun-2020 10:30	01-Jul-2020 09:40	☐
HS20070055-06	Trip Blank	Water	CG 042320 -61	29-Jun-2020 00:00	01-Jul-2020 09:40	☐

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS20070055

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R364746

Sample ID: 35AWW13_062920 (HS20070055-03MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MS may be due to sample matrix interference.

Sample ID: 35AWW13_062920 (HS20070055-03MSD)

- The recovery of the Matrix Spike Duplicate (MSD) was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

The RPD between the MS and MSD was outside of the control limit.

Batch ID: R364892

Sample ID: VLCSW-200710

- 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene and Naphthalene exceeded QC limits for LCS. Samples are ND for these compounds.

Sample ID: HS20070043-17MS

- MS and MSD are for an unrelated sample

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW21_062920
Collection Date: 29-Jun-2020 07:55

ANALYTICAL REPORT
WorkOrder:HS20070055
Lab ID:HS20070055-01
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	10-Jul-2020 14:20
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	10-Jul-2020 14:20
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	10-Jul-2020 14:20
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	10-Jul-2020 14:20
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	10-Jul-2020 14:20
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	10-Jul-2020 14:20
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	10-Jul-2020 14:20
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	10-Jul-2020 14:20
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	10-Jul-2020 14:20
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	10-Jul-2020 14:20
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	10-Jul-2020 14:20
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	10-Jul-2020 14:20
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	10-Jul-2020 14:20
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	10-Jul-2020 14:20
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	10-Jul-2020 14:20
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	10-Jul-2020 14:20
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	10-Jul-2020 14:20
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	10-Jul-2020 14:20
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	10-Jul-2020 14:20
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW21_062920
Collection Date: 29-Jun-2020 07:55

ANALYTICAL REPORT
WorkOrder:HS20070055
Lab ID:HS20070055-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	10-Jul-2020 14:20
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	10-Jul-2020 14:20
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	10-Jul-2020 14:20
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	10-Jul-2020 14:20
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	10-Jul-2020 14:20
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	10-Jul-2020 14:20
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	10-Jul-2020 14:20
Surr: 1,2-Dichloroethane-d4	*86.4*			**0**	*81-118*	*%REC*	*1*	*10-Jul-2020 14:20*
Surr: 4-Bromofluorobenzene	*99.0*			**0**	*85-114*	*%REC*	*1*	*10-Jul-2020 14:20*
Surr: Dibromofluoromethane	*90.8*			**0**	*80-119*	*%REC*	*1*	*10-Jul-2020 14:20*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*1*	*10-Jul-2020 14:20*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW21_062920_a
Collection Date: 29-Jun-2020 07:55

ANALYTICAL REPORT
WorkOrder:HS20070055
Lab ID:HS20070055-02
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	08-Jul-2020 15:01
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:01
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:01
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:01
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:01
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:01
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:01
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:01
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:01
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 15:01
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	08-Jul-2020 15:01
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:01
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	08-Jul-2020 15:01
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 15:01
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:01
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:01
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:01
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Jul-2020 15:01
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:01
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW21_062920_a
Collection Date: 29-Jun-2020 07:55

ANALYTICAL REPORT
WorkOrder:HS20070055
Lab ID:HS20070055-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Jul-2020 15:01
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Jul-2020 15:01
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 15:01
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 15:01
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:01
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:01
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:01
Surr: 1,2-Dichloroethane-d4	*87.6*			**0**	*81-118*	*%REC*	*1*	*08-Jul-2020 15:01*
Surr: 4-Bromofluorobenzene	*96.6*			**0**	*85-114*	*%REC*	*1*	*08-Jul-2020 15:01*
Surr: Dibromofluoromethane	*91.3*			**0**	*80-119*	*%REC*	*1*	*08-Jul-2020 15:01*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*08-Jul-2020 15:01*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW13_062920
Collection Date: 29-Jun-2020 08:50

ANALYTICAL REPORT
WorkOrder:HS20070055
Lab ID:HS20070055-03
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	08-Jul-2020 15:49
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:49
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:49
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:49
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:49
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:49
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:49
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:49
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:49
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 15:49
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	08-Jul-2020 15:49
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:49
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	08-Jul-2020 15:49
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 15:49
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:49
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:49
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:49
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Jul-2020 15:49
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:49
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW13_062920
Collection Date: 29-Jun-2020 08:50

ANALYTICAL REPORT
WorkOrder:HS20070055
Lab ID:HS20070055-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Jul-2020 15:49
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Jul-2020 15:49
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 15:49
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 15:49
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:49
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:49
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:49
Surr: 1,2-Dichloroethane-d4	*94.2*			**0**	*81-118*	*%REC*	*1*	*08-Jul-2020 15:49*
Surr: 4-Bromofluorobenzene	*106*			**0**	*85-114*	*%REC*	*1*	*08-Jul-2020 15:49*
Surr: Dibromofluoromethane	*97.4*			**0**	*80-119*	*%REC*	*1*	*08-Jul-2020 15:49*
Surr: Toluene-d8	*102*			**0**	*89-112*	*%REC*	*1*	*08-Jul-2020 15:49*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW10_062920
Collection Date: 29-Jun-2020 09:40

ANALYTICAL REPORT
WorkOrder:HS20070055
Lab ID:HS20070055-04
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	08-Jul-2020 16:13
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 16:13
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 16:13
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 16:13
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 16:13
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 16:13
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 16:13
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 16:13
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 16:13
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 16:13
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	08-Jul-2020 16:13
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 16:13
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	UG/L	1	08-Jul-2020 16:13
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 16:13
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 16:13
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 16:13
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 16:13
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Jul-2020 16:13
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 16:13
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW10_062920
Collection Date: 29-Jun-2020 09:40

ANALYTICAL REPORT
WorkOrder:HS20070055
Lab ID:HS20070055-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Jul-2020 16:13
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Jul-2020 16:13
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 16:13
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 16:13
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 16:13
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:13
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:13
Surr: 1,2-Dichloroethane-d4	*94.8*			**0**	*81-118*	*%REC*	*1*	*08-Jul-2020 16:13*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*08-Jul-2020 16:13*
Surr: Dibromofluoromethane	*97.9*			**0**	*80-119*	*%REC*	*1*	*08-Jul-2020 16:13*
Surr: Toluene-d8	*101*			**0**	*89-112*	*%REC*	*1*	*08-Jul-2020 16:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW17_062920
Collection Date: 29-Jun-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20070055
Lab ID:HS20070055-05
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	08-Jul-2020 16:36
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 16:36
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 16:36
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 16:36
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 16:36
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 16:36
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 16:36
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 16:36
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 16:36
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 16:36
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	08-Jul-2020 16:36
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 16:36
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	08-Jul-2020 16:36
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 16:36
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 16:36
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 16:36
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 16:36
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Jul-2020 16:36
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 16:36
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW17_062920
Collection Date: 29-Jun-2020 10:30

ANALYTICAL REPORT
WorkOrder:HS20070055
Lab ID:HS20070055-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Jul-2020 16:36
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Jul-2020 16:36
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 16:36
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 16:36
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 16:36
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 16:36
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 16:36
Surr: 1,2-Dichloroethane-d4	*95.3*			**0**	*81-118*	*%REC*	*1*	*08-Jul-2020 16:36*
Surr: 4-Bromofluorobenzene	*101*			**0**	*85-114*	*%REC*	*1*	*08-Jul-2020 16:36*
Surr: Dibromofluoromethane	*96.7*			**0**	*80-119*	*%REC*	*1*	*08-Jul-2020 16:36*
Surr: Toluene-d8	*98.4*			**0**	*89-112*	*%REC*	*1*	*08-Jul-2020 16:36*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 29-Jun-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20070055
Lab ID:HS20070055-06
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	08-Jul-2020 15:25
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:25
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:25
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:25
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:25
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:25
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:25
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:25
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:25
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
2-Butanone	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 15:25
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
2-Hexanone	2.0	U	1.0	2.0	2.0	UG/L	1	08-Jul-2020 15:25
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:25
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
4-Methyl-2-pentanone	2.0	U	0.70	2.0	2.0	UG/L	1	08-Jul-2020 15:25
Acetone	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 15:25
Benzene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
Bromobenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:25
Bromochloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
Bromodichloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
Bromoform	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:25
Bromomethane	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:25
Carbon disulfide	1.0	U	0.60	1.0	2.0	UG/L	1	08-Jul-2020 15:25
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	UG/L	1	08-Jul-2020 15:25
Chlorobenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
Chloroethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
Chloroform	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 29-Jun-2020 00:00

ANALYTICAL REPORT
WorkOrder:HS20070055
Lab ID:HS20070055-06
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: PC
Chloromethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	UG/L	1	08-Jul-2020 15:25
Dibromochloromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
Dibromomethane	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
Ethylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	UG/L	1	08-Jul-2020 15:25
Isopropylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
m,p-Xylene	1.0	U	0.50	1.0	2.0	UG/L	1	08-Jul-2020 15:25
Methylene chloride	1.0	U	0.40	1.0	2.0	UG/L	1	08-Jul-2020 15:25
n-Butylbenzene	1.0	U	0.40	1.0	1.0	UG/L	1	08-Jul-2020 15:25
n-Propylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
Naphthalene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
o-Xylene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
Styrene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
Tetrachloroethene	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
Toluene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
Trichloroethene	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	UG/L	1	08-Jul-2020 15:25
Vinyl chloride	0.50	U	0.20	0.50	1.0	UG/L	1	08-Jul-2020 15:25
Surr: 1,2-Dichloroethane-d4	*94.7*			**0**	*81-118*	*%REC*	*1*	*08-Jul-2020 15:25*
Surr: 4-Bromofluorobenzene	*87.5*			**0**	*85-114*	*%REC*	*1*	*08-Jul-2020 15:25*
Surr: Dibromofluoromethane	*97.3*			**0**	*80-119*	*%REC*	*1*	*08-Jul-2020 15:25*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*08-Jul-2020 15:25*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R364746 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS20070055-06	Trip Blank	29 Jun 2020 00:00			08 Jul 2020 15:25	1
Batch ID: R364746 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20070055-02	35AWW21_062920_a	29 Jun 2020 07:55			08 Jul 2020 15:01	1
HS20070055-03	35AWW13_062920	29 Jun 2020 08:50			08 Jul 2020 15:49	1
HS20070055-04	35AWW10_062920	29 Jun 2020 09:40			08 Jul 2020 16:13	1
HS20070055-05	35AWW17_062920	29 Jun 2020 10:30			08 Jul 2020 16:36	1
Batch ID: R364892 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS20070055-01	35AWW21_062920	29 Jun 2020 07:55			10 Jul 2020 14:20	1

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-200708** Units: **UG/L** Analysis Date: **08-Jul-2020 13:49**
Client ID: Run ID: **VOA6_364746** SeqNo: **5655577** 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-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	1.0	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
Bromomethane	1.0	1.0								U

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200708** Units: **UG/L** Analysis Date: **08-Jul-2020 13:49**
Client ID: Run ID: **VOA6_364746** SeqNo: **5655577** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	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	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	1.0	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	*44.73*	*1.0*	*50*	*0*	*89.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.31*	*1.0*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*47.03*	*1.0*	*50*	*0*	*94.1*	*80 - 119*				
Surr: Toluene-d8	*52.05*	*1.0*	*50*	*0*	*104*	*89 - 112*				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200708** Units: **UG/L** Analysis Date: **08-Jul-2020 12:36**
Client ID: Run ID: **VOA6_364746** SeqNo: **5655576** 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	19.38	1.0	20	0	96.9	78 - 124				
1,1,1-Trichloroethane	19.17	1.0	20	0	95.9	74 - 131				
1,1,2,2-Tetrachloroethane	17.67	1.0	20	0	88.4	71 - 121				
1,1,2-Trichloroethane	18.86	1.0	20	0	94.3	80 - 119				
1,1-Dichloroethane	18.55	1.0	20	0	92.8	77 - 125				
1,1-Dichloroethene	19.51	1.0	20	0	97.5	71 - 131				
1,1-Dichloropropene	18.73	1.0	20	0	93.7	78 - 125				
1,2,3-Trichlorobenzene	21.47	1.0	20	0	107	69 - 129				
1,2,3-Trichloropropane	17.83	1.0	20	0	89.2	73 - 122				
1,2,4-Trichlorobenzene	21.55	1.0	20	0	108	69 - 130				
1,2,4-Trimethylbenzene	19.14	1.0	20	0	95.7	76 - 124				
1,2-Dibromo-3-chloropropane	14.77	1.0	20	0	73.8	62 - 128				
1,2-Dibromoethane	18.65	1.0	20	0	93.2	77 - 121				
1,2-Dichlorobenzene	18.07	1.0	20	0	90.3	80 - 119				
1,2-Dichloroethane	19.73	1.0	20	0	98.6	73 - 128				
1,2-Dichloropropane	19.8	1.0	20	0	99.0	78 - 122				
1,3,5-Trimethylbenzene	19.58	1.0	20	0	97.9	75 - 124				
1,3-Dichlorobenzene	19.11	1.0	20	0	95.5	80 - 119				
1,3-Dichloropropane	18.9	1.0	20	0	94.5	80 - 119				
1,4-Dichlorobenzene	19.88	1.0	20	0	99.4	79 - 118				
2,2-Dichloropropane	20.66	1.0	20	0	103	60 - 139				
2-Butanone	33.67	2.0	40	0	84.2	56 - 143				
2-Chlorotoluene	18.84	1.0	20	0	94.2	79 - 122				
2-Hexanone	34.66	2.0	40	0	86.6	57 - 139				
4-Chlorotoluene	19.51	1.0	20	0	97.6	78 - 122				
4-Isopropyltoluene	19.47	1.0	20	0	97.4	77 - 127				
4-Methyl-2-pentanone	35.68	2.0	40	0	89.2	67 - 130				
Acetone	18.47	2.0	40	0	46.2	39 - 160				
Benzene	19.21	1.0	20	0	96.1	79 - 120				
Bromobenzene	19.39	1.0	20	0	97.0	80 - 120				
Bromochloromethane	17.34	1.0	20	0	86.7	78 - 123				
Bromodichloromethane	19.84	1.0	20	0	99.2	79 - 125				
Bromoform	17.78	1.0	20	0	88.9	66 - 130				
Bromomethane	20.32	1.0	20	0	102	53 - 141				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200708** Units: **UG/L** Analysis Date: **08-Jul-2020 12:36**
Client ID: Run ID: **VOA6_364746** SeqNo: **5655576** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	38.58	2.0	40	0	96.5	64 - 133				
Carbon tetrachloride	19.08	1.0	20	0	95.4	72 - 136				
Chlorobenzene	19.12	1.0	20	0	95.6	82 - 118				
Chloroethane	16.68	1.0	20	0	83.4	60 - 138				
Chloroform	19.06	1.0	20	0	95.3	79 - 124				
Chloromethane	18.29	1.0	20	0	91.5	50 - 139				
cis-1,2-Dichloroethene	19.13	1.0	20	0	95.6	78 - 123				
cis-1,3-Dichloropropene	19.51	1.0	20	0	97.6	75 - 124				
Dibromochloromethane	19.13	1.0	20	0	95.6	74 - 126				
Dibromomethane	19.46	1.0	20	0	97.3	79 - 123				
Dichlorodifluoromethane	18.49	1.0	20	0	92.4	32 - 152				
Ethylbenzene	19.12	1.0	20	0	95.6	79 - 121				
Hexachlorobutadiene	24.39	1.0	20	0	122	66 - 134				
Isopropylbenzene	18.99	1.0	20	0	94.9	72 - 131				
m,p-Xylene	38.39	2.0	40	0	96.0	80 - 121				
Methylene chloride	20.43	2.0	20	0	102	74 - 124				
Naphthalene	18.3	1.0	20	0	91.5	61 - 128				
n-Butylbenzene	19.63	1.0	20	0	98.1	75 - 128				
n-Propylbenzene	19.36	1.0	20	0	96.8	76 - 126				
o-Xylene	19.01	1.0	20	0	95.1	78 - 122				
sec-Butylbenzene	19.09	1.0	20	0	95.4	77 - 126				
Styrene	18.62	1.0	20	0	93.1	78 - 123				
tert-Butylbenzene	19.8	1.0	20	0	99.0	78 - 124				
Tetrachloroethene	19.31	1.0	20	0	96.5	74 - 129				
Toluene	19.54	1.0	20	0	97.7	80 - 121				
trans-1,2-Dichloroethene	19.43	1.0	20	0	97.1	75 - 124				
trans-1,3-Dichloropropene	19.05	1.0	20	0	95.2	73 - 127				
Trichloroethene	19.06	1.0	20	0	95.3	79 - 123				
Trichlorofluoromethane	18.38	1.0	20	0	91.9	65 - 141				
Vinyl chloride	16.8	1.0	20	0	84.0	58 - 137				
Surr: 1,2-Dichloroethane-d4	*49.73*	*1.0*	*50*	*0*	*99.5*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.44*	*1.0*	*50*	*0*	*98.9*	*85 - 114*				
Surr: Dibromofluoromethane	*49.6*	*1.0*	*50*	*0*	*99.2*	*80 - 119*				
Surr: Toluene-d8	*48.05*	*1.0*	*50*	*0*	*96.1*	*89 - 112*				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS20070055-04MS** Units: **UG/L** Analysis Date: **08-Jul-2020 18:13**
Client ID: **35AWW10_062920** Run ID: **VOA6_364746** SeqNo: **5655587** 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	20.39	1.0	20	0	102	78 - 124				
1,1,1-Trichloroethane	19.24	1.0	20	0	96.2	74 - 131				
1,1,2,2-Tetrachloroethane	18.97	1.0	20	0	94.9	71 - 121				
1,1,2-Trichloroethane	19.72	1.0	20	0	98.6	80 - 119				
1,1-Dichloroethane	17.81	1.0	20	0	89.0	77 - 125				
1,1-Dichloroethene	16.61	1.0	20	0	83.1	71 - 131				
1,1-Dichloropropene	19.86	1.0	20	0	99.3	78 - 125				
1,2,3-Trichlorobenzene	20.66	1.0	20	0	103	69 - 129				
1,2,3-Trichloropropane	18.53	1.0	20	0	92.7	73 - 122				
1,2,4-Trichlorobenzene	20.9	1.0	20	0	104	69 - 130				
1,2,4-Trimethylbenzene	21.6	1.0	20	0	108	76 - 124				
1,2-Dibromo-3-chloropropane	16.53	1.0	20	0	82.7	62 - 128				
1,2-Dibromoethane	19	1.0	20	0	95.0	77 - 121				
1,2-Dichlorobenzene	20.15	1.0	20	0	101	80 - 119				
1,2-Dichloroethane	18.61	1.0	20	0	93.0	73 - 128				
1,2-Dichloropropane	19.65	1.0	20	0	98.3	78 - 122				
1,3,5-Trimethylbenzene	22.19	1.0	20	0	111	75 - 124				
1,3-Dichlorobenzene	20.99	1.0	20	0	105	80 - 119				
1,3-Dichloropropane	19.2	1.0	20	0	96.0	80 - 119				
1,4-Dichlorobenzene	22.37	1.0	20	0	112	79 - 118				
2,2-Dichloropropane	19.88	1.0	20	0	99.4	60 - 139				
2-Butanone	25.56	2.0	40	0	63.9	56 - 143				
2-Chlorotoluene	21.63	1.0	20	0	108	79 - 122				
2-Hexanone	32.93	2.0	40	0	82.3	57 - 139				
4-Chlorotoluene	21.42	1.0	20	0	107	78 - 122				
4-Isopropyltoluene	22.42	1.0	20	0	112	77 - 127				
4-Methyl-2-pentanone	35.92	2.0	40	0	89.8	67 - 130				
Acetone	61.84	2.0	40	0	155	39 - 160				
Benzene	19.74	1.0	20	0	98.7	79 - 120				
Bromobenzene	21.34	1.0	20	0	107	80 - 120				
Bromochloromethane	17.11	1.0	20	0	85.5	78 - 123				
Bromodichloromethane	19.2	1.0	20	0	96.0	79 - 125				
Bromoform	18.28	1.0	20	0	91.4	66 - 130				
Bromomethane	17.71	1.0	20	0	88.5	53 - 141				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS20070055-04MS** Units: **UG/L** Analysis Date: **08-Jul-2020 18:13**
Client ID: **35AWW10_062920** Run ID: **VOA6_364746** SeqNo: **5655587** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	31.17	2.0	40	0	77.9	64 - 133				
Carbon tetrachloride	20.26	1.0	20	0	101	72 - 136				
Chlorobenzene	20.11	1.0	20	0	101	82 - 118				
Chloroethane	15.56	1.0	20	0	77.8	60 - 138				
Chloroform	18.58	1.0	20	0	92.9	79 - 124				
Chloromethane	19.21	1.0	20	0	96.0	50 - 139				
cis-1,2-Dichloroethene	18.36	1.0	20	0	91.8	78 - 123				
cis-1,3-Dichloropropene	19.11	1.0	20	0	95.6	75 - 124				
Dibromochloromethane	19.23	1.0	20	0	96.1	74 - 126				
Dibromomethane	18.44	1.0	20	0	92.2	79 - 123				
Dichlorodifluoromethane	17.05	1.0	20	0	85.2	32 - 152				
Ethylbenzene	20.9	1.0	20	0	105	79 - 121				
Hexachlorobutadiene	23.26	1.0	20	0	116	66 - 134				
Isopropylbenzene	20.93	1.0	20	0	105	72 - 131				
m,p-Xylene	41.34	2.0	40	0	103	80 - 121				
Methylene chloride	14.79	2.0	20	0	74.0	74 - 124				S
Naphthalene	19.27	1.0	20	0	96.3	61 - 128				
n-Butylbenzene	22.36	1.0	20	0	112	75 - 128				
n-Propylbenzene	22.58	1.0	20	0	113	76 - 126				
o-Xylene	20.39	1.0	20	0	102	78 - 122				
sec-Butylbenzene	22.15	1.0	20	0	111	77 - 126				
Styrene	20.27	1.0	20	0	101	78 - 123				
tert-Butylbenzene	22.48	1.0	20	0	112	78 - 124				
Tetrachloroethene	21.65	1.0	20	0	108	74 - 129				
Toluene	20.99	1.0	20	0	105	80 - 121				
trans-1,2-Dichloroethene	19.07	1.0	20	0	95.3	75 - 124				
trans-1,3-Dichloropropene	18.58	1.0	20	0	92.9	73 - 127				
Trichloroethene	20	1.0	20	0	100	79 - 123				
Trichlorofluoromethane	17.5	1.0	20	0	87.5	65 - 141				
Vinyl chloride	18.59	1.0	20	0	92.9	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.82*	*1.0*	*50*	*0*	*89.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.52*	*1.0*	*50*	*0*	*99.0*	*85 - 114*				
Surr: Dibromofluoromethane	*46.72*	*1.0*	*50*	*0*	*93.4*	*80 - 119*				
Surr: Toluene-d8	*50.75*	*1.0*	*50*	*0*	*102*	*89 - 112*				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS20070055-03MS** Units: **UG/L** Analysis Date: **08-Jul-2020 17:25**
Client ID: **35AWW13_062920** Run ID: **VOA6_364746** SeqNo: **5655585** 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	19.89	1.0	20	0	99.5	78 - 124				
1,1,1-Trichloroethane	19.34	1.0	20	0	96.7	74 - 131				
1,1,2,2-Tetrachloroethane	20.58	1.0	20	0	103	71 - 121				
1,1,2-Trichloroethane	19.52	1.0	20	0	97.6	80 - 119				
1,1-Dichloroethane	18.25	1.0	20	0	91.3	77 - 125				
1,1-Dichloroethene	19.32	1.0	20	0	96.6	71 - 131				
1,1-Dichloropropene	19.67	1.0	20	0	98.3	78 - 125				
1,2,3-Trichlorobenzene	18.24	1.0	20	0	91.2	69 - 129				
1,2,3-Trichloropropane	20	1.0	20	0	100	73 - 122				
1,2,4-Trichlorobenzene	20.41	1.0	20	0	102	69 - 130				
1,2,4-Trimethylbenzene	19.41	1.0	20	0	97.0	76 - 124				
1,2-Dibromo-3-chloropropane	17.64	1.0	20	0	88.2	62 - 128				
1,2-Dibromoethane	18.48	1.0	20	0	92.4	77 - 121				
1,2-Dichlorobenzene	21.38	1.0	20	0	107	80 - 119				
1,2-Dichloroethane	18.47	1.0	20	0	92.3	73 - 128				
1,2-Dichloropropane	19.73	1.0	20	0	98.7	78 - 122				
1,3,5-Trimethylbenzene	23.36	1.0	20	0	117	75 - 124				
1,3-Dichlorobenzene	19.68	1.0	20	0	98.4	80 - 119				
1,3-Dichloropropane	19.32	1.0	20	0	96.6	80 - 119				
1,4-Dichlorobenzene	20.53	1.0	20	0	103	79 - 118				
2,2-Dichloropropane	20.49	1.0	20	0	102	60 - 139				
2-Butanone	26.69	2.0	40	0	66.7	56 - 143				
2-Chlorotoluene	23	1.0	20	0	115	79 - 122				
2-Hexanone	33.24	2.0	40	0	83.1	57 - 139				
4-Chlorotoluene	22.7	1.0	20	0	113	78 - 122				
4-Isopropyltoluene	21.13	1.0	20	0	106	77 - 127				
4-Methyl-2-pentanone	36.52	2.0	40	0	91.3	67 - 130				
Acetone	8.695	2.0	40	0	21.7	39 - 160				S
Benzene	19.46	1.0	20	0	97.3	79 - 120				
Bromobenzene	23.16	1.0	20	0	116	80 - 120				
Bromochloromethane	16.99	1.0	20	0	84.9	78 - 123				
Bromodichloromethane	19.4	1.0	20	0	97.0	79 - 125				
Bromoform	17.83	1.0	20	0	89.2	66 - 130				
Bromomethane	20.16	1.0	20	0	101	53 - 141				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS20070055-03MS** Units: **UG/L** Analysis Date: **08-Jul-2020 17:25**
Client ID: **35AWW13_062920** Run ID: **VOA6_364746** SeqNo: **5655585** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	39.68	2.0	40	0	99.2	64 - 133				
Carbon tetrachloride	20.19	1.0	20	0	101	72 - 136				
Chlorobenzene	19.7	1.0	20	0	98.5	82 - 118				
Chloroethane	17.03	1.0	20	0	85.1	60 - 138				
Chloroform	18.42	1.0	20	0	92.1	79 - 124				
Chloromethane	19.23	1.0	20	0	96.1	50 - 139				
cis-1,2-Dichloroethene	18.92	1.0	20	0	94.6	78 - 123				
cis-1,3-Dichloropropene	19.2	1.0	20	0	96.0	75 - 124				
Dibromochloromethane	19.07	1.0	20	0	95.3	74 - 126				
Dibromomethane	18.38	1.0	20	0	91.9	79 - 123				
Dichlorodifluoromethane	17.83	1.0	20	0	89.2	32 - 152				
Ethylbenzene	20.27	1.0	20	0	101	79 - 121				
Hexachlorobutadiene	25.4	1.0	20	0	127	66 - 134				
Isopropylbenzene	20.53	1.0	20	0	103	72 - 131				
m,p-Xylene	40.28	2.0	40	0	101	80 - 121				
Methylene chloride	17.8	2.0	20	0	89.0	74 - 124				
Naphthalene	16.18	1.0	20	0	80.9	61 - 128				
n-Butylbenzene	23.91	1.0	20	0	120	75 - 128				
n-Propylbenzene	23.83	1.0	20	0	119	76 - 126				
o-Xylene	19.93	1.0	20	0	99.7	78 - 122				
sec-Butylbenzene	20.02	1.0	20	0	100	77 - 126				
Styrene	19.56	1.0	20	0	97.8	78 - 123				
tert-Butylbenzene	20.41	1.0	20	0	102	78 - 124				
Tetrachloroethene	21.77	1.0	20	0	109	74 - 129				
Toluene	21	1.0	20	0	105	80 - 121				
trans-1,2-Dichloroethene	19.64	1.0	20	0	98.2	75 - 124				
trans-1,3-Dichloropropene	18.8	1.0	20	0	94.0	73 - 127				
Trichloroethene	19.78	1.0	20	0	98.9	79 - 123				
Trichlorofluoromethane	19.08	1.0	20	0	95.4	65 - 141				
Vinyl chloride	19.63	1.0	20	0	98.1	58 - 137				
Surr: 1,2-Dichloroethane-d4	*44.6*	*1.0*	*50*	*0*	*89.2*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.69*	*1.0*	*50*	*0*	*97.4*	*85 - 114*				
Surr: Dibromofluoromethane	*46.96*	*1.0*	*50*	*0*	*93.9*	*80 - 119*				
Surr: Toluene-d8	*50.94*	*1.0*	*50*	*0*	*102*	*89 - 112*				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS20070055-04MSD** Units: **UG/L** Analysis Date: **08-Jul-2020 18:37**
Client ID: **35AWW10_062920** Run ID: **VOA6_364746** SeqNo: **5655588** 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	19.59	1.0	20	0	97.9	78 - 124	20.39	4	20	
1,1,1-Trichloroethane	18.74	1.0	20	0	93.7	74 - 131	19.24	2.63	20	
1,1,2,2-Tetrachloroethane	17.66	1.0	20	0	88.3	71 - 121	18.97	7.15	20	
1,1,2-Trichloroethane	19.12	1.0	20	0	95.6	80 - 119	19.72	3.06	20	
1,1-Dichloroethane	17.88	1.0	20	0	89.4	77 - 125	17.81	0.388	20	
1,1-Dichloroethene	16.87	1.0	20	0	84.4	71 - 131	16.61	1.55	20	
1,1-Dichloropropene	18.73	1.0	20	0	93.6	78 - 125	19.86	5.87	20	
1,2,3-Trichlorobenzene	19.4	1.0	20	0	97.0	69 - 129	20.66	6.29	20	
1,2,3-Trichloropropane	17.75	1.0	20	0	88.8	73 - 122	18.53	4.31	20	
1,2,4-Trichlorobenzene	19.72	1.0	20	0	98.6	69 - 130	20.9	5.78	20	
1,2,4-Trimethylbenzene	20.13	1.0	20	0	101	76 - 124	21.6	7.09	20	
1,2-Dibromo-3-chloropropane	15.47	1.0	20	0	77.3	62 - 128	16.53	6.65	20	
1,2-Dibromoethane	18.69	1.0	20	0	93.4	77 - 121	19	1.68	20	
1,2-Dichlorobenzene	18.81	1.0	20	0	94.0	80 - 119	20.15	6.91	20	
1,2-Dichloroethane	18.44	1.0	20	0	92.2	73 - 128	18.61	0.869	20	
1,2-Dichloropropane	19	1.0	20	0	95.0	78 - 122	19.65	3.36	20	
1,3,5-Trimethylbenzene	20.15	1.0	20	0	101	75 - 124	22.19	9.64	20	
1,3-Dichlorobenzene	19.35	1.0	20	0	96.8	80 - 119	20.99	8.13	20	
1,3-Dichloropropane	18.87	1.0	20	0	94.4	80 - 119	19.2	1.74	20	
1,4-Dichlorobenzene	20.24	1.0	20	0	101	79 - 118	22.37	10	20	
2,2-Dichloropropane	19	1.0	20	0	95.0	60 - 139	19.88	4.52	20	
2-Butanone	25.76	2.0	40	0	64.4	56 - 143	25.56	0.774	20	
2-Chlorotoluene	19.4	1.0	20	0	97.0	79 - 122	21.63	10.9	20	
2-Hexanone	33.01	2.0	40	0	82.5	57 - 139	32.93	0.236	20	
4-Chlorotoluene	19.8	1.0	20	0	99.0	78 - 122	21.42	7.86	20	
4-Isopropyltoluene	20.31	1.0	20	0	102	77 - 127	22.42	9.87	20	
4-Methyl-2-pentanone	35.57	2.0	40	0	88.9	67 - 130	35.92	0.978	20	
Acetone	6.938	2.0	40	0	17.3	39 - 160	61.84	160	20	SR
Benzene	18.81	1.0	20	0	94.1	79 - 120	19.74	4.79	20	
Bromobenzene	19.38	1.0	20	0	96.9	80 - 120	21.34	9.63	20	
Bromochloromethane	16.72	1.0	20	0	83.6	78 - 123	17.11	2.26	20	
Bromodichloromethane	18.96	1.0	20	0	94.8	79 - 125	19.2	1.27	20	
Bromoform	17.81	1.0	20	0	89.1	66 - 130	18.28	2.58	20	
Bromomethane	18.55	1.0	20	0	92.7	53 - 141	17.71	4.64	20	

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS20070055-04MSD** Units: **UG/L** Analysis Date: **08-Jul-2020 18:37**
Client ID: **35AWW10_062920** Run ID: **VOA6_364746** SeqNo: **5655588** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	33.88	2.0	40	0	84.7	64 - 133	31.17	8.32	20	
Carbon tetrachloride	19.39	1.0	20	0	96.9	72 - 136	20.26	4.39	20	
Chlorobenzene	19.36	1.0	20	0	96.8	82 - 118	20.11	3.8	20	
Chloroethane	15.9	1.0	20	0	79.5	60 - 138	15.56	2.16	20	
Chloroform	17.92	1.0	20	0	89.6	79 - 124	18.58	3.59	20	
Chloromethane	17.42	1.0	20	0	87.1	50 - 139	19.21	9.78	20	
cis-1,2-Dichloroethene	17.88	1.0	20	0	89.4	78 - 123	18.36	2.65	20	
cis-1,3-Dichloropropene	18.47	1.0	20	0	92.3	75 - 124	19.11	3.43	20	
Dibromochloromethane	19	1.0	20	0	95.0	74 - 126	19.23	1.21	20	
Dibromomethane	17.85	1.0	20	0	89.3	79 - 123	18.44	3.21	20	
Dichlorodifluoromethane	15.94	1.0	20	0	79.7	32 - 152	17.05	6.71	20	
Ethylbenzene	19.78	1.0	20	0	98.9	79 - 121	20.9	5.51	20	
Hexachlorobutadiene	21.15	1.0	20	0	106	66 - 134	23.26	9.52	20	
Isopropylbenzene	19.96	1.0	20	0	99.8	72 - 131	20.93	4.75	20	
m,p-Xylene	39.24	2.0	40	0	98.1	80 - 121	41.34	5.2	20	
Methylene chloride	17.7	2.0	20	0	88.5	74 - 124	14.79	17.9	20	
Naphthalene	16.74	1.0	20	0	83.7	61 - 128	19.27	14	20	
n-Butylbenzene	20.51	1.0	20	0	103	75 - 128	22.36	8.66	20	
n-Propylbenzene	20.31	1.0	20	0	102	76 - 126	22.58	10.5	20	
o-Xylene	19.52	1.0	20	0	97.6	78 - 122	20.39	4.35	20	
sec-Butylbenzene	20.14	1.0	20	0	101	77 - 126	22.15	9.52	20	
Styrene	19.3	1.0	20	0	96.5	78 - 123	20.27	4.89	20	
tert-Butylbenzene	20.63	1.0	20	0	103	78 - 124	22.48	8.57	20	
Tetrachloroethene	20.55	1.0	20	0	103	74 - 129	21.65	5.23	20	
Toluene	20.05	1.0	20	0	100	80 - 121	20.99	4.58	20	
trans-1,2-Dichloroethene	18.69	1.0	20	0	93.4	75 - 124	19.07	2.01	20	
trans-1,3-Dichloropropene	18.48	1.0	20	0	92.4	73 - 127	18.58	0.558	20	
Trichloroethene	19.23	1.0	20	0	96.1	79 - 123	20	3.97	20	
Trichlorofluoromethane	17.6	1.0	20	0	88.0	65 - 141	17.5	0.55	20	
Vinyl chloride	16.49	1.0	20	0	82.5	58 - 137	18.59	11.9	20	
Surr: 1,2-Dichloroethane-d4	*43.77*	*1.0*	*50*	*0*	*87.5*	*81 - 118*	*44.82*	*2.38*	*20*	
Surr: 4-Bromofluorobenzene	*50.68*	*1.0*	*50*	*0*	*101*	*85 - 114*	*49.52*	*2.33*	*20*	
Surr: Dibromofluoromethane	*46.38*	*1.0*	*50*	*0*	*92.8*	*80 - 119*	*46.72*	*0.724*	*20*	
Surr: Toluene-d8	*50.16*	*1.0*	*50*	*0*	*100*	*89 - 112*	*50.75*	*1.17*	*20*	

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS20070055-03MSD** Units: **UG/L** Analysis Date: **08-Jul-2020 17:49**
Client ID: **35AWW13_062920** Run ID: **VOA6_364746** SeqNo: **5655586** 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	19.6	1.0	20	0	98.0	78 - 124	19.89	1.46	20	
1,1,1-Trichloroethane	18.76	1.0	20	0	93.8	74 - 131	19.34	3.02	20	
1,1,2,2-Tetrachloroethane	18.25	1.0	20	0	91.2	71 - 121	20.58	12	20	
1,1,2-Trichloroethane	19.51	1.0	20	0	97.6	80 - 119	19.52	0.00862	20	
1,1-Dichloroethane	17.54	1.0	20	0	87.7	77 - 125	18.25	3.97	20	
1,1-Dichloroethene	17.88	1.0	20	0	89.4	71 - 131	19.32	7.73	20	
1,1-Dichloropropene	18.94	1.0	20	0	94.7	78 - 125	19.67	3.79	20	
1,2,3-Trichlorobenzene	17.91	1.0	20	0	89.5	69 - 129	18.24	1.84	20	
1,2,3-Trichloropropane	18.07	1.0	20	0	90.4	73 - 122	20	10.1	20	
1,2,4-Trichlorobenzene	19.69	1.0	20	0	98.5	69 - 130	20.41	3.56	20	
1,2,4-Trimethylbenzene	19.46	1.0	20	0	97.3	76 - 124	19.41	0.268	20	
1,2-Dibromo-3-chloropropane	16.41	1.0	20	0	82.0	62 - 128	17.64	7.23	20	
1,2-Dibromoethane	18.37	1.0	20	0	91.9	77 - 121	18.48	0.57	20	
1,2-Dichlorobenzene	16.68	1.0	20	0	83.4	80 - 119	21.38	24.7	20	R
1,2-Dichloroethane	18.64	1.0	20	0	93.2	73 - 128	18.47	0.943	20	
1,2-Dichloropropane	19.58	1.0	20	0	97.9	78 - 122	19.73	0.762	20	
1,3,5-Trimethylbenzene	21.44	1.0	20	0	107	75 - 124	23.36	8.57	20	
1,3-Dichlorobenzene	19.62	1.0	20	0	98.1	80 - 119	19.68	0.305	20	
1,3-Dichloropropane	18.91	1.0	20	0	94.5	80 - 119	19.32	2.19	20	
1,4-Dichlorobenzene	20.9	1.0	20	0	105	79 - 118	20.53	1.79	20	
2,2-Dichloropropane	19.88	1.0	20	0	99.4	60 - 139	20.49	3.05	20	
2-Butanone	25.42	2.0	40	0	63.6	56 - 143	26.69	4.88	20	
2-Chlorotoluene	20.54	1.0	20	0	103	79 - 122	23	11.3	20	
2-Hexanone	33.25	2.0	40	0	83.1	57 - 139	33.24	0.0178	20	
4-Chlorotoluene	20.91	1.0	20	0	105	78 - 122	22.7	8.18	20	
4-Isopropyltoluene	21.42	1.0	20	0	107	77 - 127	21.13	1.4	20	
4-Methyl-2-pentanone	34.27	2.0	40	0	85.7	67 - 130	36.52	6.38	20	
Acetone	8.021	2.0	40	0	20.1	39 - 160	8.695	8.06	20	S
Benzene	19.02	1.0	20	0	95.1	79 - 120	19.46	2.28	20	
Bromobenzene	20.39	1.0	20	0	102	80 - 120	23.16	12.7	20	
Bromochloromethane	16.66	1.0	20	0	83.3	78 - 123	16.99	1.95	20	
Bromodichloromethane	18.46	1.0	20	0	92.3	79 - 125	19.4	4.97	20	
Bromoform	17.88	1.0	20	0	89.4	66 - 130	17.83	0.301	20	
Bromomethane	19.39	1.0	20	0	96.9	53 - 141	20.16	3.93	20	

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364746 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS20070055-03MSD** Units: **UG/L** Analysis Date: **08-Jul-2020 17:49**
Client ID: **35AWW13_062920** Run ID: **VOA6_364746** SeqNo: **5655586** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	37.63	2.0	40	0	94.1	64 - 133	39.68	5.3	20	
Carbon tetrachloride	19.56	1.0	20	0	97.8	72 - 136	20.19	3.2	20	
Chlorobenzene	19.67	1.0	20	0	98.3	82 - 118	19.7	0.139	20	
Chloroethane	15.53	1.0	20	0	77.7	60 - 138	17.03	9.19	20	
Chloroform	18.08	1.0	20	0	90.4	79 - 124	18.42	1.89	20	
Chloromethane	18.32	1.0	20	0	91.6	50 - 139	19.23	4.85	20	
cis-1,2-Dichloroethene	17.95	1.0	20	0	89.8	78 - 123	18.92	5.27	20	
cis-1,3-Dichloropropene	18.52	1.0	20	0	92.6	75 - 124	19.2	3.57	20	
Dibromochloromethane	18.51	1.0	20	0	92.6	74 - 126	19.07	2.96	20	
Dibromomethane	18.21	1.0	20	0	91.1	79 - 123	18.38	0.935	20	
Dichlorodifluoromethane	16.99	1.0	20	0	85.0	32 - 152	17.83	4.83	20	
Ethylbenzene	20.15	1.0	20	0	101	79 - 121	20.27	0.631	20	
Hexachlorobutadiene	21.74	1.0	20	0	109	66 - 134	25.4	15.5	20	
Isopropylbenzene	20.25	1.0	20	0	101	72 - 131	20.53	1.36	20	
m,p-Xylene	40.02	2.0	40	0	100	80 - 121	40.28	0.642	20	
Methylene chloride	17.33	2.0	20	0	86.6	74 - 124	17.8	2.72	20	
Naphthalene	16.57	1.0	20	0	82.9	61 - 128	16.18	2.43	20	
n-Butylbenzene	18.32	1.0	20	0	91.6	75 - 128	23.91	26.5	20	R
n-Propylbenzene	21.49	1.0	20	0	107	76 - 126	23.83	10.3	20	
o-Xylene	19.8	1.0	20	0	99.0	78 - 122	19.93	0.653	20	
sec-Butylbenzene	21.13	1.0	20	0	106	77 - 126	20.02	5.41	20	
Styrene	19.46	1.0	20	0	97.3	78 - 123	19.56	0.534	20	
tert-Butylbenzene	21.59	1.0	20	0	108	78 - 124	20.41	5.62	20	
Tetrachloroethene	20.67	1.0	20	0	103	74 - 129	21.77	5.18	20	
Toluene	20.28	1.0	20	0	101	80 - 121	21	3.51	20	
trans-1,2-Dichloroethene	18.76	1.0	20	0	93.8	75 - 124	19.64	4.57	20	
trans-1,3-Dichloropropene	18.68	1.0	20	0	93.4	73 - 127	18.8	0.645	20	
Trichloroethene	18.9	1.0	20	0	94.5	79 - 123	19.78	4.55	20	
Trichlorofluoromethane	18.28	1.0	20	0	91.4	65 - 141	19.08	4.29	20	
Vinyl chloride	17.94	1.0	20	0	89.7	58 - 137	19.63	8.97	20	
Surr: 1,2-Dichloroethane-d4	*44.66*	*1.0*	*50*	*0*	*89.3*	*81 - 118*	*44.6*	*0.142*	*20*	
Surr: 4-Bromofluorobenzene	*48.96*	*1.0*	*50*	*0*	*97.9*	*85 - 114*	*48.69*	*0.546*	*20*	
Surr: Dibromofluoromethane	*46.85*	*1.0*	*50*	*0*	*93.7*	*80 - 119*	*46.96*	*0.242*	*20*	
Surr: Toluene-d8	*50.65*	*1.0*	*50*	*0*	*101*	*89 - 112*	*50.94*	*0.588*	*20*	

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364746 (0)	Instrument: VOA6	Method: VOLATILES ORGANICS BY METHOD 8260C

The following samples were analyzed in this batch:				
HS20070055-02	HS20070055-03	HS20070055-04	HS20070055-05	
HS20070055-06				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364892 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-200710** Units: **UG/L** Analysis Date: **10-Jul-2020 13:56**
Client ID: Run ID: **VOA6_364892** SeqNo: **5658729** 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-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	1.0	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
Bromomethane	1.0	1.0								U

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364892 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-200710** Units: **UG/L** Analysis Date: **10-Jul-2020 13:56**
Client ID: Run ID: **VOA6_364892** SeqNo: **5658729** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	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	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	1.0	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	*45.2*	*1.0*	*50*	*0*	*90.4*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*49.38*	*1.0*	*50*	*0*	*98.8*	*85 - 114*				
Surr: Dibromofluoromethane	*46.39*	*1.0*	*50*	*0*	*92.8*	*80 - 119*				
Surr: Toluene-d8	*47.93*	*1.0*	*50*	*0*	*95.9*	*89 - 112*				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364892 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-200710** Units: **UG/L** Analysis Date: **10-Jul-2020 13:07**
Client ID: Run ID: **VOA6_364892** SeqNo: **5658728** 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	19.68	1.0	20	0	98.4	78 - 124				
1,1,1-Trichloroethane	17.81	1.0	20	0	89.0	74 - 131				
1,1,2,2-Tetrachloroethane	22.16	1.0	20	0	111	71 - 121				
1,1,2-Trichloroethane	20.3	1.0	20	0	102	80 - 119				
1,1-Dichloroethane	18.26	1.0	20	0	91.3	77 - 125				
1,1-Dichloroethene	17.16	1.0	20	0	85.8	71 - 131				
1,1-Dichloropropene	17.02	1.0	20	0	85.1	78 - 125				
1,2,3-Trichlorobenzene	31.68	1.0	20	0	158	69 - 129				S
1,2,3-Trichloropropane	22.86	1.0	20	0	114	73 - 122				
1,2,4-Trichlorobenzene	28.82	1.0	20	0	144	69 - 130				S
1,2,4-Trimethylbenzene	19.91	1.0	20	0	99.6	76 - 124				
1,2-Dibromo-3-chloropropane	24.65	1.0	20	0	123	62 - 128				
1,2-Dibromoethane	20.17	1.0	20	0	101	77 - 121				
1,2-Dichlorobenzene	19.19	1.0	20	0	96.0	80 - 119				
1,2-Dichloroethane	19.43	1.0	20	0	97.1	73 - 128				
1,2-Dichloropropane	19.44	1.0	20	0	97.2	78 - 122				
1,3,5-Trimethylbenzene	19.22	1.0	20	0	96.1	75 - 124				
1,3-Dichlorobenzene	18.1	1.0	20	0	90.5	80 - 119				
1,3-Dichloropropane	19.35	1.0	20	0	96.7	80 - 119				
1,4-Dichlorobenzene	18.87	1.0	20	0	94.4	79 - 118				
2,2-Dichloropropane	19.79	1.0	20	0	98.9	60 - 139				
2-Butanone	38.76	2.0	40	0	96.9	56 - 143				
2-Chlorotoluene	19.78	1.0	20	0	98.9	79 - 122				
2-Hexanone	43.11	2.0	40	0	108	57 - 139				
4-Chlorotoluene	20.34	1.0	20	0	102	78 - 122				
4-Isopropyltoluene	16.43	1.0	20	0	82.2	77 - 127				
4-Methyl-2-pentanone	43.5	2.0	40	0	109	67 - 130				
Acetone	18.79	2.0	40	0	47.0	39 - 160				
Benzene	18.57	1.0	20	0	92.8	79 - 120				
Bromobenzene	21.47	1.0	20	0	107	80 - 120				
Bromochloromethane	18.76	1.0	20	0	93.8	78 - 123				
Bromodichloromethane	19.19	1.0	20	0	95.9	79 - 125				
Bromoform	19.93	1.0	20	0	99.7	66 - 130				
Bromomethane	20.71	1.0	20	0	104	53 - 141				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364892 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-200710** Units: **UG/L** Analysis Date: **10-Jul-2020 13:07**
Client ID: Run ID: **VOA6_364892** SeqNo: **5658728** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	35.35	2.0	40	0	88.4	64 - 133				
Carbon tetrachloride	16.8	1.0	20	0	84.0	72 - 136				
Chlorobenzene	19.14	1.0	20	0	95.7	82 - 118				
Chloroethane	16.48	1.0	20	0	82.4	60 - 138				
Chloroform	19.16	1.0	20	0	95.8	79 - 124				
Chloromethane	18.28	1.0	20	0	91.4	50 - 139				
cis-1,2-Dichloroethene	19.24	1.0	20	0	96.2	78 - 123				
cis-1,3-Dichloropropene	18.85	1.0	20	0	94.2	75 - 124				
Dibromochloromethane	19.93	1.0	20	0	99.7	74 - 126				
Dibromomethane	19.04	1.0	20	0	95.2	79 - 123				
Dichlorodifluoromethane	15.27	1.0	20	0	76.4	32 - 152				
Ethylbenzene	17.71	1.0	20	0	88.6	79 - 121				
Hexachlorobutadiene	25.89	1.0	20	0	129	66 - 134				
Isopropylbenzene	17.11	1.0	20	0	85.5	72 - 131				
m,p-Xylene	34.53	2.0	40	0	86.3	80 - 121				
Methylene chloride	18.7	2.0	20	0	93.5	74 - 124				
Naphthalene	28.68	1.0	20	0	143	61 - 128				S
n-Butylbenzene	16.02	1.0	20	0	80.1	75 - 128				
n-Propylbenzene	18.99	1.0	20	0	94.9	76 - 126				
o-Xylene	18.48	1.0	20	0	92.4	78 - 122				
sec-Butylbenzene	17.68	1.0	20	0	88.4	77 - 126				
Styrene	18.81	1.0	20	0	94.1	78 - 123				
tert-Butylbenzene	18.63	1.0	20	0	93.2	78 - 124				
Tetrachloroethene	17.63	1.0	20	0	88.1	74 - 129				
Toluene	19.23	1.0	20	0	96.1	80 - 121				
trans-1,2-Dichloroethene	18.78	1.0	20	0	93.9	75 - 124				
trans-1,3-Dichloropropene	19.46	1.0	20	0	97.3	73 - 127				
Trichloroethene	17.76	1.0	20	0	88.8	79 - 123				
Trichlorofluoromethane	17.16	1.0	20	0	85.8	65 - 141				
Vinyl chloride	16.01	1.0	20	0	80.0	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.8*	*1.0*	*50*	*0*	*106*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.09*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*51.33*	*1.0*	*50*	*0*	*103*	*80 - 119*				
Surr: Toluene-d8	*49.04*	*1.0*	*50*	*0*	*98.1*	*89 - 112*				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364892 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20070043-17MS** Units: **UG/L** Analysis Date: **10-Jul-2020 15:55**
Client ID: Run ID: **VOA6_364892** SeqNo: **5658734** 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	19.31	1.0	20	0	96.5	78 - 124				
1,1,1-Trichloroethane	17.18	1.0	20	0	85.9	74 - 131				
1,1,2,2-Tetrachloroethane	19.68	1.0	20	0	98.4	71 - 121				
1,1,2-Trichloroethane	19.79	1.0	20	0	98.9	80 - 119				
1,1-Dichloroethane	16.02	1.0	20	0.6579	76.8	77 - 125				S
1,1-Dichloroethene	17.92	1.0	20	1.621	81.5	71 - 131				
1,1-Dichloropropene	18.6	1.0	20	0	93.0	78 - 125				
1,2,3-Trichlorobenzene	22.78	1.0	20	0	114	69 - 129				
1,2,3-Trichloropropane	19.75	1.0	20	0	98.8	73 - 122				
1,2,4-Trichlorobenzene	23.21	1.0	20	0	116	69 - 130				
1,2,4-Trimethylbenzene	19.29	1.0	20	0	96.4	76 - 124				
1,2-Dibromo-3-chloropropane	21.8	1.0	20	0	109	62 - 128				
1,2-Dibromoethane	19.43	1.0	20	0	97.2	77 - 121				
1,2-Dichlorobenzene	19.41	1.0	20	0	97.0	80 - 119				
1,2-Dichloroethane	18.65	1.0	20	0	93.3	73 - 128				
1,2-Dichloropropane	19.14	1.0	20	0	95.7	78 - 122				
1,3,5-Trimethylbenzene	19.63	1.0	20	0	98.1	75 - 124				
1,3-Dichlorobenzene	19.13	1.0	20	0	95.6	80 - 119				
1,3-Dichloropropane	19.33	1.0	20	0	96.6	80 - 119				
1,4-Dichlorobenzene	20.11	1.0	20	0	101	79 - 118				
2,2-Dichloropropane	17.79	1.0	20	0	89.0	60 - 139				
2-Butanone	28.82	2.0	40	0	72.0	56 - 143				
2-Chlorotoluene	19.14	1.0	20	0	95.7	79 - 122				
2-Hexanone	41.91	2.0	40	0	105	57 - 139				
4-Chlorotoluene	19.44	1.0	20	0	97.2	78 - 122				
4-Isopropyltoluene	19.47	1.0	20	0	97.4	77 - 127				
4-Methyl-2-pentanone	41.44	2.0	40	0	104	67 - 130				
Acetone	9.401	2.0	40	0	23.5	39 - 160				S
Benzene	18.49	1.0	20	0	92.4	79 - 120				
Bromobenzene	19.56	1.0	20	0	97.8	80 - 120				
Bromochloromethane	16.14	1.0	20	0	80.7	78 - 123				
Bromodichloromethane	18.96	1.0	20	0	94.8	79 - 125				
Bromoform	19.61	1.0	20	0	98.1	66 - 130				
Bromomethane	18.33	1.0	20	0	91.6	53 - 141				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364892 (0) **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS20070043-17MS** Units: **UG/L** Analysis Date: **10-Jul-2020 15:55**
Client ID: Run ID: **VOA6_364892** SeqNo: **5658734** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	31.59	2.0	40	0	79.0	64 - 133				
Carbon tetrachloride	19.32	1.0	20	0	96.6	72 - 136				
Chlorobenzene	19.22	1.0	20	0	96.1	82 - 118				
Chloroethane	16.46	1.0	20	0	82.3	60 - 138				
Chloroform	16.9	1.0	20	0	84.5	79 - 124				
Chloromethane	19.7	1.0	20	0	98.5	50 - 139				
cis-1,2-Dichloroethene	27.72	1.0	20	15.39	61.7	78 - 123				S
cis-1,3-Dichloropropene	20.76	1.0	20	0	104	75 - 124				
Dibromochloromethane	19.72	1.0	20	0	98.6	74 - 126				
Dibromomethane	18.55	1.0	20	0	92.7	79 - 123				
Dichlorodifluoromethane	17.02	1.0	20	0	85.1	32 - 152				
Ethylbenzene	19.76	1.0	20	0	98.8	79 - 121				
Hexachlorobutadiene	22.36	1.0	20	0	112	66 - 134				
Isopropylbenzene	20.11	1.0	20	0	101	72 - 131				
m,p-Xylene	39.02	2.0	40	0	97.6	80 - 121				
Methylene chloride	17.85	2.0	20	0	89.2	74 - 124				
Naphthalene	21.89	1.0	20	0	109	61 - 128				
n-Butylbenzene	19.82	1.0	20	0	99.1	75 - 128				
n-Propylbenzene	19.62	1.0	20	0	98.1	76 - 126				
o-Xylene	19.5	1.0	20	0	97.5	78 - 122				
sec-Butylbenzene	19.43	1.0	20	0	97.1	77 - 126				
Styrene	19.19	1.0	20	0	96.0	78 - 123				
tert-Butylbenzene	19.72	1.0	20	0	98.6	78 - 124				
Tetrachloroethene	20.3	1.0	20	0	102	74 - 129				
Toluene	19.8	1.0	20	0	99.0	80 - 121				
trans-1,2-Dichloroethene	16.48	1.0	20	0.4181	80.3	75 - 124				
trans-1,3-Dichloropropene	22.2	1.0	20	0	111	73 - 127				
Trichloroethene	79.03	1.0	20	77.74	6.45	79 - 123				S
Trichlorofluoromethane	18.6	1.0	20	0	93.0	65 - 141				
Vinyl chloride	18.79	1.0	20	0.7027	90.4	58 - 137				
Surr: 1,2-Dichloroethane-d4	*42.88*	*1.0*	*50*	*0*	*85.8*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.92*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*44.55*	*1.0*	*50*	*0*	*89.1*	*80 - 119*				
Surr: Toluene-d8	*50.25*	*1.0*	*50*	*0*	*100*	*89 - 112*				

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364892 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS20070043-17MSD** Units: **UG/L** Analysis Date: **10-Jul-2020 16:19**
Client ID: Run ID: **VOA6_364892** SeqNo: **5658735** 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	18.98	1.0	20	0	94.9	78 - 124	19.31	1.72	20	
1,1,1-Trichloroethane	17.74	1.0	20	0	88.7	74 - 131	17.18	3.24	20	
1,1,2,2-Tetrachloroethane	20.42	1.0	20	0	102	71 - 121	19.68	3.73	20	
1,1,2-Trichloroethane	19.66	1.0	20	0	98.3	80 - 119	19.79	0.624	20	
1,1-Dichloroethane	17.52	1.0	20	0.6579	84.3	77 - 125	16.02	8.92	20	
1,1-Dichloroethene	16.76	1.0	20	1.621	75.7	71 - 131	17.92	6.65	20	
1,1-Dichloropropene	18.42	1.0	20	0	92.1	78 - 125	18.6	0.998	20	
1,2,3-Trichlorobenzene	23.64	1.0	20	0	118	69 - 129	22.78	3.73	20	
1,2,3-Trichloropropane	20.65	1.0	20	0	103	73 - 122	19.75	4.43	20	
1,2,4-Trichlorobenzene	23.2	1.0	20	0	116	69 - 130	23.21	0.025	20	
1,2,4-Trimethylbenzene	19.69	1.0	20	0	98.4	76 - 124	19.29	2.06	20	
1,2-Dibromo-3-chloropropane	23.32	1.0	20	0	117	62 - 128	21.8	6.76	20	
1,2-Dibromoethane	19.26	1.0	20	0	96.3	77 - 121	19.43	0.909	20	
1,2-Dichlorobenzene	19.82	1.0	20	0	99.1	80 - 119	19.41	2.1	20	
1,2-Dichloroethane	19.31	1.0	20	0	96.6	73 - 128	18.65	3.48	20	
1,2-Dichloropropane	18.85	1.0	20	0	94.3	78 - 122	19.14	1.49	20	
1,3,5-Trimethylbenzene	19.81	1.0	20	0	99.0	75 - 124	19.63	0.9	20	
1,3-Dichlorobenzene	19.86	1.0	20	0	99.3	80 - 119	19.13	3.75	20	
1,3-Dichloropropane	19.07	1.0	20	0	95.4	80 - 119	19.33	1.33	20	
1,4-Dichlorobenzene	20.59	1.0	20	0	103	79 - 118	20.11	2.37	20	
2,2-Dichloropropane	19.03	1.0	20	0	95.2	60 - 139	17.79	6.73	20	
2-Butanone	33.05	2.0	40	0	82.6	56 - 143	28.82	13.7	20	
2-Chlorotoluene	19.37	1.0	20	0	96.9	79 - 122	19.14	1.22	20	
2-Hexanone	41.68	2.0	40	0	104	57 - 139	41.91	0.565	20	
4-Chlorotoluene	19.34	1.0	20	0	96.7	78 - 122	19.44	0.566	20	
4-Isopropyltoluene	20.36	1.0	20	0	102	77 - 127	19.47	4.43	20	
4-Methyl-2-pentanone	43.07	2.0	40	0	108	67 - 130	41.44	3.86	20	
Acetone	10.87	2.0	40	0	27.2	39 - 160	9.401	14.4	20	S
Benzene	18.72	1.0	20	0	93.6	79 - 120	18.49	1.25	20	
Bromobenzene	19.46	1.0	20	0	97.3	80 - 120	19.56	0.518	20	
Bromochloromethane	16.35	1.0	20	0	81.8	78 - 123	16.14	1.27	20	
Bromodichloromethane	18.61	1.0	20	0	93.0	79 - 125	18.96	1.88	20	
Bromoform	19.66	1.0	20	0	98.3	66 - 130	19.61	0.236	20	
Bromomethane	16.22	1.0	20	0	81.1	53 - 141	18.33	12.2	20	

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS20070055

QC BATCH REPORT

Batch ID: R364892 (0) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS20070043-17MSD** Units: **UG/L** Analysis Date: **10-Jul-2020 16:19**
Client ID: Run ID: **VOA6_364892** SeqNo: **5658735** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	30.04	2.0	40	0	75.1	64 - 133	31.59	5.04	20	
Carbon tetrachloride	18.75	1.0	20	0	93.7	72 - 136	19.32	3.02	20	
Chlorobenzene	18.98	1.0	20	0	94.9	82 - 118	19.22	1.26	20	
Chloroethane	14.25	1.0	20	0	71.3	60 - 138	16.46	14.3	20	
Chloroform	17.88	1.0	20	0	89.4	79 - 124	16.9	5.63	20	
Chloromethane	17.48	1.0	20	0	87.4	50 - 139	19.7	12	20	
cis-1,2-Dichloroethene	29.82	1.0	20	15.39	72.2	78 - 123	27.72	7.31	20	S
cis-1,3-Dichloropropene	18.55	1.0	20	0	92.7	75 - 124	20.76	11.3	20	
Dibromochloromethane	18.85	1.0	20	0	94.2	74 - 126	19.72	4.54	20	
Dibromomethane	18.71	1.0	20	0	93.5	79 - 123	18.55	0.853	20	
Dichlorodifluoromethane	15.28	1.0	20	0	76.4	32 - 152	17.02	10.7	20	
Ethylbenzene	19.11	1.0	20	0	95.5	79 - 121	19.76	3.37	20	
Hexachlorobutadiene	20.91	1.0	20	0	105	66 - 134	22.36	6.68	20	
Isopropylbenzene	19.5	1.0	20	0	97.5	72 - 131	20.11	3.12	20	
m,p-Xylene	37.89	2.0	40	0	94.7	80 - 121	39.02	2.94	20	
Methylene chloride	18.26	2.0	20	0	91.3	74 - 124	17.85	2.29	20	
Naphthalene	25.31	1.0	20	0	127	61 - 128	21.89	14.5	20	
n-Butylbenzene	20.74	1.0	20	0	104	75 - 128	19.82	4.55	20	
n-Propylbenzene	20.16	1.0	20	0	101	76 - 126	19.62	2.72	20	
o-Xylene	19.05	1.0	20	0	95.2	78 - 122	19.5	2.35	20	
sec-Butylbenzene	20.02	1.0	20	0	100	77 - 126	19.43	2.98	20	
Styrene	18.69	1.0	20	0	93.5	78 - 123	19.19	2.64	20	
tert-Butylbenzene	20.12	1.0	20	0	101	78 - 124	19.72	1.99	20	
Tetrachloroethene	19.5	1.0	20	0	97.5	74 - 129	20.3	4.01	20	
Toluene	19.19	1.0	20	0	96.0	80 - 121	19.8	3.14	20	
trans-1,2-Dichloroethene	18.18	1.0	20	0.4181	88.8	75 - 124	16.48	9.81	20	
trans-1,3-Dichloropropene	18.95	1.0	20	0	94.7	73 - 127	22.2	15.8	20	
Trichloroethene	77.51	1.0	20	77.74	-1.16	79 - 123	79.03	1.94	20	S
Trichlorofluoromethane	16.77	1.0	20	0	83.9	65 - 141	18.6	10.3	20	
Vinyl chloride	16.91	1.0	20	0.7027	81.0	58 - 137	18.79	10.5	20	
Surr: 1,2-Dichloroethane-d4	*44.65*	*1.0*	*50*	*0*	*89.3*	*81 - 118*	*42.88*	*4.06*	*20*	
Surr: 4-Bromofluorobenzene	*50.44*	*1.0*	*50*	*0*	*101*	*85 - 114*	*50.92*	*0.942*	*20*	
Surr: Dibromofluoromethane	*46.84*	*1.0*	*50*	*0*	*93.7*	*80 - 119*	*44.55*	*5.01*	*20*	
Surr: Toluene-d8	*49.49*	*1.0*	*50*	*0*	*99.0*	*89 - 112*	*50.25*	*1.52*	*20*	

ALS Houston, US Date: 13-Jul-20

Client:	Bhate Environmental Associates, Inc.
Project:	LHAAP-58
WorkOrder:	HS20070055

QC BATCH REPORT

Batch ID:	**R364892 (0)**	**Instrument:**	**VOA6**	**Method:**	**VOLATILES ORGANICS BY METHOD 8260C**

The following samples were analyzed in this batch: HS20070055-01

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: **HS20070055**

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

ALS Houston, US Date: 13-Jul-20

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	20-030-0	26-Mar-2021
Dept of Defense	ANAB L2231 V009	22-Dec-2021
Illinois	2000322020-4	09-May-2021
Kansas	E-10352 2019-2020	31-Jul-2020
North Carolina	624-2020	31-Dec-2020
Oklahoma	2019-141	31-Aug-2020
Texas	T104704231-20-26	30-Apr-2021

ALS Houston, US Date: 13-Jul-20

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS20070055

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS20070055-01	35AWW21_062920	Login	7/1/2020 4:57:25 PM	JRM	VOA214
HS20070055-02	35AWW21_062920_a	Login	7/1/2020 4:57:25 PM	JRM	VOA214
HS20070055-03	35AWW13_062920	Login	7/1/2020 4:57:25 PM	JRM	VOA214
HS20070055-04	35AWW10_062920	Login	7/1/2020 4:57:25 PM	JRM	VOA214
HS20070055-05	35AWW17_062920	Login	7/1/2020 4:57:25 PM	JRM	VOA214
HS20070055-06	Trip Blank	Login	7/1/2020 4:57:25 PM	JRM	VOA214

ALS Houston, US Date: 13-Jul-20

Sample Receipt Checklist

Work Order ID: HS20070055 **Date/Time Received:** **01-Jul-2020 09:40**

Client Name: Bhate Environmental **Received by:** **Paresh M. Giga**

Completed By:	/S/ Jared R. Makan	01-Jul-2020 17:01	**Reviewed by:**	/S/ RJ Modashia	10-Jul-2020 15:55
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **Water** Carrier name: **ALS Courier**

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	☐		
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):	1.3°C/1.3°C UC/C				IR25	
Cooler(s)/Kit(s):	43739					
Date/Time sample(s) sent to storage:	07/01/2020 17:05					
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: