



ANALYTICAL REPORT

Lab Number:	L1928037
Client:	Anchor QEA, LLC 305 West Grand Avenue Suite 300 Montvale, NJ 07645
ATTN:	Deborah Chiavelli
Phone:	(201) 930-9890
Project Name:	GASCO HYDROCARBON INVESTIGATIO
Project Number:	000029-02
Report Date:	08/07/19

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Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1928037-01	2708-190528-015P	SOLID	PORTLAND, OR	05/28/19 10:55	06/26/19
L1928037-02	2708-190528-015T	SOLID	PORTLAND, OR	05/28/19 10:55	06/26/19
L1928037-03	2708-190528-016	SOLID	PORTLAND, OR	05/28/19 11:00	06/26/19
L1928037-04	2708-190513-002	SOLID	PORTLAND, OR	05/13/19 16:00	06/26/19
L1928037-05	2708-190513-003	SOLID	PORTLAND, OR	05/13/19 16:05	06/26/19
L1928037-06	2708-190520-006	SOLID	PORTLAND, OR	05/20/19 15:00	06/26/19
L1928037-07	2708-190523-012	SOLID	PORTLAND, OR	05/23/19 12:50	06/26/19
L1928037-08	2708-190521-009	SOLID	PORTLAND, OR	05/21/19 11:55	06/26/19
L1928037-09	2708-190521-010	SOLID	PORTLAND, OR	05/21/19 15:30	06/26/19
L1928037-10	2708-190606-OIL	OIL	PORTLAND, OR	06/06/19 14:00	06/26/19
L1928037-11	2708-190514-004	SOLID	PORTLAND, OR	05/14/19 15:00	06/26/19
L1928037-12	2708-190520-1-006	SOLID	PORTLAND, OR	05/20/19 15:00	06/26/19

Project Name: GASCO HYDROCARBON INVESTIGATIO
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Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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Report Date: 08/07/19

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Semivolatile Organics

L1928037-01 through -12 were extracted with the method required holding time exceeded.

Alykated PAHs

L1928037-01 through -12 were extracted with the method required holding time exceeded.

L1928037-01, 02, -03, -04, -05, -06, -07, -08 and -11: The sample has elevated detection limits due to the dilution required by the sample matrix.

L1928037-03, -05, -06, -07, and -10: The sample was re-analyzed on dilution in order to quantify the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

L1928037-08: The surrogate recoveries are outside the acceptance criteria for benzo(a)pyrene-d12 (138%); however, the sample was not re-extracted due to coelution with obvious interferences.

L1928037-09 and -12: The sample has elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the sample.

The WG1264828-5/-6 MS/MSD recoveries, performed on L1928037-11, are outside the acceptance criteria for several compounds; however, the associated LCS/LCSD recoveries are within overall method allowances. No further action was required. The unacceptable percent recoveries are attributed to the elevated concentrations of target compounds present in the native sample.

The WG1264828-4 Laboratory Duplicate RPDs, performed on L1928037-09, are outside the acceptance criteria for anthracene (46%D) and carbazole (34%D). The elevated RPDs have been attributed to the heterogeneity of the native sample. The integrations and calculations have been reviewed and verified.

WG1264828-4: The sample has elevated detection limits due to the dilution required by the sample matrix.

Project Name: GASCO HYDROCARBON INVESTIGATIO
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Case Narrative (continued)

Petroleum Hydrocarbon Quantitation

L1928037-01: The surrogate recoveries are outside the acceptance criteria for d50-tetracosane (132%); however, the sample was not re-extracted due to coelution with obvious interferences.

L1928037-02: The surrogate recoveries are outside the acceptance criteria for d50-tetracosane (138%); however, the sample was not re-extracted due to coelution with obvious interferences.

L1928037-06, -07, -08, and -12: The sample was re-analyzed on dilution in order to quantify the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

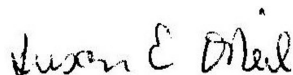
WG1264844-1: The Method Blank, associated with L1928037-10, has a concentration above the reporting limit for C9-C44 Total Petroleum Hydrocarbons. Since the associated sample concentrations are greater than 10x the blank concentration for this analyte, no corrective action is required.

The WG1264828-6 MSD recoveries, performed on L1928037-11, are outside the acceptance criteria for octadecane (c18) (0%) and triacontane (c30) (174%); however, the associated LCS/LCSD recoveries are within overall method allowances. No further action was required.

The WG1264828-4 Laboratory Duplicate RPD for phytane (36%), performed on L1928037-09, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 08/07/19

ORGANICS

SEMIVOLATILES

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-01 F1
 Client ID: 2708-190528-015P
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 10:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 01:31
 Analyst: MJS
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3585
 Extraction Date: 07/26/19 09:00
 Cleanup Method: EPA 3630(M)
 Cleanup Date: 07/29/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
Hopane (T19)	0.293		mg/kg	0.163	0.069	1
C23 Tricyclic Terpane (T4)	ND		mg/kg	0.163	0.069	1
C24 Tricyclic Terpane (T5)	ND		mg/kg	0.163	0.069	1
C25 Tricyclic Terpane (T6)	ND		mg/kg	0.163	0.069	1
C24 Tetracyclic Terpane (T6a)	ND		mg/kg	0.163	0.069	1
C26 Tricyclic Terpane-22S (T6b)	ND		mg/kg	0.163	0.069	1
C26 Tricyclic Terpane-22R (T6c)	ND		mg/kg	0.163	0.069	1
C28 Tricyclic Terpane-22S (T7)	ND		mg/kg	0.163	0.069	1
C28 Tricyclic Terpane-22R (T8)	ND		mg/kg	0.163	0.069	1
C29 Tricyclic Terpane-22S (T9)	ND		mg/kg	0.163	0.069	1
C29 Tricyclic Terpane-22R (T10)	ND		mg/kg	0.163	0.069	1
18a-22,29,30-Trisnorneohopane-TS (T11)	ND		mg/kg	0.163	0.069	1
C30 Tricyclic Terpane-22S	ND		mg/kg	0.163	0.069	1
C30 Tricyclic Terpane-22R	ND		mg/kg	0.163	0.069	1
17a(H)-22,29,30-Trisnorhopane-TM (T12)	0.224		mg/kg	0.163	0.069	1
17a/b,21b/a 28,30-Bisnorhopane (T14a)	ND		mg/kg	0.163	0.069	1
17a(H),21b(H)-25-Norhopane (T14b)	ND		mg/kg	0.163	0.069	1
30-Norhopane (T15)	0.286		mg/kg	0.163	0.069	1
18a(H)-30-Norneohopane-C29Ts (T16)	ND		mg/kg	0.163	0.069	1
17a(H)-Diahopane (X)	ND		mg/kg	0.163	0.069	1
30-Normoretane (T17)	ND		mg/kg	0.163	0.069	1
18a(H)&18b(H)-Oleananes (T18)	ND		mg/kg	0.163	0.069	1
Moretane (T20)	ND		mg/kg	0.163	0.069	1
30-Homohopane-22S (T21)	ND		mg/kg	0.163	0.069	1
30-Homohopane-22R (T22)	ND		mg/kg	0.163	0.069	1
Gammacerane/C32-Diahopane	ND		mg/kg	0.163	0.069	1
30,31-Bishomohopane-22S (T26)	ND		mg/kg	0.163	0.069	1
30,31-Bishomohopane-22R (T27)	ND		mg/kg	0.163	0.069	1

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Project Number: 000029-02

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SAMPLE RESULTS

Lab ID: L1928037-01 F1
 Client ID: 2708-190528-015P
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 10:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
30,31-Trishomohopane-22S (T30)	ND		mg/kg	0.163	0.069	1
30,31-Trishomohopane-22R (T31)	ND		mg/kg	0.163	0.069	1
Tetrakishomohopane-22S (T32)	ND		mg/kg	0.163	0.069	1
Tetrakishomohopane-22R (T33)	ND		mg/kg	0.163	0.069	1
Pentakishomohopane-22S (T34)	ND		mg/kg	0.163	0.069	1
Pentakishomohopane-22R (T35)	ND		mg/kg	0.163	0.069	1
13b(H),17a(H)-20S-Diacholestane (S4)	ND		mg/kg	0.163	0.054	1
13b(H),17a(H)-20R-Diacholestane (S5)	ND		mg/kg	0.163	0.054	1
13b,17a-20S-Methyldiacholestane (S8)	ND		mg/kg	0.163	0.054	1
17a(H)20SC27/C29dia	0.063	J	mg/kg	0.163	0.054	1
17a(H)20rc27/C29dia	0.091	J	mg/kg	0.163	0.054	1
Unknown Sterane (S18)	ND		mg/kg	0.163	0.054	1
13a,17b-20S-Ethyldiacholestane (S19)	ND		mg/kg	0.163	0.054	1
14a,17a-20S-Methylcholestane (S20)	ND		mg/kg	0.163	0.054	1
14a,17a-20R-Methylcholestane (S24)	0.064	J	mg/kg	0.163	0.054	1
14a(H),17a(H)-20S-Ethylcholestane (S25)	ND		mg/kg	0.163	0.054	1
14a(H),17a(H)-20R-Ethylcholestane (S28)	0.061	J	mg/kg	0.163	0.054	1
14b(H),17b(H)-20R-Cholestane (S14)	0.061	J	mg/kg	0.163	0.054	1
14b(H),17b(H)-20S-Cholestane (S15)	0.058	J	mg/kg	0.163	0.054	1
14b,17b-20R-Methylcholestane (S22)	ND		mg/kg	0.163	0.054	1
14b,17b-20S-Methylcholestane (S23)	ND		mg/kg	0.163	0.054	1
14b(H),17b(H)-20R-Ethylcholestane (S26)	ND		mg/kg	0.163	0.054	1
14b(H),17b(H)-20S-Ethylcholestane (S27)	ND		mg/kg	0.163	0.054	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
5B(H)Cholane-Surr	90		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-01 D
 Client ID: 2708-190528-015P
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 10:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 00:51
 Analyst: ML
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
cis/trans-Decalin	ND		mg/kg	8.78	4.41	10
C1-Decalins	ND		mg/kg	17.6	4.41	10
C2-Decalins	ND		mg/kg	17.6	4.41	10
C3-Decalins	ND		mg/kg	17.6	4.41	10
C4-Decalins	ND		mg/kg	17.6	4.41	10
Naphthalene	704		mg/kg	17.6	5.05	10
C1-Naphthalenes	258		mg/kg	17.6	5.05	10
C2-Naphthalenes	92.2		mg/kg	17.6	5.05	10
C3-Naphthalenes	34.9		mg/kg	17.6	5.05	10
C4-Naphthalenes	14.7	J	mg/kg	17.6	5.05	10
2-Methylnaphthalene	264		mg/kg	17.6	4.53	10
1-Methylnaphthalene	139		mg/kg	17.6	5.53	10
Benzothiophene	71.6		mg/kg	17.6	5.50	10
C1-Benzo(b)thiophenes	23.2		mg/kg	17.6	5.50	10
C2-Benzo(b)thiophenes	11.3	J	mg/kg	17.6	5.50	10
C3-Benzo(b)thiophenes	8.08	J	mg/kg	17.6	5.50	10
C4-Benzo(b)thiophenes	ND		mg/kg	17.6	5.50	10
Biphenyl	54.9		mg/kg	17.6	5.43	10
2,6-Dimethylnaphthalene	43.6		mg/kg	17.6	4.17	10
Dibenzofuran	193		mg/kg	17.6	5.53	10
Acenaphthylene	26.4		mg/kg	17.6	3.35	10
Acenaphthene	757		mg/kg	17.6	3.10	10
2,3,5-Trimethylnaphthalene	5.25	J	mg/kg	17.6	2.87	10
Fluorene	468		mg/kg	17.6	4.68	10
C1-Fluorenes	73.6		mg/kg	17.6	4.68	10
C2-Fluorenes	52.8		mg/kg	17.6	4.68	10
C3-Fluorenes	84.2		mg/kg	17.6	4.68	10
Dibenzothiophene	305		mg/kg	17.6	4.84	10

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SAMPLE RESULTS

Lab ID: L1928037-01 D
 Client ID: 2708-190528-015P
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 10:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
4-Methyldibenzothiophene(4MDT)	23.5		mg/kg	17.6	4.84	10
2/3-Methyldibenzothiophene(2MDT)	32.9		mg/kg	17.6	4.84	10
1-Methyldibenzothiophene(1MDT)	7.91	J	mg/kg	17.6	4.84	10
C1-Dibenzothiophenes BS	85.9		mg/kg	17.6	4.84	10
C2-Dibenzothiophenes	49.3		mg/kg	17.6	4.84	10
C3-Dibenzothiophenes	28.2		mg/kg	17.6	4.84	10
C4-Dibenzothiophenes	13.0	J	mg/kg	17.6	4.84	10
Phenanthrene	8150		mg/kg	17.6	5.82	10
3-Methylphenanthrene (3MP)	233		mg/kg	17.6	5.82	10
2-Methylphenanthrene (2MP)	314		mg/kg	17.6	5.82	10
2-Methylanthracene (2MA)	128		mg/kg	17.6	5.82	10
9/4-Methylphenanthrene (9MP)	229		mg/kg	17.6	5.82	10
C1-Phenanthrenes/Anthracenes	1080		mg/kg	17.6	5.82	10
C2-Phenanthrenes/Anthr BS	300		mg/kg	17.6	5.82	10
C3-Phenanthrenes/Anthracenes	104		mg/kg	17.6	5.82	10
C4-Phenanthrenes/Anthracenes	50.0		mg/kg	17.6	5.82	10
Retene	ND		mg/kg	17.6	4.31	10
Anthracene	2160		mg/kg	17.6	3.62	10
Carbazole	2450		mg/kg	17.6	5.74	10
1-Methylphenanthrene	265		mg/kg	17.6	4.64	10
Fluoranthene	16600		mg/kg	17.6	5.58	10
Benzo(b)fluorene	1480		mg/kg	17.6	5.09	10
7H-Benzo(c)fluorene	525		mg/kg	17.6	5.09	10
2-Methylpyrene ¹	354		mg/kg	17.6	4.62	10
4-Methylpyrene ¹	361		mg/kg	17.6	4.62	10
1-Methylpyrene ¹	388		mg/kg	17.6	4.62	10
Pyrene	15500		mg/kg	17.6	4.62	10
C1-Fluoranthenes/Pyrenes	4170		mg/kg	17.6	4.62	10
C2-Fluoranthenes/Pyrenes	792		mg/kg	17.6	4.62	10
C3-Fluoranthenes/Pyrenes	289		mg/kg	17.6	4.62	10
C4-Fluoranthenes/Pyrenes	257		mg/kg	17.6	4.62	10
Naphthobenzothiophenes	1180		mg/kg	17.6	4.91	10
C1-Naphthobenzothiophenes	212		mg/kg	17.6	4.91	10
C2-Naphthobenzothiophenes	56.4		mg/kg	17.6	4.91	10
C3-Naphthobenzothiophenes	77.5		mg/kg	17.6	4.91	10
C4-Naphthobenzothiophenes	22.9		mg/kg	17.6	4.91	10
Benz(a)anthracene	8210		mg/kg	17.6	3.58	10

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Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-01 D
 Client ID: 2708-190528-015P
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 10:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Chrysene	7930		mg/kg	17.6	3.55	10
C1-Chrysenes	1440		mg/kg	17.6	3.55	10
C2-Chrysenes BS	398		mg/kg	17.6	3.55	10
C3-Chrysenes	277		mg/kg	17.6	3.55	10
C4-Chrysenes	81.3		mg/kg	17.6	3.55	10
Benzo(b)fluoranthene	7820		mg/kg	17.6	4.57	10
Benzo(j)+(k)fluoranthene	6850		mg/kg	17.6	3.48	10
Benzo(a)fluoranthene	1220		mg/kg	17.6	3.48	10
Benzo(e)pyrene	5670		mg/kg	17.6	3.62	10
Benzo(a)pyrene	9690		mg/kg	17.6	5.01	10
Perylene	2890		mg/kg	17.6	3.39	10
Indeno(1,2,3-cd)pyrene	6100		mg/kg	17.6	4.77	10
Dibenz(a,h)+(a,c)anthracene	1070		mg/kg	17.6	4.74	10
Benzo(g,h,i)perylene	6500		mg/kg	17.6	4.67	10
C26,20R+C27,20S TAS	ND		mg/kg	17.6	3.90	10
C28,20S TAS	ND		mg/kg	17.6	3.90	10
C27,20R TAS	ND		mg/kg	17.6	3.90	10
C28,20R TAS	ND		mg/kg	17.6	3.90	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	112		50-130
Phenanthrene-d10	106		50-130
Benzo(a)pyrene-d12	125		50-130
5B(H)Cholane-Surr	128		50-130

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Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-02 F1
 Client ID: 2708-190528-015T
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 10:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 03:06
 Analyst: MJS
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3585
 Extraction Date: 07/26/19 09:00
 Cleanup Method: EPA 3630(M)
 Cleanup Date: 07/29/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
Hopane (T19)	0.652		mg/kg	0.149	0.064	1
C23 Tricyclic Terpane (T4)	0.221		mg/kg	0.149	0.064	1
C24 Tricyclic Terpane (T5)	0.098	J	mg/kg	0.149	0.064	1
C25 Tricyclic Terpane (T6)	0.140	J	mg/kg	0.149	0.064	1
C24 Tetracyclic Terpane (T6a)	0.074	J	mg/kg	0.149	0.064	1
C26 Tricyclic Terpane-22S (T6b)	0.066	J	mg/kg	0.149	0.064	1
C26 Tricyclic Terpane-22R (T6c)	0.079	J	mg/kg	0.149	0.064	1
C28 Tricyclic Terpane-22S (T7)	ND		mg/kg	0.149	0.064	1
C28 Tricyclic Terpane-22R (T8)	0.074	J	mg/kg	0.149	0.064	1
C29 Tricyclic Terpane-22S (T9)	ND		mg/kg	0.149	0.064	1
C29 Tricyclic Terpane-22R (T10)	ND		mg/kg	0.149	0.064	1
18a-22,29,30-Trisnorneohopane-TS (T11)	ND		mg/kg	0.149	0.064	1
C30 Tricyclic Terpane-22S	ND		mg/kg	0.149	0.064	1
C30 Tricyclic Terpane-22R	ND		mg/kg	0.149	0.064	1
17a(H)-22,29,30-Trisnorhopane-TM (T12)	0.253		mg/kg	0.149	0.064	1
17a/b,21b/a 28,30-Bisnorhopane (T14a)	ND		mg/kg	0.149	0.064	1
17a(H),21b(H)-25-Norhopane (T14b)	ND		mg/kg	0.149	0.064	1
30-Norhopane (T15)	0.440		mg/kg	0.149	0.064	1
18a(H)-30-Norneohopane-C29Ts (T16)	ND		mg/kg	0.149	0.064	1
17a(H)-Diahopane (X)	ND		mg/kg	0.149	0.064	1
30-Normoretane (T17)	ND		mg/kg	0.149	0.064	1
18a(H)&18b(H)-Oleananes (T18)	ND		mg/kg	0.149	0.064	1
Moretane (T20)	ND		mg/kg	0.149	0.064	1
30-Homohopane-22S (T21)	0.149		mg/kg	0.149	0.064	1
30-Homohopane-22R (T22)	ND		mg/kg	0.149	0.064	1
Gammacerane/C32-Diahopane	ND		mg/kg	0.149	0.064	1
30,31-Bishomohopane-22S (T26)	ND		mg/kg	0.149	0.064	1
30,31-Bishomohopane-22R (T27)	ND		mg/kg	0.149	0.064	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-02 F1
 Client ID: 2708-190528-015T
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 10:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
30,31-Trishomohopane-22S (T30)	ND		mg/kg	0.149	0.064	1
30,31-Trishomohopane-22R (T31)	ND		mg/kg	0.149	0.064	1
Tetrakishomohopane-22S (T32)	ND		mg/kg	0.149	0.064	1
Tetrakishomohopane-22R (T33)	ND		mg/kg	0.149	0.064	1
Pentakishomohopane-22S (T34)	ND		mg/kg	0.149	0.064	1
Pentakishomohopane-22R (T35)	ND		mg/kg	0.149	0.064	1
13b(H),17a(H)-20S-Diacholestane (S4)	0.142	J	mg/kg	0.149	0.050	1
13b(H),17a(H)-20R-Diacholestane (S5)	0.090	J	mg/kg	0.149	0.050	1
13b,17a-20S-Methyldiacholestane (S8)	0.112	J	mg/kg	0.149	0.050	1
17a(H)20SC27/C29dia	0.241		mg/kg	0.149	0.050	1
17a(H)20rc27/C29dia	0.330		mg/kg	0.149	0.050	1
Unknown Sterane (S18)	ND		mg/kg	0.149	0.050	1
13a,17b-20S-Ethyldiacholestane (S19)	ND		mg/kg	0.149	0.050	1
14a,17a-20S-Methylcholestane (S20)	0.127	J	mg/kg	0.149	0.050	1
14a,17a-20R-Methylcholestane (S24)	0.206		mg/kg	0.149	0.050	1
14a(H),17a(H)-20S-Ethylcholestane (S25)	0.098	J	mg/kg	0.149	0.050	1
14a(H),17a(H)-20R-Ethylcholestane (S28)	0.130	J	mg/kg	0.149	0.050	1
14b(H),17b(H)-20R-Cholestane (S14)	0.148	J	mg/kg	0.149	0.050	1
14b(H),17b(H)-20S-Cholestane (S15)	0.149		mg/kg	0.149	0.050	1
14b,17b-20R-Methylcholestane (S22)	0.129	J	mg/kg	0.149	0.050	1
14b,17b-20S-Methylcholestane (S23)	0.143	J	mg/kg	0.149	0.050	1
14b(H),17b(H)-20R-Ethylcholestane (S26)	0.144	J	mg/kg	0.149	0.050	1
14b(H),17b(H)-20S-Ethylcholestane (S27)	0.090	J	mg/kg	0.149	0.050	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
5B(H)Cholane-Surr	88		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-02 D
 Client ID: 2708-190528-015T
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 10:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 02:15
 Analyst: ML
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
cis/trans-Decalin	ND		mg/kg	8.06	4.05	10
C1-Decalins	5.54	J	mg/kg	16.1	4.05	10
C2-Decalins	14.2	J	mg/kg	16.1	4.05	10
C3-Decalins	ND		mg/kg	16.1	4.05	10
C4-Decalins	ND		mg/kg	16.1	4.05	10
Naphthalene	2030		mg/kg	16.1	4.63	10
C1-Naphthalenes	730		mg/kg	16.1	4.63	10
C2-Naphthalenes	267		mg/kg	16.1	4.63	10
C3-Naphthalenes	106		mg/kg	16.1	4.63	10
C4-Naphthalenes	37.1		mg/kg	16.1	4.63	10
2-Methylnaphthalene	755		mg/kg	16.1	4.16	10
1-Methylnaphthalene	382		mg/kg	16.1	5.08	10
Benzothiophene	241		mg/kg	16.1	5.05	10
C1-Benzo(b)thiophenes	65.7		mg/kg	16.1	5.05	10
C2-Benzo(b)thiophenes	35.5		mg/kg	16.1	5.05	10
C3-Benzo(b)thiophenes	18.5		mg/kg	16.1	5.05	10
C4-Benzo(b)thiophenes	7.24	J	mg/kg	16.1	5.05	10
Biphenyl	164		mg/kg	16.1	4.98	10
2,6-Dimethylnaphthalene	141		mg/kg	16.1	3.83	10
Dibenzofuran	205		mg/kg	16.1	5.08	10
Acenaphthylene	98.6		mg/kg	16.1	3.07	10
Acenaphthene	757		mg/kg	16.1	2.84	10
2,3,5-Trimethylnaphthalene	15.6	J	mg/kg	16.1	2.64	10
Fluorene	534		mg/kg	16.1	4.30	10
C1-Fluorenes	94.8		mg/kg	16.1	4.30	10
C2-Fluorenes	70.5		mg/kg	16.1	4.30	10
C3-Fluorenes	94.7		mg/kg	16.1	4.30	10
Dibenzothiophene	360		mg/kg	16.1	4.44	10

Project Name: GASCO HYDROCARBON INVESTIGATIO

Lab Number: L1928037

Project Number: 000029-02

Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-02 D

Date Collected: 05/28/19 10:55

Client ID: 2708-190528-015T

Date Received: 06/26/19

Sample Location: PORTLAND, OR

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
4-Methyldibenzothiophene(4MDT)	36.4		mg/kg	16.1	4.44	10
2/3-Methyldibenzothiophene(2MDT)	46.6		mg/kg	16.1	4.44	10
1-Methyldibenzothiophene(1MDT)	11.6	J	mg/kg	16.1	4.44	10
C1-Dibenzothiophenes BS	121		mg/kg	16.1	4.44	10
C2-Dibenzothiophenes	74.8		mg/kg	16.1	4.44	10
C3-Dibenzothiophenes	43.3		mg/kg	16.1	4.44	10
C4-Dibenzothiophenes	17.9		mg/kg	16.1	4.44	10
Phenanthrene	8160		mg/kg	16.1	5.34	10
3-Methylphenanthrene (3MP)	270		mg/kg	16.1	5.34	10
2-Methylphenanthrene (2MP)	358		mg/kg	16.1	5.34	10
2-Methylanthracene (2MA)	133		mg/kg	16.1	5.34	10
9/4-Methylphenanthrene (9MP)	243		mg/kg	16.1	5.34	10
C1-Phenanthrenes/Anthracenes	1190		mg/kg	16.1	5.34	10
C2-Phenanthrenes/Anthr BS	376		mg/kg	16.1	5.34	10
C3-Phenanthrenes/Anthracenes	133		mg/kg	16.1	5.34	10
C4-Phenanthrenes/Anthracenes	54.6		mg/kg	16.1	5.34	10
Retene	ND		mg/kg	16.1	3.95	10
Anthracene	2090		mg/kg	16.1	3.32	10
Carbazole	2360		mg/kg	16.1	5.27	10
1-Methylphenanthrene	280		mg/kg	16.1	4.26	10
Fluoranthene	15600		mg/kg	16.1	5.12	10
Benzo(b)fluorene	1390		mg/kg	16.1	4.67	10
7H-Benzo(c)fluorene	483		mg/kg	16.1	4.67	10
2-Methylpyrene ¹	347		mg/kg	16.1	4.24	10
4-Methylpyrene ¹	347		mg/kg	16.1	4.24	10
1-Methylpyrene ¹	373		mg/kg	16.1	4.24	10
Pyrene	14600		mg/kg	16.1	4.24	10
C1-Fluoranthenes/Pyrenes	3980		mg/kg	16.1	4.24	10
C2-Fluoranthenes/Pyrenes	777		mg/kg	16.1	4.24	10
C3-Fluoranthenes/Pyrenes	284		mg/kg	16.1	4.24	10
C4-Fluoranthenes/Pyrenes	252		mg/kg	16.1	4.24	10
Naphthobenzothiophenes	1100		mg/kg	16.1	4.51	10
C1-Naphthobenzothiophenes	212		mg/kg	16.1	4.51	10
C2-Naphthobenzothiophenes	65.3		mg/kg	16.1	4.51	10
C3-Naphthobenzothiophenes	75.3		mg/kg	16.1	4.51	10
C4-Naphthobenzothiophenes	24.2		mg/kg	16.1	4.51	10
Benz(a)anthracene	7830		mg/kg	16.1	3.28	10

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-02 D
 Client ID: 2708-190528-015T
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 10:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Chrysene	7610		mg/kg	16.1	3.26	10
C1-Chrysenes	1430		mg/kg	16.1	3.26	10
C2-Chrysenes BS	409		mg/kg	16.1	3.26	10
C3-Chrysenes	284		mg/kg	16.1	3.26	10
C4-Chrysenes	92.1		mg/kg	16.1	3.26	10
Benzo(b)fluoranthene	7440		mg/kg	16.1	4.19	10
Benzo(j)+(k)fluoranthene	6470		mg/kg	16.1	3.20	10
Benzo(a)fluoranthene	1170		mg/kg	16.1	3.20	10
Benzo(e)pyrene	5330		mg/kg	16.1	3.32	10
Benzo(a)pyrene	9130		mg/kg	16.1	4.60	10
Perylene	2750		mg/kg	16.1	3.11	10
Indeno(1,2,3-cd)pyrene	5760		mg/kg	16.1	4.37	10
Dibenz(a,h)+(a,c)anthracene	1130		mg/kg	16.1	4.35	10
Benzo(g,h,i)perylene	6050		mg/kg	16.1	4.28	10
C26,20R+C27,20S TAS	ND		mg/kg	16.1	3.58	10
C28,20S TAS	ND		mg/kg	16.1	3.58	10
C27,20R TAS	ND		mg/kg	16.1	3.58	10
C28,20R TAS	ND		mg/kg	16.1	3.58	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	113		50-130
Phenanthrene-d10	106		50-130
Benzo(a)pyrene-d12	129		50-130
5B(H)Cholane-Surr	122		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-03 F1
 Client ID: 2708-190528-016
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 11:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 04:40
 Analyst: MJS
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3585
 Extraction Date: 07/26/19 09:00
 Cleanup Method: EPA 3630(M)
 Cleanup Date: 07/29/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
Hopane (T19)	0.536		mg/kg	0.127	0.054	1
C23 Tricyclic Terpane (T4)	0.096	J	mg/kg	0.127	0.054	1
C24 Tricyclic Terpane (T5)	0.062	J	mg/kg	0.127	0.054	1
C25 Tricyclic Terpane (T6)	0.082	J	mg/kg	0.127	0.054	1
C24 Tetracyclic Terpane (T6a)	0.065	J	mg/kg	0.127	0.054	1
C26 Tricyclic Terpane-22S (T6b)	ND		mg/kg	0.127	0.054	1
C26 Tricyclic Terpane-22R (T6c)	ND		mg/kg	0.127	0.054	1
C28 Tricyclic Terpane-22S (T7)	ND		mg/kg	0.127	0.054	1
C28 Tricyclic Terpane-22R (T8)	ND		mg/kg	0.127	0.054	1
C29 Tricyclic Terpane-22S (T9)	ND		mg/kg	0.127	0.054	1
C29 Tricyclic Terpane-22R (T10)	ND		mg/kg	0.127	0.054	1
18a-22,29,30-Trisnorneohopane-TS (T11)	ND		mg/kg	0.127	0.054	1
C30 Tricyclic Terpane-22S	ND		mg/kg	0.127	0.054	1
C30 Tricyclic Terpane-22R	ND		mg/kg	0.127	0.054	1
17a(H)-22,29,30-Trisnorhopane-TM (T12)	0.266		mg/kg	0.127	0.054	1
17a/b,21b/a 28,30-Bisnorhopane (T14a)	ND		mg/kg	0.127	0.054	1
17a(H),21b(H)-25-Norhopane (T14b)	ND		mg/kg	0.127	0.054	1
30-Norhopane (T15)	0.410		mg/kg	0.127	0.054	1
18a(H)-30-Norneohopane-C29Ts (T16)	ND		mg/kg	0.127	0.054	1
17a(H)-Diahopane (X)	ND		mg/kg	0.127	0.054	1
30-Normoretane (T17)	ND		mg/kg	0.127	0.054	1
18a(H)&18b(H)-Oleananes (T18)	ND		mg/kg	0.127	0.054	1
Moretane (T20)	ND		mg/kg	0.127	0.054	1
30-Homohopane-22S (T21)	ND		mg/kg	0.127	0.054	1
30-Homohopane-22R (T22)	ND		mg/kg	0.127	0.054	1
Gammacerane/C32-Diahopane	ND		mg/kg	0.127	0.054	1
30,31-Bishomohopane-22S (T26)	ND		mg/kg	0.127	0.054	1
30,31-Bishomohopane-22R (T27)	ND		mg/kg	0.127	0.054	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-03 F1
 Client ID: 2708-190528-016
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 11:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
30,31-Trishomohopane-22S (T30)	ND		mg/kg	0.127	0.054	1
30,31-Trishomohopane-22R (T31)	ND		mg/kg	0.127	0.054	1
Tetrakishomohopane-22S (T32)	ND		mg/kg	0.127	0.054	1
Tetrakishomohopane-22R (T33)	ND		mg/kg	0.127	0.054	1
Pentakishomohopane-22S (T34)	ND		mg/kg	0.127	0.054	1
Pentakishomohopane-22R (T35)	ND		mg/kg	0.127	0.054	1
13b(H),17a(H)-20S-Diacholestane (S4)	0.148		mg/kg	0.127	0.042	1
13b(H),17a(H)-20R-Diacholestane (S5)	0.088	J	mg/kg	0.127	0.042	1
13b,17a-20S-Methyldiacholestane (S8)	0.071	J	mg/kg	0.127	0.042	1
17a(H)20SC27/C29dia	0.220		mg/kg	0.127	0.042	1
17a(H)20rc27/C29dia	0.239		mg/kg	0.127	0.042	1
Unknown Sterane (S18)	ND		mg/kg	0.127	0.042	1
13a,17b-20S-Ethyldiacholestane (S19)	ND		mg/kg	0.127	0.042	1
14a,17a-20S-Methylcholestane (S20)	0.096	J	mg/kg	0.127	0.042	1
14a,17a-20R-Methylcholestane (S24)	0.101	J	mg/kg	0.127	0.042	1
14a(H),17a(H)-20S-Ethylcholestane (S25)	0.10	J	mg/kg	0.127	0.042	1
14a(H),17a(H)-20R-Ethylcholestane (S28)	0.102	J	mg/kg	0.127	0.042	1
14b(H),17b(H)-20R-Cholestane (S14)	0.126	J	mg/kg	0.127	0.042	1
14b(H),17b(H)-20S-Cholestane (S15)	0.118	J	mg/kg	0.127	0.042	1
14b,17b-20R-Methylcholestane (S22)	0.099	J	mg/kg	0.127	0.042	1
14b,17b-20S-Methylcholestane (S23)	0.128		mg/kg	0.127	0.042	1
14b(H),17b(H)-20R-Ethylcholestane (S26)	0.129		mg/kg	0.127	0.042	1
14b(H),17b(H)-20S-Ethylcholestane (S27)	0.131		mg/kg	0.127	0.042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
5B(H)Cholane-Surr	88		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-03 D2
 Client ID: 2708-190528-016
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 11:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 08/01/19 14:21
 Analyst: ML
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Fluoranthene	13100		mg/kg	19.1	6.07	20
Pyrene	11900		mg/kg	19.1	5.03	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	105		50-130
Phenanthrene-d10	113		50-130
Benzo(a)pyrene-d12	115		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-03 D
 Client ID: 2708-190528-016
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 11:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 03:40
 Analyst: ML
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
cis/trans-Decalin	ND		mg/kg	4.78	2.40	10
C1-Decalins	ND		mg/kg	9.56	2.40	10
C2-Decalins	ND		mg/kg	9.56	2.40	10
C3-Decalins	ND		mg/kg	9.56	2.40	10
C4-Decalins	ND		mg/kg	9.56	2.40	10
Naphthalene	298		mg/kg	9.56	2.75	10
C1-Naphthalenes	113		mg/kg	9.56	2.75	10
C2-Naphthalenes	53.6		mg/kg	9.56	2.75	10
C3-Naphthalenes	23.3		mg/kg	9.56	2.75	10
C4-Naphthalenes	10.8		mg/kg	9.56	2.75	10
2-Methylnaphthalene	107		mg/kg	9.56	2.46	10
1-Methylnaphthalene	68.4		mg/kg	9.56	3.01	10
Benzothiophene	17.1		mg/kg	9.56	2.99	10
C1-Benzo(b)thiophenes	9.62		mg/kg	9.56	2.99	10
C2-Benzo(b)thiophenes	5.38	J	mg/kg	9.56	2.99	10
C3-Benzo(b)thiophenes	4.71	J	mg/kg	9.56	2.99	10
C4-Benzo(b)thiophenes	ND		mg/kg	9.56	2.99	10
Biphenyl	19.0		mg/kg	9.56	2.95	10
2,6-Dimethylnaphthalene	24.2		mg/kg	9.56	2.27	10
Dibenzofuran	168		mg/kg	9.56	3.01	10
Acenaphthylene	8.46	J	mg/kg	9.56	1.82	10
Acenaphthene	677		mg/kg	9.56	1.68	10
2,3,5-Trimethylnaphthalene	3.03	J	mg/kg	9.56	1.56	10
Fluorene	407		mg/kg	9.56	2.55	10
C1-Fluorenes	63.1		mg/kg	9.56	2.55	10
C2-Fluorenes	43.2		mg/kg	9.56	2.55	10
C3-Fluorenes	67.9		mg/kg	9.56	2.55	10
Dibenzothiophene	267		mg/kg	9.56	2.64	10

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-03 D
 Client ID: 2708-190528-016
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 11:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
4-Methyldibenzothiophene(4MDT)	20.4		mg/kg	9.56	2.64	10
2/3-Methyldibenzothiophene(2MDT)	29.0		mg/kg	9.56	2.64	10
1-Methyldibenzothiophene(1MDT)	6.67	J	mg/kg	9.56	2.64	10
C1-Dibenzothiophenes BS	74.8		mg/kg	9.56	2.64	10
C2-Dibenzothiophenes	43.5		mg/kg	9.56	2.64	10
C3-Dibenzothiophenes	25.0		mg/kg	9.56	2.64	10
C4-Dibenzothiophenes	10.6		mg/kg	9.56	2.64	10
Phenanthrene	7080		mg/kg	9.56	3.17	10
3-Methylphenanthrene (3MP)	207		mg/kg	9.56	3.17	10
2-Methylphenanthrene (2MP)	279		mg/kg	9.56	3.17	10
2-Methylanthracene (2MA)	118		mg/kg	9.56	3.17	10
9/4-Methylphenanthrene (9MP)	204		mg/kg	9.56	3.17	10
C1-Phenanthrenes/Anthracenes	966		mg/kg	9.56	3.17	10
C2-Phenanthrenes/Anthr BS	256		mg/kg	9.56	3.17	10
C3-Phenanthrenes/Anthracenes	89.6		mg/kg	9.56	3.17	10
C4-Phenanthrenes/Anthracenes	41.6		mg/kg	9.56	3.17	10
Retene	ND		mg/kg	9.56	2.34	10
Anthracene	1940		mg/kg	9.56	1.97	10
Carbazole	2190		mg/kg	9.56	3.13	10
1-Methylphenanthrene	233		mg/kg	9.56	2.52	10
Fluoranthene	14100	E	mg/kg	9.56	3.04	10
Benzo(b)fluorene	1370		mg/kg	9.56	2.77	10
7H-Benzo(c)fluorene	353		mg/kg	9.56	2.77	10
2-Methylpyrene ¹	312		mg/kg	9.56	2.51	10
4-Methylpyrene ¹	315		mg/kg	9.56	2.51	10
1-Methylpyrene ¹	337		mg/kg	9.56	2.51	10
Pyrene	13100	E	mg/kg	9.56	2.51	10
C1-Fluoranthenes/Pyrenes	3610		mg/kg	9.56	2.51	10
C2-Fluoranthenes/Pyrenes	692		mg/kg	9.56	2.51	10
C3-Fluoranthenes/Pyrenes	244		mg/kg	9.56	2.51	10
C4-Fluoranthenes/Pyrenes	217		mg/kg	9.56	2.51	10
Naphthobenzothiophenes	1040		mg/kg	9.56	2.67	10
C1-Naphthobenzothiophenes	184		mg/kg	9.56	2.67	10
C2-Naphthobenzothiophenes	48.5		mg/kg	9.56	2.67	10
C3-Naphthobenzothiophenes	63.2		mg/kg	9.56	2.67	10
C4-Naphthobenzothiophenes	18.7		mg/kg	9.56	2.67	10
Benz(a)anthracene	7240		mg/kg	9.56	1.95	10

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-03 D
 Client ID: 2708-190528-016
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 11:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Chrysene	6910		mg/kg	9.56	1.93	10
C1-Chrysenes	1310		mg/kg	9.56	1.93	10
C2-Chrysenes BS	354		mg/kg	9.56	1.93	10
C3-Chrysenes	255		mg/kg	9.56	1.93	10
C4-Chrysenes	82.1		mg/kg	9.56	1.93	10
Benzo(b)fluoranthene	6880		mg/kg	9.56	2.48	10
Benzo(j)+(k)fluoranthene	5780		mg/kg	9.56	1.90	10
Benzo(a)fluoranthene	1080		mg/kg	9.56	1.90	10
Benzo(e)pyrene	4850		mg/kg	9.56	1.97	10
Benzo(a)pyrene	8270		mg/kg	9.56	2.73	10
Perylene	2540		mg/kg	9.56	1.84	10
Indeno(1,2,3-cd)pyrene	5340		mg/kg	9.56	2.59	10
Dibenz(a,h)+(a,c)anthracene	1040		mg/kg	9.56	2.58	10
Benzo(g,h,i)perylene	5580		mg/kg	9.56	2.54	10
C26,20R+C27,20S TAS	ND		mg/kg	9.56	2.12	10
C28,20S TAS	ND		mg/kg	9.56	2.12	10
C27,20R TAS	ND		mg/kg	9.56	2.12	10
C28,20R TAS	ND		mg/kg	9.56	2.12	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	117		50-130
Phenanthrene-d10	108		50-130
Benzo(a)pyrene-d12	122		50-130
5B(H)Cholane-Surr	128		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-04 F1
 Client ID: 2708-190513-002
 Sample Location: PORTLAND, OR

Date Collected: 05/13/19 16:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 06:14
 Analyst: MJS
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3585
 Extraction Date: 07/26/19 09:00
 Cleanup Method: EPA 3630(M)
 Cleanup Date: 07/29/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
Hopane (T19)	1.33		mg/kg	0.117	0.050	1
C23 Tricyclic Terpane (T4)	0.468		mg/kg	0.117	0.050	1
C24 Tricyclic Terpane (T5)	0.239		mg/kg	0.117	0.050	1
C25 Tricyclic Terpane (T6)	0.328		mg/kg	0.117	0.050	1
C24 Tetracyclic Terpane (T6a)	0.136		mg/kg	0.117	0.050	1
C26 Tricyclic Terpane-22S (T6b)	0.151		mg/kg	0.117	0.050	1
C26 Tricyclic Terpane-22R (T6c)	0.154		mg/kg	0.117	0.050	1
C28 Tricyclic Terpane-22S (T7)	0.227		mg/kg	0.117	0.050	1
C28 Tricyclic Terpane-22R (T8)	0.240		mg/kg	0.117	0.050	1
C29 Tricyclic Terpane-22S (T9)	0.228		mg/kg	0.117	0.050	1
C29 Tricyclic Terpane-22R (T10)	0.192		mg/kg	0.117	0.050	1
18a-22,29,30-Trisnorneohopane-TS (T11)	0.464		mg/kg	0.117	0.050	1
C30 Tricyclic Terpane-22S	0.211		mg/kg	0.117	0.050	1
C30 Tricyclic Terpane-22R	0.135		mg/kg	0.117	0.050	1
17a(H)-22,29,30-Trisnorhopane-TM (T12)	0.469		mg/kg	0.117	0.050	1
17a/b,21b/a 28,30-Bisnorhopane (T14a)	0.200		mg/kg	0.117	0.050	1
17a(H),21b(H)-25-Norhopane (T14b)	0.119		mg/kg	0.117	0.050	1
30-Norhopane (T15)	0.842		mg/kg	0.117	0.050	1
18a(H)-30-Norneohopane-C29Ts (T16)	0.282		mg/kg	0.117	0.050	1
17a(H)-Diahopane (X)	0.102	J	mg/kg	0.117	0.050	1
30-Normoretane (T17)	0.159		mg/kg	0.117	0.050	1
18a(H)&18b(H)-Oleananes (T18)	ND		mg/kg	0.117	0.050	1
Moretane (T20)	0.244		mg/kg	0.117	0.050	1
30-Homohopane-22S (T21)	0.316		mg/kg	0.117	0.050	1
30-Homohopane-22R (T22)	0.253		mg/kg	0.117	0.050	1
Gammacerane/C32-Diahopane	ND		mg/kg	0.117	0.050	1
30,31-Bishomohopane-22S (T26)	0.235		mg/kg	0.117	0.050	1
30,31-Bishomohopane-22R (T27)	ND		mg/kg	0.117	0.050	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-04 F1
 Client ID: 2708-190513-002
 Sample Location: PORTLAND, OR

Date Collected: 05/13/19 16:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
30,31-Trishomohopane-22S (T30)	ND		mg/kg	0.117	0.050	1
30,31-Trishomohopane-22R (T31)	ND		mg/kg	0.117	0.050	1
Tetrakishomohopane-22S (T32)	ND		mg/kg	0.117	0.050	1
Tetrakishomohopane-22R (T33)	ND		mg/kg	0.117	0.050	1
Pentakishomohopane-22S (T34)	ND		mg/kg	0.117	0.050	1
Pentakishomohopane-22R (T35)	ND		mg/kg	0.117	0.050	1
13b(H),17a(H)-20S-Diacholestane (S4)	0.546		mg/kg	0.117	0.039	1
13b(H),17a(H)-20R-Diacholestane (S5)	0.318		mg/kg	0.117	0.039	1
13b,17a-20S-Methyldiacholestane (S8)	0.326		mg/kg	0.117	0.039	1
17a(H)20SC27/C29dia	0.787		mg/kg	0.117	0.039	1
17a(H)20rc27/C29dia	0.922		mg/kg	0.117	0.039	1
Unknown Sterane (S18)	0.168		mg/kg	0.117	0.039	1
13a,17b-20S-Ethyldiacholestane (S19)	ND		mg/kg	0.117	0.039	1
14a,17a-20S-Methylcholestane (S20)	0.345		mg/kg	0.117	0.039	1
14a,17a-20R-Methylcholestane (S24)	0.394		mg/kg	0.117	0.039	1
14a(H),17a(H)-20S-Ethylcholestane (S25)	0.289		mg/kg	0.117	0.039	1
14a(H),17a(H)-20R-Ethylcholestane (S28)	0.321		mg/kg	0.117	0.039	1
14b(H),17b(H)-20R-Cholestane (S14)	0.423		mg/kg	0.117	0.039	1
14b(H),17b(H)-20S-Cholestane (S15)	0.451		mg/kg	0.117	0.039	1
14b,17b-20R-Methylcholestane (S22)	0.396		mg/kg	0.117	0.039	1
14b,17b-20S-Methylcholestane (S23)	0.465		mg/kg	0.117	0.039	1
14b(H),17b(H)-20R-Ethylcholestane (S26)	0.452		mg/kg	0.117	0.039	1
14b(H),17b(H)-20S-Ethylcholestane (S27)	0.467		mg/kg	0.117	0.039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
5B(H)Cholane-Surr	99		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-04 D
 Client ID: 2708-190513-002
 Sample Location: PORTLAND, OR

Date Collected: 05/13/19 16:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 05:04
 Analyst: ML
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
cis/trans-Decalin	ND		mg/kg	4.38	2.20	10
C1-Decalins	2.21	J	mg/kg	8.75	2.20	10
C2-Decalins	4.85	J	mg/kg	8.75	2.20	10
C3-Decalins	ND		mg/kg	8.75	2.20	10
C4-Decalins	ND		mg/kg	8.75	2.20	10
Naphthalene	777		mg/kg	8.75	2.52	10
C1-Naphthalenes	284		mg/kg	8.75	2.52	10
C2-Naphthalenes	199		mg/kg	8.75	2.52	10
C3-Naphthalenes	88.2		mg/kg	8.75	2.52	10
C4-Naphthalenes	29.2		mg/kg	8.75	2.52	10
2-Methylnaphthalene	230		mg/kg	8.75	2.26	10
1-Methylnaphthalene	216		mg/kg	8.75	2.76	10
Benzothiophene	75.2		mg/kg	8.75	2.74	10
C1-Benzo(b)thiophenes	36.3		mg/kg	8.75	2.74	10
C2-Benzo(b)thiophenes	26.7		mg/kg	8.75	2.74	10
C3-Benzo(b)thiophenes	15.6		mg/kg	8.75	2.74	10
C4-Benzo(b)thiophenes	5.73	J	mg/kg	8.75	2.74	10
Biphenyl	45.6		mg/kg	8.75	2.70	10
2,6-Dimethylnaphthalene	110		mg/kg	8.75	2.08	10
Dibenzofuran	139		mg/kg	8.75	2.76	10
Acenaphthylene	28.2		mg/kg	8.75	1.67	10
Acenaphthene	566		mg/kg	8.75	1.54	10
2,3,5-Trimethylnaphthalene	12.2		mg/kg	8.75	1.43	10
Fluorene	361		mg/kg	8.75	2.33	10
C1-Fluorenes	73.5		mg/kg	8.75	2.33	10
C2-Fluorenes	57.8		mg/kg	8.75	2.33	10
C3-Fluorenes	64.3		mg/kg	8.75	2.33	10
Dibenzothiophene	264		mg/kg	8.75	2.41	10

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-04 D
 Client ID: 2708-190513-002
 Sample Location: PORTLAND, OR

Date Collected: 05/13/19 16:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
4-Methyldibenzothiophene(4MDT)	29.9		mg/kg	8.75	2.41	10
2/3-Methyldibenzothiophene(2MDT)	39.1		mg/kg	8.75	2.41	10
1-Methyldibenzothiophene(1MDT)	8.23	J	mg/kg	8.75	2.41	10
C1-Dibenzothiophenes BS	99.4		mg/kg	8.75	2.41	10
C2-Dibenzothiophenes	62.7		mg/kg	8.75	2.41	10
C3-Dibenzothiophenes	34.6		mg/kg	8.75	2.41	10
C4-Dibenzothiophenes	13.1		mg/kg	8.75	2.41	10
Phenanthrene	5780		mg/kg	8.75	2.90	10
3-Methylphenanthrene (3MP)	206		mg/kg	8.75	2.90	10
2-Methylphenanthrene (2MP)	270		mg/kg	8.75	2.90	10
2-Methylanthracene (2MA)	102		mg/kg	8.75	2.90	10
9/4-Methylphenanthrene (9MP)	182		mg/kg	8.75	2.90	10
C1-Phenanthrenes/Anthracenes	903		mg/kg	8.75	2.90	10
C2-Phenanthrenes/Anthr BS	286		mg/kg	8.75	2.90	10
C3-Phenanthrenes/Anthracenes	104		mg/kg	8.75	2.90	10
C4-Phenanthrenes/Anthracenes	41.0		mg/kg	8.75	2.90	10
Retene	ND		mg/kg	8.75	2.15	10
Anthracene	1540		mg/kg	8.75	1.80	10
Carbazole	1710		mg/kg	8.75	2.86	10
1-Methylphenanthrene	209		mg/kg	8.75	2.31	10
Fluoranthene	10900		mg/kg	8.75	2.78	10
Benzo(b)fluorene	987		mg/kg	8.75	2.54	10
7H-Benzo(c)fluorene	352		mg/kg	8.75	2.54	10
2-Methylpyrene ¹	248		mg/kg	8.75	2.30	10
4-Methylpyrene ¹	246		mg/kg	8.75	2.30	10
1-Methylpyrene ¹	267		mg/kg	8.75	2.30	10
Pyrene	10200		mg/kg	8.75	2.30	10
C1-Fluoranthenes/Pyrenes	2840		mg/kg	8.75	2.30	10
C2-Fluoranthenes/Pyrenes	562		mg/kg	8.75	2.30	10
C3-Fluoranthenes/Pyrenes	203		mg/kg	8.75	2.30	10
C4-Fluoranthenes/Pyrenes	177		mg/kg	8.75	2.30	10
Naphthobenzothiophenes	814		mg/kg	8.75	2.45	10
C1-Naphthobenzothiophenes	154		mg/kg	8.75	2.45	10
C2-Naphthobenzothiophenes	46.8		mg/kg	8.75	2.45	10
C3-Naphthobenzothiophenes	54.4		mg/kg	8.75	2.45	10
C4-Naphthobenzothiophenes	17.9		mg/kg	8.75	2.45	10
Benz(a)anthracene	5610		mg/kg	8.75	1.78	10

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-04 D
 Client ID: 2708-190513-002
 Sample Location: PORTLAND, OR

Date Collected: 05/13/19 16:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Chrysene	5360		mg/kg	8.75	1.77	10
C1-Chrysenes	1050		mg/kg	8.75	1.77	10
C2-Chrysenes BS	308		mg/kg	8.75	1.77	10
C3-Chrysenes	221		mg/kg	8.75	1.77	10
C4-Chrysenes	65.8		mg/kg	8.75	1.77	10
Benzo(b)fluoranthene	5090		mg/kg	8.75	2.28	10
Benzo(j)+(k)fluoranthene	4630		mg/kg	8.75	1.74	10
Benzo(a)fluoranthene	850		mg/kg	8.75	1.74	10
Benzo(e)pyrene	3770		mg/kg	8.75	1.81	10
Benzo(a)pyrene	6440		mg/kg	8.75	2.50	10
Perylene	1970		mg/kg	8.75	1.69	10
Indeno(1,2,3-cd)pyrene	4070		mg/kg	8.75	2.38	10
Dibenz(a,h)+(a,c)anthracene	778		mg/kg	8.75	2.36	10
Benzo(g,h,i)perylene	4300		mg/kg	8.75	2.32	10
C26,20R+C27,20S TAS	ND		mg/kg	8.75	1.94	10
C28,20S TAS	ND		mg/kg	8.75	1.94	10
C27,20R TAS	ND		mg/kg	8.75	1.94	10
C28,20R TAS	ND		mg/kg	8.75	1.94	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	116		50-130
Phenanthrene-d10	106		50-130
Benzo(a)pyrene-d12	109		50-130
5B(H)Cholane-Surr	117		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-05 F1
 Client ID: 2708-190513-003
 Sample Location: PORTLAND, OR

Date Collected: 05/13/19 16:05
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 07:49
 Analyst: MJS
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3585
 Extraction Date: 07/26/19 09:00
 Cleanup Method: EPA 3630(M)
 Cleanup Date: 07/29/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
Hopane (T19)	0.544		mg/kg	0.121	0.052	1
C23 Tricyclic Terpane (T4)	0.108	J	mg/kg	0.121	0.052	1
C24 Tricyclic Terpane (T5)	0.084	J	mg/kg	0.121	0.052	1
C25 Tricyclic Terpane (T6)	0.095	J	mg/kg	0.121	0.052	1
C24 Tetracyclic Terpane (T6a)	0.055	J	mg/kg	0.121	0.052	1
C26 Tricyclic Terpane-22S (T6b)	ND		mg/kg	0.121	0.052	1
C26 Tricyclic Terpane-22R (T6c)	0.056	J	mg/kg	0.121	0.052	1
C28 Tricyclic Terpane-22S (T7)	ND		mg/kg	0.121	0.052	1
C28 Tricyclic Terpane-22R (T8)	0.079	J	mg/kg	0.121	0.052	1
C29 Tricyclic Terpane-22S (T9)	ND		mg/kg	0.121	0.052	1
C29 Tricyclic Terpane-22R (T10)	ND		mg/kg	0.121	0.052	1
18a-22,29,30-Trisnorneohopane-TS (T11)	ND		mg/kg	0.121	0.052	1
C30 Tricyclic Terpane-22S	ND		mg/kg	0.121	0.052	1
C30 Tricyclic Terpane-22R	ND		mg/kg	0.121	0.052	1
17a(H)-22,29,30-Trisnorhopane-TM (T12)	0.219		mg/kg	0.121	0.052	1
17a/b,21b/a 28,30-Bisnorhopane (T14a)	ND		mg/kg	0.121	0.052	1
17a(H),21b(H)-25-Norhopane (T14b)	ND		mg/kg	0.121	0.052	1
30-Norhopane (T15)	0.404		mg/kg	0.121	0.052	1
18a(H)-30-Norneohopane-C29Ts (T16)	ND		mg/kg	0.121	0.052	1
17a(H)-Diahopane (X)	ND		mg/kg	0.121	0.052	1
30-Normoretane (T17)	ND		mg/kg	0.121	0.052	1
18a(H)&18b(H)-Oleananes (T18)	ND		mg/kg	0.121	0.052	1
Moretane (T20)	ND		mg/kg	0.121	0.052	1
30-Homohopane-22S (T21)	ND		mg/kg	0.121	0.052	1
30-Homohopane-22R (T22)	ND		mg/kg	0.121	0.052	1
Gammacerane/C32-Diahopane	ND		mg/kg	0.121	0.052	1
30,31-Bishomohopane-22S (T26)	ND		mg/kg	0.121	0.052	1
30,31-Bishomohopane-22R (T27)	ND		mg/kg	0.121	0.052	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-05 F1
 Client ID: 2708-190513-003
 Sample Location: PORTLAND, OR

Date Collected: 05/13/19 16:05
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
30,31-Trishomohopane-22S (T30)	ND		mg/kg	0.121	0.052	1
30,31-Trishomohopane-22R (T31)	ND		mg/kg	0.121	0.052	1
Tetrakishomohopane-22S (T32)	ND		mg/kg	0.121	0.052	1
Tetrakishomohopane-22R (T33)	ND		mg/kg	0.121	0.052	1
Pentakishomohopane-22S (T34)	ND		mg/kg	0.121	0.052	1
Pentakishomohopane-22R (T35)	ND		mg/kg	0.121	0.052	1
13b(H),17a(H)-20S-Diacholestane (S4)	0.133		mg/kg	0.121	0.040	1
13b(H),17a(H)-20R-Diacholestane (S5)	0.089	J	mg/kg	0.121	0.040	1
13b,17a-20S-Methyldiacholestane (S8)	0.078	J	mg/kg	0.121	0.040	1
17a(H)20SC27/C29dia	0.179		mg/kg	0.121	0.040	1
17a(H)20rc27/C29dia	0.241		mg/kg	0.121	0.040	1
Unknown Sterane (S18)	0.050	J	mg/kg	0.121	0.040	1
13a,17b-20S-Ethyldiacholestane (S19)	ND		mg/kg	0.121	0.040	1
14a,17a-20S-Methylcholestane (S20)	0.094	J	mg/kg	0.121	0.040	1
14a,17a-20R-Methylcholestane (S24)	0.114	J	mg/kg	0.121	0.040	1
14a(H),17a(H)-20S-Ethylcholestane (S25)	0.101	J	mg/kg	0.121	0.040	1
14a(H),17a(H)-20R-Ethylcholestane (S28)	0.117	J	mg/kg	0.121	0.040	1
14b(H),17b(H)-20R-Cholestane (S14)	0.108	J	mg/kg	0.121	0.040	1
14b(H),17b(H)-20S-Cholestane (S15)	0.109	J	mg/kg	0.121	0.040	1
14b,17b-20R-Methylcholestane (S22)	0.104	J	mg/kg	0.121	0.040	1
14b,17b-20S-Methylcholestane (S23)	0.132		mg/kg	0.121	0.040	1
14b(H),17b(H)-20R-Ethylcholestane (S26)	0.137		mg/kg	0.121	0.040	1
14b(H),17b(H)-20S-Ethylcholestane (S27)	0.138		mg/kg	0.121	0.040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
5B(H)Cholane-Surr	91		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-05 D2
 Client ID: 2708-190513-003
 Sample Location: PORTLAND, OR

Date Collected: 05/13/19 16:05
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 08/01/19 15:48
 Analyst: ML
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Fluoranthene	12100		mg/kg	18.2	5.78	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	101		50-130
Phenanthrene-d10	105		50-130
Benzo(a)pyrene-d12	112		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-05 D
 Client ID: 2708-190513-003
 Sample Location: PORTLAND, OR

Date Collected: 05/13/19 16:05
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 06:28
 Analyst: ML
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
cis/trans-Decalin	ND		mg/kg	4.55	2.28	10
C1-Decalins	ND		mg/kg	9.10	2.28	10
C2-Decalins	ND		mg/kg	9.10	2.28	10
C3-Decalins	ND		mg/kg	9.10	2.28	10
C4-Decalins	ND		mg/kg	9.10	2.28	10
Naphthalene	293		mg/kg	9.10	2.62	10
C1-Naphthalenes	114		mg/kg	9.10	2.62	10
C2-Naphthalenes	56.8		mg/kg	9.10	2.62	10
C3-Naphthalenes	24.6		mg/kg	9.10	2.62	10
C4-Naphthalenes	10.9		mg/kg	9.10	2.62	10
2-Methylnaphthalene	107		mg/kg	9.10	2.35	10
1-Methylnaphthalene	71.1		mg/kg	9.10	2.87	10
Benzothiophene	19.1		mg/kg	9.10	2.85	10
C1-Benzo(b)thiophenes	9.87		mg/kg	9.10	2.85	10
C2-Benzo(b)thiophenes	5.76	J	mg/kg	9.10	2.85	10
C3-Benzo(b)thiophenes	4.53	J	mg/kg	9.10	2.85	10
C4-Benzo(b)thiophenes	ND		mg/kg	9.10	2.85	10
Biphenyl	20.3		mg/kg	9.10	2.81	10
2,6-Dimethylnaphthalene	26.2		mg/kg	9.10	2.16	10
Dibenzofuran	152		mg/kg	9.10	2.87	10
Acenaphthylene	8.69	J	mg/kg	9.10	1.74	10
Acenaphthene	621		mg/kg	9.10	1.60	10
2,3,5-Trimethylnaphthalene	3.24	J	mg/kg	9.10	1.49	10
Fluorene	372		mg/kg	9.10	2.43	10
C1-Fluorenes	58.7		mg/kg	9.10	2.43	10
C2-Fluorenes	42.3		mg/kg	9.10	2.43	10
C3-Fluorenes	60.6		mg/kg	9.10	2.43	10
Dibenzothiophene	245		mg/kg	9.10	2.51	10

Project Name: GASCO HYDROCARBON INVESTIGATIO**Lab Number:** L1928037**Project Number:** 000029-02**Report Date:** 08/07/19**SAMPLE RESULTS**

Lab ID: L1928037-05 D

Date Collected: 05/13/19 16:05

Client ID: 2708-190513-003

Date Received: 06/26/19

Sample Location: PORTLAND, OR

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
4-Methyldibenzothiophene(4MDT)	19.5		mg/kg	9.10	2.51	10
2/3-Methyldibenzothiophene(2MDT)	26.8		mg/kg	9.10	2.51	10
1-Methyldibenzothiophene(1MDT)	8.12	J	mg/kg	9.10	2.51	10
C1-Dibenzothiophenes BS	70.9		mg/kg	9.10	2.51	10
C2-Dibenzothiophenes	42.5		mg/kg	9.10	2.51	10
C3-Dibenzothiophenes	23.4		mg/kg	9.10	2.51	10
C4-Dibenzothiophenes	9.82		mg/kg	9.10	2.51	10
Phenanthrene	6370		mg/kg	9.10	3.02	10
3-Methylphenanthrene (3MP)	189		mg/kg	9.10	3.02	10
2-Methylphenanthrene (2MP)	254		mg/kg	9.10	3.02	10
2-Methylanthracene (2MA)	105		mg/kg	9.10	3.02	10
9/4-Methylphenanthrene (9MP)	185		mg/kg	9.10	3.02	10
C1-Phenanthrenes/Anthracenes	875		mg/kg	9.10	3.02	10
C2-Phenanthrenes/Anthr BS	237		mg/kg	9.10	3.02	10
C3-Phenanthrenes/Anthracenes	84.8		mg/kg	9.10	3.02	10
C4-Phenanthrenes/Anthracenes	40.5		mg/kg	9.10	3.02	10
Retene	ND		mg/kg	9.10	2.23	10
Anthracene	1730		mg/kg	9.10	1.88	10
Carbazole	1980		mg/kg	9.10	2.98	10
1-Methylphenanthrene	214		mg/kg	9.10	2.40	10
Fluoranthene	12400	E	mg/kg	9.10	2.89	10
Benzo(b)fluorene	1200		mg/kg	9.10	2.64	10
7H-Benzo(c)fluorene	321		mg/kg	9.10	2.64	10
2-Methylpyrene ¹	276		mg/kg	9.10	2.39	10
4-Methylpyrene ¹	276		mg/kg	9.10	2.39	10
1-Methylpyrene ¹	298		mg/kg	9.10	2.39	10
Pyrene	11600		mg/kg	9.10	2.39	10
C1-Fluoranthenes/Pyrenes	3210		mg/kg	9.10	2.39	10
C2-Fluoranthenes/Pyrenes	608		mg/kg	9.10	2.39	10
C3-Fluoranthenes/Pyrenes	219		mg/kg	9.10	2.39	10
C4-Fluoranthenes/Pyrenes	194		mg/kg	9.10	2.39	10
Naphthobenzothiophenes	908		mg/kg	9.10	2.55	10
C1-Naphthobenzothiophenes	161		mg/kg	9.10	2.55	10
C2-Naphthobenzothiophenes	43.5		mg/kg	9.10	2.55	10
C3-Naphthobenzothiophenes	55.8		mg/kg	9.10	2.55	10
C4-Naphthobenzothiophenes	17.6		mg/kg	9.10	2.55	10
Benz(a)anthracene	6440		mg/kg	9.10	1.86	10

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-05 D
 Client ID: 2708-190513-003
 Sample Location: PORTLAND, OR

Date Collected: 05/13/19 16:05
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Chrysene	6150		mg/kg	9.10	1.84	10
C1-Chrysenes	1170		mg/kg	9.10	1.84	10
C2-Chrysenes BS	320		mg/kg	9.10	1.84	10
C3-Chrysenes	236		mg/kg	9.10	1.84	10
C4-Chrysenes	64.3		mg/kg	9.10	1.84	10
Benzo(b)fluoranthene	5970		mg/kg	9.10	2.37	10
Benzo(j)+(k)fluoranthene	5140		mg/kg	9.10	1.81	10
Benzo(a)fluoranthene	959		mg/kg	9.10	1.81	10
Benzo(e)pyrene	4260		mg/kg	9.10	1.88	10
Benzo(a)pyrene	7280		mg/kg	9.10	2.60	10
Perylene	2220		mg/kg	9.10	1.76	10
Indeno(1,2,3-cd)pyrene	4660		mg/kg	9.10	2.47	10
Dibenz(a,h)+(a,c)anthracene	971		mg/kg	9.10	2.46	10
Benzo(g,h,i)perylene	4850		mg/kg	9.10	2.42	10
C26,20R+C27,20S TAS	ND		mg/kg	9.10	2.02	10
C28,20S TAS	ND		mg/kg	9.10	2.02	10
C27,20R TAS	ND		mg/kg	9.10	2.02	10
C28,20R TAS	ND		mg/kg	9.10	2.02	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	106		50-130
Phenanthrene-d10	97		50-130
Benzo(a)pyrene-d12	106		50-130
5B(H)Cholane-Surr	106		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-06 F1
 Client ID: 2708-190520-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 09:24
 Analyst: MJS
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3585
 Extraction Date: 07/26/19 09:00
 Cleanup Method: EPA 3630(M)
 Cleanup Date: 07/29/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
Hopane (T19)	2.39		mg/kg	0.183	0.078	1
C23 Tricyclic Terpane (T4)	0.272		mg/kg	0.183	0.078	1
C24 Tricyclic Terpane (T5)	0.206		mg/kg	0.183	0.078	1
C25 Tricyclic Terpane (T6)	0.221		mg/kg	0.183	0.078	1
C24 Tetracyclic Terpane (T6a)	0.203		mg/kg	0.183	0.078	1
C26 Tricyclic Terpane-22S (T6b)	0.110	J	mg/kg	0.183	0.078	1
C26 Tricyclic Terpane-22R (T6c)	0.149	J	mg/kg	0.183	0.078	1
C28 Tricyclic Terpane-22S (T7)	0.178	J	mg/kg	0.183	0.078	1
C28 Tricyclic Terpane-22R (T8)	0.135	J	mg/kg	0.183	0.078	1
C29 Tricyclic Terpane-22S (T9)	0.176	J	mg/kg	0.183	0.078	1
C29 Tricyclic Terpane-22R (T10)	0.173	J	mg/kg	0.183	0.078	1
18a-22,29,30-Trisnorneohopane-TS (T11)	0.326		mg/kg	0.183	0.078	1
C30 Tricyclic Terpane-22S	ND		mg/kg	0.183	0.078	1
C30 Tricyclic Terpane-22R	ND		mg/kg	0.183	0.078	1
17a(H)-22,29,30-Trisnorhopane-TM (T12)	1.23		mg/kg	0.183	0.078	1
17a/b,21b/a 28,30-Bisnorhopane (T14a)	ND		mg/kg	0.183	0.078	1
17a(H),21b(H)-25-Norhopane (T14b)	ND		mg/kg	0.183	0.078	1
30-Norhopane (T15)	2.21		mg/kg	0.183	0.078	1
18a(H)-30-Norneohopane-C29Ts (T16)	ND		mg/kg	0.183	0.078	1
17a(H)-Diahopane (X)	ND		mg/kg	0.183	0.078	1
30-Normoretane (T17)	0.528		mg/kg	0.183	0.078	1
18a(H)&18b(H)-Oleananes (T18)	ND		mg/kg	0.183	0.078	1
Moretane (T20)	0.920		mg/kg	0.183	0.078	1
30-Homohopane-22S (T21)	0.659		mg/kg	0.183	0.078	1
30-Homohopane-22R (T22)	0.500		mg/kg	0.183	0.078	1
Gammacerane/C32-Diahopane	ND		mg/kg	0.183	0.078	1
30,31-Bishomohopane-22S (T26)	0.315		mg/kg	0.183	0.078	1
30,31-Bishomohopane-22R (T27)	0.246		mg/kg	0.183	0.078	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-06 F1
 Client ID: 2708-190520-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
30,31-Trishomohopane-22S (T30)	ND		mg/kg	0.183	0.078	1
30,31-Trishomohopane-22R (T31)	ND		mg/kg	0.183	0.078	1
Tetrakishomohopane-22S (T32)	ND		mg/kg	0.183	0.078	1
Tetrakishomohopane-22R (T33)	ND		mg/kg	0.183	0.078	1
Pentakishomohopane-22S (T34)	ND		mg/kg	0.183	0.078	1
Pentakishomohopane-22R (T35)	ND		mg/kg	0.183	0.078	1
13b(H),17a(H)-20S-Diacholestane (S4)	0.330		mg/kg	0.183	0.061	1
13b(H),17a(H)-20R-Diacholestane (S5)	0.205		mg/kg	0.183	0.061	1
13b,17a-20S-Methyldiacholestane (S8)	0.254		mg/kg	0.183	0.061	1
17a(H)20SC27/C29dia	0.498		mg/kg	0.183	0.061	1
17a(H)20rc27/C29dia	0.513		mg/kg	0.183	0.061	1
Unknown Sterane (S18)	0.162	J	mg/kg	0.183	0.061	1
13a,17b-20S-Ethyldiacholestane (S19)	ND		mg/kg	0.183	0.061	1
14a,17a-20S-Methylcholestane (S20)	0.268		mg/kg	0.183	0.061	1
14a,17a-20R-Methylcholestane (S24)	0.296		mg/kg	0.183	0.061	1
14a(H),17a(H)-20S-Ethylcholestane (S25)	0.330		mg/kg	0.183	0.061	1
14a(H),17a(H)-20R-Ethylcholestane (S28)	0.358		mg/kg	0.183	0.061	1
14b(H),17b(H)-20R-Cholestane (S14)	0.276		mg/kg	0.183	0.061	1
14b(H),17b(H)-20S-Cholestane (S15)	0.272		mg/kg	0.183	0.061	1
14b,17b-20R-Methylcholestane (S22)	0.326		mg/kg	0.183	0.061	1
14b,17b-20S-Methylcholestane (S23)	0.356		mg/kg	0.183	0.061	1
14b(H),17b(H)-20R-Ethylcholestane (S26)	0.438		mg/kg	0.183	0.061	1
14b(H),17b(H)-20S-Ethylcholestane (S27)	0.332		mg/kg	0.183	0.061	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
5B(H)Cholane-Surr	107		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-06 D2
 Client ID: 2708-190520-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 08/01/19 17:15
 Analyst: ML
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Naphthalene	32900		mg/kg	30.6	8.78	20
Phenanthrene	36000		mg/kg	30.6	10.1	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	117		50-130
Phenanthrene-d10	116		50-130
Benzo(a)pyrene-d12	108		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-06 D
 Client ID: 2708-190520-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 07:53
 Analyst: ML
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
cis/trans-Decalin	ND		mg/kg	7.64	3.84	10
C1-Decalins	ND		mg/kg	15.3	3.84	10
C2-Decalins	ND		mg/kg	15.3	3.84	10
C3-Decalins	ND		mg/kg	15.3	3.84	10
C4-Decalins	ND		mg/kg	15.3	3.84	10
Naphthalene	30600	E	mg/kg	15.3	4.39	10
C1-Naphthalenes	11600		mg/kg	15.3	4.39	10
C2-Naphthalenes	2220		mg/kg	15.3	4.39	10
C3-Naphthalenes	444		mg/kg	15.3	4.39	10
C4-Naphthalenes	105		mg/kg	15.3	4.39	10
2-Methylnaphthalene	12200		mg/kg	15.3	3.94	10
1-Methylnaphthalene	5650		mg/kg	15.3	4.81	10
Benzothiophene	1110		mg/kg	15.3	4.78	10
C1-Benzo(b)thiophenes	352		mg/kg	15.3	4.78	10
C2-Benzo(b)thiophenes	93.1		mg/kg	15.3	4.78	10
C3-Benzo(b)thiophenes	30.2		mg/kg	15.3	4.78	10
C4-Benzo(b)thiophenes	13.2	J	mg/kg	15.3	4.78	10
Biphenyl	4700		mg/kg	15.3	4.72	10
2,6-Dimethylnaphthalene	957		mg/kg	15.3	3.63	10
Dibenzofuran	10500		mg/kg	15.3	4.81	10
Acenaphthylene	384		mg/kg	15.3	2.91	10
Acenaphthene	18400		mg/kg	15.3	2.69	10
2,3,5-Trimethylnaphthalene	44.2		mg/kg	15.3	2.50	10
Fluorene	9600		mg/kg	15.3	4.07	10
C1-Fluorenes	529		mg/kg	15.3	4.07	10
C2-Fluorenes	138		mg/kg	15.3	4.07	10
C3-Fluorenes	209		mg/kg	15.3	4.07	10
Dibenzothiophene	1440		mg/kg	15.3	4.21	10

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-06 D
 Client ID: 2708-190520-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
4-Methyl dibenzothiophene(4MDT)	47.7		mg/kg	15.3	4.21	10
2/3-Methyl dibenzothiophene(2MDT)	72.2		mg/kg	15.3	4.21	10
1-Methyl dibenzothiophene(1MDT)	16.5		mg/kg	15.3	4.21	10
C1-Dibenzothiophenes BS	198		mg/kg	15.3	4.21	10
C2-Dibenzothiophenes	93.6		mg/kg	15.3	4.21	10
C3-Dibenzothiophenes	47.6		mg/kg	15.3	4.21	10
C4-Dibenzothiophenes	18.4		mg/kg	15.3	4.21	10
Phenanthrene	30300	E	mg/kg	15.3	5.06	10
3-Methylphenanthrene (3MP)	549		mg/kg	15.3	5.06	10
2-Methylphenanthrene (2MP)	667		mg/kg	15.3	5.06	10
2-Methylanthracene (2MA)	307		mg/kg	15.3	5.06	10
9/4-Methylphenanthrene (9MP)	408		mg/kg	15.3	5.06	10
C1-Phenanthrenes/Anthracenes	2260		mg/kg	15.3	5.06	10
C2-Phenanthrenes/Anthr BS	479		mg/kg	15.3	5.06	10
C3-Phenanthrenes/Anthracenes	120		mg/kg	15.3	5.06	10
C4-Phenanthrenes/Anthracenes	38.6		mg/kg	15.3	5.06	10
Retene	ND		mg/kg	15.3	3.75	10
Anthracene	8970		mg/kg	15.3	3.15	10
Carbazole	4780		mg/kg	15.3	5.00	10
1-Methylphenanthrene	475		mg/kg	15.3	4.03	10
Fluoranthene	18200		mg/kg	15.3	4.85	10
Benzo(b)fluorene	1120		mg/kg	15.3	4.42	10
7H-Benzo(c)fluorene	393		mg/kg	15.3	4.42	10
2-Methylpyrene ¹	262		mg/kg	15.3	4.02	10
4-Methylpyrene ¹	167		mg/kg	15.3	4.02	10
1-Methylpyrene ¹	175		mg/kg	15.3	4.02	10
Pyrene	15000		mg/kg	15.3	4.02	10
C1-Fluoranthenes/Pyrenes	2810		mg/kg	15.3	4.02	10
C2-Fluoranthenes/Pyrenes	437		mg/kg	15.3	4.02	10
C3-Fluoranthenes/Pyrenes	184		mg/kg	15.3	4.02	10
C4-Fluoranthenes/Pyrenes	170		mg/kg	15.3	4.02	10
Naphthobenzothiophenes	608		mg/kg	15.3	4.27	10
C1-Naphthobenzothiophenes	112		mg/kg	15.3	4.27	10
C2-Naphthobenzothiophenes	34.9		mg/kg	15.3	4.27	10
C3-Naphthobenzothiophenes	51.8		mg/kg	15.3	4.27	10
C4-Naphthobenzothiophenes	18.4		mg/kg	15.3	4.27	10
Benz(a)anthracene	5900		mg/kg	15.3	3.11	10

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-06 D
 Client ID: 2708-190520-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Chrysene	4840		mg/kg	15.3	3.09	10
C1-Chrysenes	856		mg/kg	15.3	3.09	10
C2-Chrysenes BS	199		mg/kg	15.3	3.09	10
C3-Chrysenes	161		mg/kg	15.3	3.09	10
C4-Chrysenes	59.4		mg/kg	15.3	3.09	10
Benzo(b)fluoranthene	4120		mg/kg	15.3	3.97	10
Benzo(j)+(k)fluoranthene	4180		mg/kg	15.3	3.03	10
Benzo(a)fluoranthene	979		mg/kg	15.3	3.03	10
Benzo(e)pyrene	3190		mg/kg	15.3	3.15	10
Benzo(a)pyrene	6000		mg/kg	15.3	4.36	10
Perylene	1840		mg/kg	15.3	2.95	10
Indeno(1,2,3-cd)pyrene	3720		mg/kg	15.3	4.15	10
Dibenz(a,h)+(a,c)anthracene	671		mg/kg	15.3	4.13	10
Benzo(g,h,i)perylene	3810		mg/kg	15.3	4.06	10
C26,20R+C27,20S TAS	ND		mg/kg	15.3	3.39	10
C28,20S TAS	ND		mg/kg	15.3	3.39	10
C27,20R TAS	ND		mg/kg	15.3	3.39	10
C28,20R TAS	ND		mg/kg	15.3	3.39	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	120		50-130
Phenanthrene-d10	103		50-130
Benzo(a)pyrene-d12	109		50-130
5B(H)Cholane-Surr	98		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-07 F1
 Client ID: 2708-190523-012
 Sample Location: PORTLAND, OR

Date Collected: 05/23/19 12:50
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 12:35
 Analyst: MJS
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3585
 Extraction Date: 07/26/19 09:00
 Cleanup Method: EPA 3630(M)
 Cleanup Date: 07/29/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
Hopane (T19)	2.01		mg/kg	0.106	0.045	1
C23 Tricyclic Terpane (T4)	0.454		mg/kg	0.106	0.045	1
C24 Tricyclic Terpane (T5)	0.268		mg/kg	0.106	0.045	1
C25 Tricyclic Terpane (T6)	0.323		mg/kg	0.106	0.045	1
C24 Tetracyclic Terpane (T6a)	0.186		mg/kg	0.106	0.045	1
C26 Tricyclic Terpane-22S (T6b)	0.129		mg/kg	0.106	0.045	1
C26 Tricyclic Terpane-22R (T6c)	0.157		mg/kg	0.106	0.045	1
C28 Tricyclic Terpane-22S (T7)	0.197		mg/kg	0.106	0.045	1
C28 Tricyclic Terpane-22R (T8)	0.175		mg/kg	0.106	0.045	1
C29 Tricyclic Terpane-22S (T9)	0.214		mg/kg	0.106	0.045	1
C29 Tricyclic Terpane-22R (T10)	0.191		mg/kg	0.106	0.045	1
18a-22,29,30-Trisnorneohopane-TS (T11)	0.320		mg/kg	0.106	0.045	1
C30 Tricyclic Terpane-22S	0.149		mg/kg	0.106	0.045	1
C30 Tricyclic Terpane-22R	0.112		mg/kg	0.106	0.045	1
17a(H)-22,29,30-Trisnorhopane-TM (T12)	0.747		mg/kg	0.106	0.045	1
17a/b,21b/a 28,30-Bisnorhopane (T14a)	0.183		mg/kg	0.106	0.045	1
17a(H),21b(H)-25-Norhopane (T14b)	ND		mg/kg	0.106	0.045	1
30-Norhopane (T15)	1.38		mg/kg	0.106	0.045	1
18a(H)-30-Norneohopane-C29Ts (T16)	0.230		mg/kg	0.106	0.045	1
17a(H)-Diahopane (X)	0.097	J	mg/kg	0.106	0.045	1
30-Normoretane (T17)	0.380		mg/kg	0.106	0.045	1
18a(H)&18b(H)-Oleananes (T18)	ND		mg/kg	0.106	0.045	1
Moretane (T20)	0.470		mg/kg	0.106	0.045	1
30-Homohopane-22S (T21)	0.611		mg/kg	0.106	0.045	1
30-Homohopane-22R (T22)	0.459		mg/kg	0.106	0.045	1
Gammacerane/C32-Diahopane	ND		mg/kg	0.106	0.045	1
30,31-Bishomohopane-22S (T26)	0.284		mg/kg	0.106	0.045	1
30,31-Bishomohopane-22R (T27)	0.211		mg/kg	0.106	0.045	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-07 F1
 Client ID: 2708-190523-012
 Sample Location: PORTLAND, OR

Date Collected: 05/23/19 12:50
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
30,31-Trishomohopane-22S (T30)	ND		mg/kg	0.106	0.045	1
30,31-Trishomohopane-22R (T31)	ND		mg/kg	0.106	0.045	1
Tetrakishomohopane-22S (T32)	ND		mg/kg	0.106	0.045	1
Tetrakishomohopane-22R (T33)	ND		mg/kg	0.106	0.045	1
Pentakishomohopane-22S (T34)	ND		mg/kg	0.106	0.045	1
Pentakishomohopane-22R (T35)	ND		mg/kg	0.106	0.045	1
13b(H),17a(H)-20S-Diacholestane (S4)	0.465		mg/kg	0.106	0.035	1
13b(H),17a(H)-20R-Diacholestane (S5)	0.308		mg/kg	0.106	0.035	1
13b,17a-20S-Methyldiacholestane (S8)	0.358		mg/kg	0.106	0.035	1
17a(H)20SC27/C29dia	0.757		mg/kg	0.106	0.035	1
17a(H)20rc27/C29dia	0.852		mg/kg	0.106	0.035	1
Unknown Sterane (S18)	0.151		mg/kg	0.106	0.035	1
13a,17b-20S-Ethyldiacholestane (S19)	ND		mg/kg	0.106	0.035	1
14a,17a-20S-Methylcholestane (S20)	0.379		mg/kg	0.106	0.035	1
14a,17a-20R-Methylcholestane (S24)	0.394		mg/kg	0.106	0.035	1
14a(H),17a(H)-20S-Ethylcholestane (S25)	0.335		mg/kg	0.106	0.035	1
14a(H),17a(H)-20R-Ethylcholestane (S28)	0.370		mg/kg	0.106	0.035	1
14b(H),17b(H)-20R-Cholestane (S14)	0.372		mg/kg	0.106	0.035	1
14b(H),17b(H)-20S-Cholestane (S15)	0.392		mg/kg	0.106	0.035	1
14b,17b-20R-Methylcholestane (S22)	0.385		mg/kg	0.106	0.035	1
14b,17b-20S-Methylcholestane (S23)	0.505		mg/kg	0.106	0.035	1
14b(H),17b(H)-20R-Ethylcholestane (S26)	0.453		mg/kg	0.106	0.035	1
14b(H),17b(H)-20S-Ethylcholestane (S27)	0.440		mg/kg	0.106	0.035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
5B(H)Cholane-Surr	105		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-07 D2
 Client ID: 2708-190523-012
 Sample Location: PORTLAND, OR

Date Collected: 05/23/19 12:50
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 08/01/19 18:42
 Analyst: ML
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Naphthalene	16700		mg/kg	17.7	5.08	20
Phenanthrene	17400		mg/kg	17.7	5.86	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	104		50-130
Phenanthrene-d10	100		50-130
Benzo(a)pyrene-d12	105		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-07 D
 Client ID: 2708-190523-012
 Sample Location: PORTLAND, OR

Date Collected: 05/23/19 12:50
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 09:18
 Analyst: ML
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
cis/trans-Decalin	ND		mg/kg	4.42	2.22	10
C1-Decalins	4.16	J	mg/kg	8.84	2.22	10
C2-Decalins	10.8		mg/kg	8.84	2.22	10
C3-Decalins	11.2		mg/kg	8.84	2.22	10
C4-Decalins	12.0		mg/kg	8.84	2.22	10
Naphthalene	16400	E	mg/kg	8.84	2.54	10
C1-Naphthalenes	6180		mg/kg	8.84	2.54	10
C2-Naphthalenes	1250		mg/kg	8.84	2.54	10
C3-Naphthalenes	275		mg/kg	8.84	2.54	10
C4-Naphthalenes	69.9		mg/kg	8.84	2.54	10
2-Methylnaphthalene	6530		mg/kg	8.84	2.28	10
1-Methylnaphthalene	3040		mg/kg	8.84	2.78	10
Benzothiophene	761		mg/kg	8.84	2.77	10
C1-Benzo(b)thiophenes	218		mg/kg	8.84	2.77	10
C2-Benzo(b)thiophenes	67.7		mg/kg	8.84	2.77	10
C3-Benzo(b)thiophenes	24.2		mg/kg	8.84	2.77	10
C4-Benzo(b)thiophenes	9.49		mg/kg	8.84	2.77	10
Biphenyl	2430		mg/kg	8.84	2.73	10
2,6-Dimethylnaphthalene	558		mg/kg	8.84	2.10	10
Dibenzofuran	5200		mg/kg	8.84	2.78	10
Acenaphthylene	262		mg/kg	8.84	1.69	10
Acenaphthene	9120		mg/kg	8.84	1.56	10
2,3,5-Trimethylnaphthalene	25.6		mg/kg	8.84	1.44	10
Fluorene	4860		mg/kg	8.84	2.36	10
C1-Fluorenes	279		mg/kg	8.84	2.36	10
C2-Fluorenes	84.0		mg/kg	8.84	2.36	10
C3-Fluorenes	105		mg/kg	8.84	2.36	10
Dibenzothiophene	765		mg/kg	8.84	2.44	10

Project Name: GASCO HYDROCARBON INVESTIGATIO

Lab Number: L1928037

Project Number: 000029-02

Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-07 D

Date Collected: 05/23/19 12:50

Client ID: 2708-190523-012

Date Received: 06/26/19

Sample Location: PORTLAND, OR

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
4-Methyldibenzothiophene(4MDT)	32.8		mg/kg	8.84	2.44	10
2/3-Methyldibenzothiophene(2MDT)	47.1		mg/kg	8.84	2.44	10
1-Methyldibenzothiophene(1MDT)	9.33		mg/kg	8.84	2.44	10
C1-Dibenzothiophenes BS	124		mg/kg	8.84	2.44	10
C2-Dibenzothiophenes	62.8		mg/kg	8.84	2.44	10
C3-Dibenzothiophenes	33.0		mg/kg	8.84	2.44	10
C4-Dibenzothiophenes	12.0		mg/kg	8.84	2.44	10
Phenanthrene	15600	E	mg/kg	8.84	2.93	10
3-Methylphenanthrene (3MP)	305		mg/kg	8.84	2.93	10
2-Methylphenanthrene (2MP)	371		mg/kg	8.84	2.93	10
2-Methylanthracene (2MA)	172		mg/kg	8.84	2.93	10
9/4-Methylphenanthrene (9MP)	224		mg/kg	8.84	2.93	10
C1-Phenanthrenes/Anthracenes	1250		mg/kg	8.84	2.93	10
C2-Phenanthrenes/Anthr BS	300		mg/kg	8.84	2.93	10
C3-Phenanthrenes/Anthracenes	79.4		mg/kg	8.84	2.93	10
C4-Phenanthrenes/Anthracenes	26.4		mg/kg	8.84	2.93	10
Retene	ND		mg/kg	8.84	2.17	10
Anthracene	4830		mg/kg	8.84	1.82	10
Carbazole	2530		mg/kg	8.84	2.89	10
1-Methylphenanthrene	263		mg/kg	8.84	2.33	10
Fluoranthene	9670		mg/kg	8.84	2.81	10
Benzo(b)fluorene	606		mg/kg	8.84	2.56	10
7H-Benzo(c)fluorene	220		mg/kg	8.84	2.56	10
2-Methylpyrene ¹	150		mg/kg	8.84	2.32	10
4-Methylpyrene ¹	102		mg/kg	8.84	2.32	10
1-Methylpyrene ¹	107		mg/kg	8.84	2.32	10
Pyrene	8090		mg/kg	8.84	2.32	10
C1-Fluoranthenes/Pyrenes	1580		mg/kg	8.84	2.32	10
C2-Fluoranthenes/Pyrenes	262		mg/kg	8.84	2.32	10
C3-Fluoranthenes/Pyrenes	109		mg/kg	8.84	2.32	10
C4-Fluoranthenes/Pyrenes	98.1		mg/kg	8.84	2.32	10
Naphthobenzothiophenes	364		mg/kg	8.84	2.47	10
C1-Naphthobenzothiophenes	69.7		mg/kg	8.84	2.47	10
C2-Naphthobenzothiophenes	22.5		mg/kg	8.84	2.47	10
C3-Naphthobenzothiophenes	28.8		mg/kg	8.84	2.47	10
C4-Naphthobenzothiophenes	9.62		mg/kg	8.84	2.47	10
Benz(a)anthracene	3350		mg/kg	8.84	1.80	10

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-07 D
 Client ID: 2708-190523-012
 Sample Location: PORTLAND, OR

Date Collected: 05/23/19 12:50
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Chrysene	2830		mg/kg	8.84	1.79	10
C1-Chrysenes	518		mg/kg	8.84	1.79	10
C2-Chrysenes BS	138		mg/kg	8.84	1.79	10
C3-Chrysenes	99.8		mg/kg	8.84	1.79	10
C4-Chrysenes	36.5		mg/kg	8.84	1.79	10
Benzo(b)fluoranthene	2410		mg/kg	8.84	2.30	10
Benzo(j)+(k)fluoranthene	2470		mg/kg	8.84	1.75	10
Benzo(a)fluoranthene	559		mg/kg	8.84	1.75	10
Benzo(e)pyrene	1820		mg/kg	8.84	1.82	10
Benzo(a)pyrene	3390		mg/kg	8.84	2.52	10
Perylene	1020		mg/kg	8.84	1.70	10
Indeno(1,2,3-cd)pyrene	2120		mg/kg	8.84	2.40	10
Dibenz(a,h)+(a,c)anthracene	358		mg/kg	8.84	2.39	10
Benzo(g,h,i)perylene	2250		mg/kg	8.84	2.35	10
C26,20R+C27,20S TAS	ND		mg/kg	8.84	1.96	10
C28,20S TAS	ND		mg/kg	8.84	1.96	10
C27,20R TAS	ND		mg/kg	8.84	1.96	10
C28,20R TAS	ND		mg/kg	8.84	1.96	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	112		50-130
Phenanthrene-d10	96		50-130
Benzo(a)pyrene-d12	98		50-130
5B(H)Cholane-Surr	93		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-08 F1
 Client ID: 2708-190521-009
 Sample Location: PORTLAND, OR

Date Collected: 05/21/19 11:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 14:11
 Analyst: MJS
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3585
 Extraction Date: 07/26/19 09:00
 Cleanup Method: EPA 3630(M)
 Cleanup Date: 07/29/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
Hopane (T19)	1.64		mg/kg	0.096	0.041	1
C23 Tricyclic Terpane (T4)	0.224		mg/kg	0.096	0.041	1
C24 Tricyclic Terpane (T5)	0.177		mg/kg	0.096	0.041	1
C25 Tricyclic Terpane (T6)	0.281		mg/kg	0.096	0.041	1
C24 Tetracyclic Terpane (T6a)	0.129		mg/kg	0.096	0.041	1
C26 Tricyclic Terpane-22S (T6b)	0.114		mg/kg	0.096	0.041	1
C26 Tricyclic Terpane-22R (T6c)	0.129		mg/kg	0.096	0.041	1
C28 Tricyclic Terpane-22S (T7)	0.153		mg/kg	0.096	0.041	1
C28 Tricyclic Terpane-22R (T8)	0.154		mg/kg	0.096	0.041	1
C29 Tricyclic Terpane-22S (T9)	0.174		mg/kg	0.096	0.041	1
C29 Tricyclic Terpane-22R (T10)	0.179		mg/kg	0.096	0.041	1
18a-22,29,30-Trisnorneohopane-TS (T11)	0.285		mg/kg	0.096	0.041	1
C30 Tricyclic Terpane-22S	0.138		mg/kg	0.096	0.041	1
C30 Tricyclic Terpane-22R	0.112		mg/kg	0.096	0.041	1
17a(H)-22,29,30-Trisnorhopane-TM (T12)	0.625		mg/kg	0.096	0.041	1
17a/b,21b/a 28,30-Bisnorhopane (T14a)	ND		mg/kg	0.096	0.041	1
17a(H),21b(H)-25-Norhopane (T14b)	ND		mg/kg	0.096	0.041	1
30-Norhopane (T15)	1.08		mg/kg	0.096	0.041	1
18a(H)-30-Norneohopane-C29Ts (T16)	0.207		mg/kg	0.096	0.041	1
17a(H)-Diahopane (X)	0.095	J	mg/kg	0.096	0.041	1
30-Normoretane (T17)	0.238		mg/kg	0.096	0.041	1
18a(H)&18b(H)-Oleananes (T18)	ND		mg/kg	0.096	0.041	1
Moretane (T20)	0.472		mg/kg	0.096	0.041	1
30-Homohopane-22S (T21)	0.509		mg/kg	0.096	0.041	1
30-Homohopane-22R (T22)	0.293		mg/kg	0.096	0.041	1
Gammacerane/C32-Diahopane	ND		mg/kg	0.096	0.041	1
30,31-Bishomohopane-22S (T26)	0.273		mg/kg	0.096	0.041	1
30,31-Bishomohopane-22R (T27)	0.181		mg/kg	0.096	0.041	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-08 F1
 Client ID: 2708-190521-009
 Sample Location: PORTLAND, OR

Date Collected: 05/21/19 11:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
30,31-Trishomohopane-22S (T30)	ND		mg/kg	0.096	0.041	1
30,31-Trishomohopane-22R (T31)	ND		mg/kg	0.096	0.041	1
Tetrakishomohopane-22S (T32)	ND		mg/kg	0.096	0.041	1
Tetrakishomohopane-22R (T33)	ND		mg/kg	0.096	0.041	1
Pentakishomohopane-22S (T34)	ND		mg/kg	0.096	0.041	1
Pentakishomohopane-22R (T35)	ND		mg/kg	0.096	0.041	1
13b(H),17a(H)-20S-Diacholestane (S4)	0.338		mg/kg	0.096	0.032	1
13b(H),17a(H)-20R-Diacholestane (S5)	0.184		mg/kg	0.096	0.032	1
13b,17a-20S-Methyldiacholestane (S8)	0.364		mg/kg	0.096	0.032	1
17a(H)20SC27/C29dia	1.04		mg/kg	0.096	0.032	1
17a(H)20rc27/C29dia	0.991		mg/kg	0.096	0.032	1
Unknown Sterane (S18)	0.296		mg/kg	0.096	0.032	1
13a,17b-20S-Ethyldiacholestane (S19)	0.059	J	mg/kg	0.096	0.032	1
14a,17a-20S-Methylcholestane (S20)	0.448		mg/kg	0.096	0.032	1
14a,17a-20R-Methylcholestane (S24)	0.361		mg/kg	0.096	0.032	1
14a(H),17a(H)-20S-Ethylcholestane (S25)	0.455		mg/kg	0.096	0.032	1
14a(H),17a(H)-20R-Ethylcholestane (S28)	0.448		mg/kg	0.096	0.032	1
14b(H),17b(H)-20R-Cholestane (S14)	0.300		mg/kg	0.096	0.032	1
14b(H),17b(H)-20S-Cholestane (S15)	0.354		mg/kg	0.096	0.032	1
14b,17b-20R-Methylcholestane (S22)	0.481		mg/kg	0.096	0.032	1
14b,17b-20S-Methylcholestane (S23)	0.753		mg/kg	0.096	0.032	1
14b(H),17b(H)-20R-Ethylcholestane (S26)	0.723		mg/kg	0.096	0.032	1
14b(H),17b(H)-20S-Ethylcholestane (S27)	0.785		mg/kg	0.096	0.032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
5B(H)Cholane-Surr	91		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-08 D2
 Client ID: 2708-190521-009
 Sample Location: PORTLAND, OR

Date Collected: 05/21/19 11:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 08/01/19 20:08
 Analyst: ML
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Naphthalene	15400		mg/kg	15.9	4.58	20
Phenanthrene	17000		mg/kg	15.9	5.28	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	112		50-130
Phenanthrene-d10	110		50-130
Benzo(a)pyrene-d12	113		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-08 D
 Client ID: 2708-190521-009
 Sample Location: PORTLAND, OR

Date Collected: 05/21/19 11:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 08/02/19 11:52
 Analyst: ML
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
cis/trans-Decalin	ND		mg/kg	3.99	2.00	10
C1-Decalins	ND		mg/kg	7.97	2.00	10
C2-Decalins	ND		mg/kg	7.97	2.00	10
C3-Decalins	ND		mg/kg	7.97	2.00	10
C4-Decalins	ND		mg/kg	7.97	2.00	10
Naphthalene	16000	E	mg/kg	7.97	2.29	10
C1-Naphthalenes	5480		mg/kg	7.97	2.29	10
C2-Naphthalenes	1060		mg/kg	7.97	2.29	10
C3-Naphthalenes	247		mg/kg	7.97	2.29	10
C4-Naphthalenes	62.3		mg/kg	7.97	2.29	10
2-Methylnaphthalene	5640		mg/kg	7.97	2.06	10
1-Methylnaphthalene	2460		mg/kg	7.97	2.51	10
Benzothiophene	491		mg/kg	7.97	2.50	10
C1-Benzo(b)thiophenes	171		mg/kg	7.97	2.50	10
C2-Benzo(b)thiophenes	44.8		mg/kg	7.97	2.50	10
C3-Benzo(b)thiophenes	16.2		mg/kg	7.97	2.50	10
C4-Benzo(b)thiophenes	7.22	J	mg/kg	7.97	2.50	10
Biphenyl	2180		mg/kg	7.97	2.46	10
2,6-Dimethylnaphthalene	421		mg/kg	7.97	1.90	10
Dibenzofuran	5010		mg/kg	7.97	2.51	10
Acenaphthylene	111		mg/kg	7.97	1.52	10
Acenaphthene	8830		mg/kg	7.97	1.40	10
2,3,5-Trimethylnaphthalene	21.4		mg/kg	7.97	1.30	10
Fluorene	4500		mg/kg	7.97	2.13	10
C1-Fluorenes	244		mg/kg	7.97	2.13	10
C2-Fluorenes	74.3		mg/kg	7.97	2.13	10
C3-Fluorenes	93.4		mg/kg	7.97	2.13	10
Dibenzothiophene	638		mg/kg	7.97	2.20	10

Project Name: GASCO HYDROCARBON INVESTIGATIO

Lab Number: L1928037

Project Number: 000029-02

Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-08 D

Date Collected: 05/21/19 11:55

Client ID: 2708-190521-009

Date Received: 06/26/19

Sample Location: PORTLAND, OR

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
4-Methyl dibenzothiophene(4MDT)	24.6		mg/kg	7.97	2.20	10
2/3-Methyl dibenzothiophene(2MDT)	39.0		mg/kg	7.97	2.20	10
1-Methyl dibenzothiophene(1MDT)	9.84		mg/kg	7.97	2.20	10
C1-Dibenzothiophenes BS	93.6		mg/kg	7.97	2.20	10
C2-Dibenzothiophenes	43.9		mg/kg	7.97	2.20	10
C3-Dibenzothiophenes	26.1		mg/kg	7.97	2.20	10
C4-Dibenzothiophenes	10.9		mg/kg	7.97	2.20	10
Phenanthrene	16500	E	mg/kg	7.97	2.64	10
3-Methylphenanthrene (3MP)	288		mg/kg	7.97	2.64	10
2-Methylphenanthrene (2MP)	347		mg/kg	7.97	2.64	10
2-Methylanthracene (2MA)	184		mg/kg	7.97	2.64	10
9/4-Methylphenanthrene (9MP)	222		mg/kg	7.97	2.64	10
C1-Phenanthrenes/Anthracenes	1210		mg/kg	7.97	2.64	10
C2-Phenanthrenes/Anthr BS	296		mg/kg	7.97	2.64	10
C3-Phenanthrenes/Anthracenes	81.4		mg/kg	7.97	2.64	10
C4-Phenanthrenes/Anthracenes	22.7		mg/kg	7.97	2.64	10
Retene	ND		mg/kg	7.97	1.96	10
Anthracene	4840		mg/kg	7.97	1.64	10
Carbazole	2210		mg/kg	7.97	2.61	10
1-Methylphenanthrene	200		mg/kg	7.97	2.10	10
Fluoranthene	8280		mg/kg	7.97	2.53	10
Benzo(b)fluorene	535		mg/kg	7.97	2.31	10
7H-Benzo(c)fluorene	112		mg/kg	7.97	2.31	10
2-Methylpyrene ¹	125		mg/kg	7.97	2.10	10
4-Methylpyrene ¹	78.4		mg/kg	7.97	2.10	10
1-Methylpyrene ¹	80.5		mg/kg	7.97	2.10	10
Pyrene	6660		mg/kg	7.97	2.10	10
C1-Fluoranthenes/Pyrenes	1310		mg/kg	7.97	2.10	10
C2-Fluoranthenes/Pyrenes	212		mg/kg	7.97	2.10	10
C3-Fluoranthenes/Pyrenes	102		mg/kg	7.97	2.10	10
C4-Fluoranthenes/Pyrenes	80.0		mg/kg	7.97	2.10	10
Naphthobenzothiophenes	248		mg/kg	7.97	2.23	10
C1-Naphthobenzothiophenes	53.3		mg/kg	7.97	2.23	10
C2-Naphthobenzothiophenes	17.6		mg/kg	7.97	2.23	10
C3-Naphthobenzothiophenes	25.7		mg/kg	7.97	2.23	10
C4-Naphthobenzothiophenes	9.98		mg/kg	7.97	2.23	10
Benz(a)anthracene	2530		mg/kg	7.97	1.62	10

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-08 D
 Client ID: 2708-190521-009
 Sample Location: PORTLAND, OR

Date Collected: 05/21/19 11:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Chrysene	2210		mg/kg	7.97	1.61	10
C1-Chrysenes	353		mg/kg	7.97	1.61	10
C2-Chrysenes BS	92.8		mg/kg	7.97	1.61	10
C3-Chrysenes	89.2		mg/kg	7.97	1.61	10
C4-Chrysenes	42.8		mg/kg	7.97	1.61	10
Benzo(b)fluoranthene	1980		mg/kg	7.97	2.07	10
Benzo(j)+(k)fluoranthene	1800		mg/kg	7.97	1.58	10
Benzo(a)fluoranthene	447		mg/kg	7.97	1.58	10
Benzo(e)pyrene	1430		mg/kg	7.97	1.64	10
Benzo(a)pyrene	2780		mg/kg	7.97	2.28	10
Perylene	823		mg/kg	7.97	1.54	10
Indeno(1,2,3-cd)pyrene	1680		mg/kg	7.97	2.16	10
Dibenz(a,h)+(a,c)anthracene	310		mg/kg	7.97	2.15	10
Benzo(g,h,i)perylene	1790		mg/kg	7.97	2.12	10
C26,20R+C27,20S TAS	ND		mg/kg	7.97	1.77	10
C28,20S TAS	ND		mg/kg	7.97	1.77	10
C27,20R TAS	ND		mg/kg	7.97	1.77	10
C28,20R TAS	ND		mg/kg	7.97	1.77	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	122		50-130
Phenanthrene-d10	124		50-130
Benzo(a)pyrene-d12	138	Q	50-130
5B(H)Cholane-Surr	106		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-09 F1
 Client ID: 2708-190521-010
 Sample Location: PORTLAND, OR

Date Collected: 05/21/19 15:30
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 15:47
 Analyst: MJS
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3585
 Extraction Date: 07/26/19 09:00
 Cleanup Method: EPA 3630(M)
 Cleanup Date: 07/29/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
Hopane (T19)	1.21		mg/kg	0.067	0.029	1
C23 Tricyclic Terpane (T4)	0.226		mg/kg	0.067	0.029	1
C24 Tricyclic Terpane (T5)	0.147		mg/kg	0.067	0.029	1
C25 Tricyclic Terpane (T6)	0.180		mg/kg	0.067	0.029	1
C24 Tetracyclic Terpane (T6a)	0.088		mg/kg	0.067	0.029	1
C26 Tricyclic Terpane-22S (T6b)	0.082		mg/kg	0.067	0.029	1
C26 Tricyclic Terpane-22R (T6c)	0.079		mg/kg	0.067	0.029	1
C28 Tricyclic Terpane-22S (T7)	0.091		mg/kg	0.067	0.029	1
C28 Tricyclic Terpane-22R (T8)	0.10		mg/kg	0.067	0.029	1
C29 Tricyclic Terpane-22S (T9)	0.103		mg/kg	0.067	0.029	1
C29 Tricyclic Terpane-22R (T10)	0.093		mg/kg	0.067	0.029	1
18a-22,29,30-Trisnorneohopane-TS (T11)	0.198		mg/kg	0.067	0.029	1
C30 Tricyclic Terpane-22S	0.088		mg/kg	0.067	0.029	1
C30 Tricyclic Terpane-22R	ND		mg/kg	0.067	0.029	1
17a(H)-22,29,30-Trisnorhopane-TM (T12)	0.402		mg/kg	0.067	0.029	1
17a/b,21b/a 28,30-Bisnorhopane (T14a)	0.116		mg/kg	0.067	0.029	1
17a(H),21b(H)-25-Norhopane (T14b)	ND		mg/kg	0.067	0.029	1
30-Norhopane (T15)	0.693		mg/kg	0.067	0.029	1
18a(H)-30-Norneohopane-C29Ts (T16)	0.158		mg/kg	0.067	0.029	1
17a(H)-Diahopane (X)	0.062	J	mg/kg	0.067	0.029	1
30-Normoretane (T17)	0.226		mg/kg	0.067	0.029	1
18a(H)&18b(H)-Oleananes (T18)	0.123		mg/kg	0.067	0.029	1
Moretane (T20)	0.258		mg/kg	0.067	0.029	1
30-Homohopane-22S (T21)	0.306		mg/kg	0.067	0.029	1
30-Homohopane-22R (T22)	0.266		mg/kg	0.067	0.029	1
Gammacerane/C32-Diahopane	ND		mg/kg	0.067	0.029	1
30,31-Bishomohopane-22S (T26)	0.160		mg/kg	0.067	0.029	1
30,31-Bishomohopane-22R (T27)	0.108		mg/kg	0.067	0.029	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-09 F1
 Client ID: 2708-190521-010
 Sample Location: PORTLAND, OR

Date Collected: 05/21/19 15:30
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
30,31-Trishomohopane-22S (T30)	ND		mg/kg	0.067	0.029	1
30,31-Trishomohopane-22R (T31)	ND		mg/kg	0.067	0.029	1
Tetrakishomohopane-22S (T32)	ND		mg/kg	0.067	0.029	1
Tetrakishomohopane-22R (T33)	ND		mg/kg	0.067	0.029	1
Pentakishomohopane-22S (T34)	ND		mg/kg	0.067	0.029	1
Pentakishomohopane-22R (T35)	ND		mg/kg	0.067	0.029	1
13b(H),17a(H)-20S-Diacholestane (S4)	0.297		mg/kg	0.067	0.023	1
13b(H),17a(H)-20R-Diacholestane (S5)	0.140		mg/kg	0.067	0.023	1
13b,17a-20S-Methyldiacholestane (S8)	0.229		mg/kg	0.067	0.023	1
17a(H)20SC27/C29dia	0.479		mg/kg	0.067	0.023	1
17a(H)20rc27/C29dia	0.493		mg/kg	0.067	0.023	1
Unknown Sterane (S18)	0.123		mg/kg	0.067	0.023	1
13a,17b-20S-Ethyldiacholestane (S19)	ND		mg/kg	0.067	0.023	1
14a,17a-20S-Methylcholestane (S20)	0.173		mg/kg	0.067	0.023	1
14a,17a-20R-Methylcholestane (S24)	0.230		mg/kg	0.067	0.023	1
14a(H),17a(H)-20S-Ethylcholestane (S25)	0.149		mg/kg	0.067	0.023	1
14a(H),17a(H)-20R-Ethylcholestane (S28)	0.225		mg/kg	0.067	0.023	1
14b(H),17b(H)-20R-Cholestane (S14)	0.199		mg/kg	0.067	0.023	1
14b(H),17b(H)-20S-Cholestane (S15)	0.222		mg/kg	0.067	0.023	1
14b,17b-20R-Methylcholestane (S22)	0.245		mg/kg	0.067	0.023	1
14b,17b-20S-Methylcholestane (S23)	0.310		mg/kg	0.067	0.023	1
14b(H),17b(H)-20R-Ethylcholestane (S26)	0.290		mg/kg	0.067	0.023	1
14b(H),17b(H)-20S-Ethylcholestane (S27)	0.227		mg/kg	0.067	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
5B(H)Cholane-Surr	102		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-09 D
 Client ID: 2708-190521-010
 Sample Location: PORTLAND, OR

Date Collected: 05/21/19 15:30
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 08/02/19 13:20
 Analyst: ML
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
cis/trans-Decalin	ND		mg/kg	2.81	1.41	10
C1-Decalins	ND		mg/kg	5.62	1.41	10
C2-Decalins	ND		mg/kg	5.62	1.41	10
C3-Decalins	ND		mg/kg	5.62	1.41	10
C4-Decalins	ND		mg/kg	5.62	1.41	10
Naphthalene	6070		mg/kg	5.62	1.61	10
C1-Naphthalenes	2160		mg/kg	5.62	1.61	10
C2-Naphthalenes	420		mg/kg	5.62	1.61	10
C3-Naphthalenes	100		mg/kg	5.62	1.61	10
C4-Naphthalenes	26.6		mg/kg	5.62	1.61	10
2-Methylnaphthalene	2220		mg/kg	5.62	1.45	10
1-Methylnaphthalene	980		mg/kg	5.62	1.77	10
Benzothiophene	193		mg/kg	5.62	1.76	10
C1-Benzo(b)thiophenes	68.5		mg/kg	5.62	1.76	10
C2-Benzo(b)thiophenes	18.7		mg/kg	5.62	1.76	10
C3-Benzo(b)thiophenes	7.96		mg/kg	5.62	1.76	10
C4-Benzo(b)thiophenes	3.31	J	mg/kg	5.62	1.76	10
Biphenyl	868		mg/kg	5.62	1.74	10
2,6-Dimethylnaphthalene	168		mg/kg	5.62	1.34	10
Dibenzofuran	2010		mg/kg	5.62	1.77	10
Acenaphthylene	60.0		mg/kg	5.62	1.07	10
Acenaphthene	3460		mg/kg	5.62	0.990	10
2,3,5-Trimethylnaphthalene	8.83		mg/kg	5.62	0.919	10
Fluorene	1810		mg/kg	5.62	1.50	10
C1-Fluorenes	99.6		mg/kg	5.62	1.50	10
C2-Fluorenes	32.1		mg/kg	5.62	1.50	10
C3-Fluorenes	43.9		mg/kg	5.62	1.50	10
Dibenzothiophene	267		mg/kg	5.62	1.55	10

Project Name: GASCO HYDROCARBON INVESTIGATIO

Lab Number: L1928037

Project Number: 000029-02

Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-09 D

Date Collected: 05/21/19 15:30

Client ID: 2708-190521-010

Date Received: 06/26/19

Sample Location: PORTLAND, OR

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
4-Methyldibenzothiophene(4MDT)	11.0		mg/kg	5.62	1.55	10
2/3-Methyldibenzothiophene(2MDT)	17.6		mg/kg	5.62	1.55	10
1-Methyldibenzothiophene(1MDT)	3.29	J	mg/kg	5.62	1.55	10
C1-Dibenzothiophenes BS	41.8		mg/kg	5.62	1.55	10
C2-Dibenzothiophenes	18.9		mg/kg	5.62	1.55	10
C3-Dibenzothiophenes	11.8		mg/kg	5.62	1.55	10
C4-Dibenzothiophenes	4.58	J	mg/kg	5.62	1.55	10
Phenanthrene	6720		mg/kg	5.62	1.86	10
3-Methylphenanthrene (3MP)	123		mg/kg	5.62	1.86	10
2-Methylphenanthrene (2MP)	149		mg/kg	5.62	1.86	10
2-Methylanthracene (2MA)	71.5		mg/kg	5.62	1.86	10
9/4-Methylphenanthrene (9MP)	92.2		mg/kg	5.62	1.86	10
C1-Phenanthrenes/Anthracenes	509		mg/kg	5.62	1.86	10
C2-Phenanthrenes/Anthr BS	131		mg/kg	5.62	1.86	10
C3-Phenanthrenes/Anthracenes	34.2		mg/kg	5.62	1.86	10
C4-Phenanthrenes/Anthracenes	9.70		mg/kg	5.62	1.86	10
Retene	ND		mg/kg	5.62	1.38	10
Anthracene	1750		mg/kg	5.62	1.16	10
Carbazole	841		mg/kg	5.62	1.84	10
1-Methylphenanthrene	86.4		mg/kg	5.62	1.48	10
Fluoranthene	3450		mg/kg	5.62	1.78	10
Benzo(b)fluorene	218		mg/kg	5.62	1.63	10
7H-Benzo(c)fluorene	50.4		mg/kg	5.62	1.63	10
2-Methylpyrene ¹	52.9		mg/kg	5.62	1.48	10
4-Methylpyrene ¹	34.4		mg/kg	5.62	1.48	10
1-Methylpyrene ¹	34.8		mg/kg	5.62	1.48	10
Pyrene	2790		mg/kg	5.62	1.48	10
C1-Fluoranthenes/Pyrenes	549		mg/kg	5.62	1.48	10
C2-Fluoranthenes/Pyrenes	89.4		mg/kg	5.62	1.48	10
C3-Fluoranthenes/Pyrenes	44.1		mg/kg	5.62	1.48	10
C4-Fluoranthenes/Pyrenes	34.1		mg/kg	5.62	1.48	10
Naphthobenzothiophenes	112		mg/kg	5.62	1.57	10
C1-Naphthobenzothiophenes	23.0		mg/kg	5.62	1.57	10
C2-Naphthobenzothiophenes	8.14		mg/kg	5.62	1.57	10
C3-Naphthobenzothiophenes	11.5		mg/kg	5.62	1.57	10
C4-Naphthobenzothiophenes	4.11	J	mg/kg	5.62	1.57	10
Benz(a)anthracene	997		mg/kg	5.62	1.14	10

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-09 D
 Client ID: 2708-190521-010
 Sample Location: PORTLAND, OR

Date Collected: 05/21/19 15:30
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Chrysene	876		mg/kg	5.62	1.14	10
C1-Chrysenes	143		mg/kg	5.62	1.14	10
C2-Chrysenes BS	36.2		mg/kg	5.62	1.14	10
C3-Chrysenes	36.7		mg/kg	5.62	1.14	10
C4-Chrysenes	18.9		mg/kg	5.62	1.14	10
Benzo(b)fluoranthene	822		mg/kg	5.62	1.46	10
Benzo(j)+(k)fluoranthene	693		mg/kg	5.62	1.12	10
Benzo(a)fluoranthene	182		mg/kg	5.62	1.12	10
Benzo(e)pyrene	584		mg/kg	5.62	1.16	10
Benzo(a)pyrene	1130		mg/kg	5.62	1.60	10
Perylene	331		mg/kg	5.62	1.08	10
Indeno(1,2,3-cd)pyrene	692		mg/kg	5.62	1.52	10
Dibenz(a,h)+(a,c)anthracene	109		mg/kg	5.62	1.52	10
Benzo(g,h,i)perylene	727		mg/kg	5.62	1.49	10
C26,20R+C27,20S TAS	ND		mg/kg	5.62	1.25	10
C28,20S TAS	ND		mg/kg	5.62	1.25	10
C27,20R TAS	ND		mg/kg	5.62	1.25	10
C28,20R TAS	ND		mg/kg	5.62	1.25	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	109		50-130
Phenanthrene-d10	106		50-130
Benzo(a)pyrene-d12	104		50-130
5B(H)Cholane-Surr	102		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-10
 Client ID: 2708-190606-OIL
 Sample Location: PORTLAND, OR

Date Collected: 06/06/19 14:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Oil
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 02:27
 Analyst: MJS
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 08:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
cis/trans-Decalin	38.7		mg/kg	1.28	0.642	1
C1-Decalins	164		mg/kg	2.56	0.642	1
C2-Decalins	440		mg/kg	2.56	0.642	1
C3-Decalins	449		mg/kg	2.56	0.642	1
C4-Decalins	483		mg/kg	2.56	0.642	1
Naphthalene	64400	E	mg/kg	2.56	0.734	1
C1-Naphthalenes	25100	E	mg/kg	2.56	0.734	1
C2-Naphthalenes	5960		mg/kg	2.56	0.734	1
C3-Naphthalenes	2600		mg/kg	2.56	0.734	1
C4-Naphthalenes	980		mg/kg	2.56	0.734	1
2-Methylnaphthalene	26000	E	mg/kg	2.56	0.659	1
1-Methylnaphthalene	11200	E	mg/kg	2.56	0.805	1
Benzothiophene	9730	E	mg/kg	2.56	0.800	1
C1-Benzo(b)thiophenes	2180		mg/kg	2.56	0.800	1
C2-Benzo(b)thiophenes	929		mg/kg	2.56	0.800	1
C3-Benzo(b)thiophenes	431		mg/kg	2.56	0.800	1
C4-Benzo(b)thiophenes	190		mg/kg	2.56	0.800	1
Biphenyl	6180	E	mg/kg	2.56	0.790	1
2,6-Dimethylnaphthalene	3050		mg/kg	2.56	0.607	1
Dibenzofuran	832		mg/kg	2.56	0.805	1
Acenaphthylene	2690		mg/kg	2.56	0.488	1
Acenaphthene	1360		mg/kg	2.56	0.450	1
2,3,5-Trimethylnaphthalene	310		mg/kg	2.56	0.418	1
Fluorene	3060		mg/kg	2.56	0.682	1
C1-Fluorenes	699		mg/kg	2.56	0.682	1
C2-Fluorenes	655		mg/kg	2.56	0.682	1
C3-Fluorenes	460		mg/kg	2.56	0.682	1
Dibenzothiophene	1740		mg/kg	2.56	0.704	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-10
 Client ID: 2708-190606-OIL
 Sample Location: PORTLAND, OR

Date Collected: 06/06/19 14:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
4-Methyldibenzothiophene(4MDT)	278		mg/kg	2.56	0.704	1
2/3-Methyldibenzothiophene(2MDT)	343		mg/kg	2.56	0.704	1
1-Methyldibenzothiophene(1MDT)	79.7		mg/kg	2.56	0.704	1
C1-Dibenzothiophenes BS	825		mg/kg	2.56	0.704	1
C2-Dibenzothiophenes	709		mg/kg	2.56	0.704	1
C3-Dibenzothiophenes	419		mg/kg	2.56	0.704	1
C4-Dibenzothiophenes	166		mg/kg	2.56	0.704	1
Phenanthrene	12000	E	mg/kg	2.56	0.847	1
3-Methylphenanthrene (3MP)	1060		mg/kg	2.56	0.847	1
2-Methylphenanthrene (2MP)	1260		mg/kg	2.56	0.847	1
2-Methylanthracene (2MA)	300		mg/kg	2.56	0.847	1
9/4-Methylphenanthrene (9MP)	597		mg/kg	2.56	0.847	1
C1-Phenanthrenes/Anthracenes	3680		mg/kg	2.56	0.847	1
C2-Phenanthrenes/Anthr BS	2440		mg/kg	2.56	0.847	1
C3-Phenanthrenes/Anthracenes	1270		mg/kg	2.56	0.847	1
C4-Phenanthrenes/Anthracenes	425		mg/kg	2.56	0.847	1
Retene	ND		mg/kg	2.56	0.627	1
Anthracene	1530		mg/kg	2.56	0.527	1
Carbazole	489		mg/kg	2.56	0.836	1
1-Methylphenanthrene	571		mg/kg	2.56	0.675	1
Fluoranthene	3050		mg/kg	2.56	0.812	1
Benzo(b)fluorene	198		mg/kg	2.56	0.740	1
7H-Benzo(c)fluorene	108		mg/kg	2.56	0.740	1
2-Methylpyrene ¹	278		mg/kg	2.56	0.672	1
4-Methylpyrene ¹	238		mg/kg	2.56	0.672	1
1-Methylpyrene ¹	240		mg/kg	2.56	0.672	1
Pyrene	3560	E	mg/kg	2.56	0.672	1
C1-Fluoranthenes/Pyrenes	1600		mg/kg	2.56	0.672	1
C2-Fluoranthenes/Pyrenes	962		mg/kg	2.56	0.672	1
C3-Fluoranthenes/Pyrenes	614		mg/kg	2.56	0.672	1
C4-Fluoranthenes/Pyrenes	280		mg/kg	2.56	0.672	1
Naphthobenzothiophenes	372		mg/kg	2.56	0.715	1
C1-Naphthobenzothiophenes	275		mg/kg	2.56	0.715	1
C2-Naphthobenzothiophenes	1940	G	mg/kg	2.56	0.715	1
C3-Naphthobenzothiophenes	154		mg/kg	2.56	0.715	1
C4-Naphthobenzothiophenes	73.6		mg/kg	2.56	0.715	1
Benz(a)anthracene	880		mg/kg	2.56	0.521	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-10
 Client ID: 2708-190606-OIL
 Sample Location: PORTLAND, OR

Date Collected: 06/06/19 14:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Chrysene	941		mg/kg	2.56	0.516	1
C1-Chrysenes	710		mg/kg	2.56	0.516	1
C2-Chrysenes BS	612		mg/kg	2.56	0.516	1
C3-Chrysenes	412		mg/kg	2.56	0.516	1
C4-Chrysenes	157		mg/kg	2.56	0.516	1
Benzo(b)fluoranthene	492		mg/kg	2.56	0.664	1
Benzo(j)+(k)fluoranthene	501		mg/kg	2.56	0.507	1
Benzo(a)fluoranthene	135		mg/kg	2.56	0.507	1
Benzo(e)pyrene	557		mg/kg	2.56	0.527	1
Benzo(a)pyrene	923		mg/kg	2.56	0.729	1
Perylene	240		mg/kg	2.56	0.493	1
Indeno(1,2,3-cd)pyrene	560		mg/kg	2.56	0.694	1
Dibenz(a,h)+(a,c)anthracene	125		mg/kg	2.56	0.690	1
Benzo(g,h,i)perylene	731		mg/kg	2.56	0.679	1
C26,20R+C27,20S TAS	5.53		mg/kg	2.56	0.567	1
C28,20S TAS	2.18	J	mg/kg	2.56	0.567	1
C27,20R TAS	3.16		mg/kg	2.56	0.567	1
C28,20R TAS	1.68	J	mg/kg	2.56	0.567	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	126		50-130
Phenanthrene-d10	96		50-130
Benzo(a)pyrene-d12	107		50-130
5B(H)Cholane-Surr	102		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-10 F1
 Client ID: 2708-190606-OIL
 Sample Location: PORTLAND, OR

Date Collected: 06/06/19 14:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Oil
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 22:09
 Analyst: MJS
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 08:06
 Cleanup Method: EPA 3630(M)
 Cleanup Date: 07/29/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
Hopane (T19)	7.84		mg/kg	0.341	0.145	1
C23 Tricyclic Terpane (T4)	5.72		mg/kg	0.341	0.145	1
C24 Tricyclic Terpane (T5)	2.82		mg/kg	0.341	0.145	1
C25 Tricyclic Terpane (T6)	2.84		mg/kg	0.341	0.145	1
C24 Tetracyclic Terpane (T6a)	0.942		mg/kg	0.341	0.145	1
C26 Tricyclic Terpane-22S (T6b)	1.29		mg/kg	0.341	0.145	1
C26 Tricyclic Terpane-22R (T6c)	1.19		mg/kg	0.341	0.145	1
C28 Tricyclic Terpane-22S (T7)	1.57		mg/kg	0.341	0.145	1
C28 Tricyclic Terpane-22R (T8)	1.76		mg/kg	0.341	0.145	1
C29 Tricyclic Terpane-22S (T9)	1.46		mg/kg	0.341	0.145	1
C29 Tricyclic Terpane-22R (T10)	1.37		mg/kg	0.341	0.145	1
18a-22,29,30-Trisnorneohopane-TS (T11)	2.08		mg/kg	0.341	0.145	1
C30 Tricyclic Terpane-22S	1.07		mg/kg	0.341	0.145	1
C30 Tricyclic Terpane-22R	0.947		mg/kg	0.341	0.145	1
17a(H)-22,29,30-Trisnorhopane-TM (T12)	2.22		mg/kg	0.341	0.145	1
17a/b,21b/a 28,30-Bisnorhopane (T14a)	2.92		mg/kg	0.341	0.145	1
17a(H),21b(H)-25-Norhopane (T14b)	0.581		mg/kg	0.341	0.145	1
30-Norhopane (T15)	5.41		mg/kg	0.341	0.145	1
18a(H)-30-Norneohopane-C29Ts (T16)	2.32		mg/kg	0.341	0.145	1
17a(H)-Diahopane (X)	0.612		mg/kg	0.341	0.145	1
30-Normoretane (T17)	1.13		mg/kg	0.341	0.145	1
18a(H)&18b(H)-Oleananes (T18)	2.18		mg/kg	0.341	0.145	1
Moretane (T20)	1.06		mg/kg	0.341	0.145	1
30-Homohopane-22S (T21)	2.40		mg/kg	0.341	0.145	1
30-Homohopane-22R (T22)	2.31		mg/kg	0.341	0.145	1
Gammacerane/C32-Diahopane	0.799		mg/kg	0.341	0.145	1
30,31-Bishomohopane-22S (T26)	1.50		mg/kg	0.341	0.145	1
30,31-Bishomohopane-22R (T27)	0.953		mg/kg	0.341	0.145	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-10 F1
 Client ID: 2708-190606-OIL
 Sample Location: PORTLAND, OR

Date Collected: 06/06/19 14:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
30,31-Trishomohopane-22S (T30)	1.00		mg/kg	0.341	0.145	1
30,31-Trishomohopane-22R (T31)	0.723		mg/kg	0.341	0.145	1
Tetrakishomohopane-22S (T32)	ND		mg/kg	0.341	0.145	1
Tetrakishomohopane-22R (T33)	ND		mg/kg	0.341	0.145	1
Pentakishomohopane-22S (T34)	ND		mg/kg	0.341	0.145	1
Pentakishomohopane-22R (T35)	ND		mg/kg	0.341	0.145	1
13b(H),17a(H)-20S-Diacholestane (S4)	3.02		mg/kg	0.341	0.113	1
13b(H),17a(H)-20R-Diacholestane (S5)	1.93		mg/kg	0.341	0.113	1
13b,17a-20S-Methyldiacholestane (S8)	2.58		mg/kg	0.341	0.113	1
17a(H)20SC27/C29dia	6.01		mg/kg	0.341	0.113	1
17a(H)20rc27/C29dia	7.76		mg/kg	0.341	0.113	1
Unknown Sterane (S18)	0.713		mg/kg	0.341	0.113	1
13a,17b-20S-Ethyldiacholestane (S19)	0.116	J	mg/kg	0.341	0.113	1
14a,17a-20S-Methylcholestane (S20)	3.14		mg/kg	0.341	0.113	1
14a,17a-20R-Methylcholestane (S24)	4.87		mg/kg	0.341	0.113	1
14a(H),17a(H)-20S-Ethylcholestane (S25)	2.24		mg/kg	0.341	0.113	1
14a(H),17a(H)-20R-Ethylcholestane (S28)	3.27		mg/kg	0.341	0.113	1
14b(H),17b(H)-20R-Cholestane (S14)	3.06		mg/kg	0.341	0.113	1
14b(H),17b(H)-20S-Cholestane (S15)	2.86		mg/kg	0.341	0.113	1
14b,17b-20R-Methylcholestane (S22)	2.92		mg/kg	0.341	0.113	1
14b,17b-20S-Methylcholestane (S23)	3.08		mg/kg	0.341	0.113	1
14b(H),17b(H)-20R-Ethylcholestane (S26)	2.50		mg/kg	0.341	0.113	1
14b(H),17b(H)-20S-Ethylcholestane (S27)	2.25		mg/kg	0.341	0.113	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
5B(H)Cholane-Surr	112		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-10 D
 Client ID: 2708-190606-OIL
 Sample Location: PORTLAND, OR

Date Collected: 06/06/19 14:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Oil
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/31/19 12:10
 Analyst: MJS
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 08:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Naphthalene	54100		mg/kg	128	36.7	50
C1-Naphthalenes	19300		mg/kg	128	36.7	50
2-Methylnaphthalene	19200		mg/kg	128	32.9	50
1-Methylnaphthalene	9480		mg/kg	128	40.2	50
Benzothiophene	8010		mg/kg	128	40.0	50
Biphenyl	5350		mg/kg	128	39.5	50
Phenanthrene	10200		mg/kg	128	42.3	50
Pyrene	2730		mg/kg	128	33.6	50

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	112		50-130
Phenanthrene-d10	116		50-130
Benzo(a)pyrene-d12	102		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-11 F1
 Client ID: 2708-190514-004
 Sample Location: PORTLAND, OR

Date Collected: 05/14/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 18:59
 Analyst: MJS
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3585
 Extraction Date: 07/26/19 09:00
 Cleanup Method: EPA 3630(M)
 Cleanup Date: 07/29/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
Hopane (T19)	1.57		mg/kg	0.118	0.050	1
C23 Tricyclic Terpane (T4)	0.482		mg/kg	0.118	0.050	1
C24 Tricyclic Terpane (T5)	0.240		mg/kg	0.118	0.050	1
C25 Tricyclic Terpane (T6)	0.290		mg/kg	0.118	0.050	1
C24 Tetracyclic Terpane (T6a)	0.186		mg/kg	0.118	0.050	1
C26 Tricyclic Terpane-22S (T6b)	0.165		mg/kg	0.118	0.050	1
C26 Tricyclic Terpane-22R (T6c)	0.176		mg/kg	0.118	0.050	1
C28 Tricyclic Terpane-22S (T7)	0.190		mg/kg	0.118	0.050	1
C28 Tricyclic Terpane-22R (T8)	0.250		mg/kg	0.118	0.050	1
C29 Tricyclic Terpane-22S (T9)	0.190		mg/kg	0.118	0.050	1
C29 Tricyclic Terpane-22R (T10)	0.224		mg/kg	0.118	0.050	1
18a-22,29,30-Trisnorneohopane-TS (T11)	0.407		mg/kg	0.118	0.050	1
C30 Tricyclic Terpane-22S	0.156		mg/kg	0.118	0.050	1
C30 Tricyclic Terpane-22R	0.160		mg/kg	0.118	0.050	1
17a(H)-22,29,30-Trisnorhopane-TM (T12)	0.465		mg/kg	0.118	0.050	1
17a/b,21b/a 28,30-Bisnorhopane (T14a)	0.264		mg/kg	0.118	0.050	1
17a(H),21b(H)-25-Norhopane (T14b)	ND		mg/kg	0.118	0.050	1
30-Norhopane (T15)	1.00		mg/kg	0.118	0.050	1
18a(H)-30-Norneohopane-C29Ts (T16)	0.348		mg/kg	0.118	0.050	1
17a(H)-Diahopane (X)	0.101	J	mg/kg	0.118	0.050	1
30-Normoretane (T17)	0.176		mg/kg	0.118	0.050	1
18a(H)&18b(H)-Oleananes (T18)	0.229		mg/kg	0.118	0.050	1
Moretane (T20)	0.224		mg/kg	0.118	0.050	1
30-Homohopane-22S (T21)	0.351		mg/kg	0.118	0.050	1
30-Homohopane-22R (T22)	0.269		mg/kg	0.118	0.050	1
Gammacerane/C32-Diahopane	ND		mg/kg	0.118	0.050	1
30,31-Bishomohopane-22S (T26)	0.148		mg/kg	0.118	0.050	1
30,31-Bishomohopane-22R (T27)	0.150		mg/kg	0.118	0.050	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-11 F1
 Client ID: 2708-190514-004
 Sample Location: PORTLAND, OR

Date Collected: 05/14/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
30,31-Trishomohopane-22S (T30)	ND		mg/kg	0.118	0.050	1
30,31-Trishomohopane-22R (T31)	ND		mg/kg	0.118	0.050	1
Tetrakishomohopane-22S (T32)	ND		mg/kg	0.118	0.050	1
Tetrakishomohopane-22R (T33)	ND		mg/kg	0.118	0.050	1
Pentakishomohopane-22S (T34)	ND		mg/kg	0.118	0.050	1
Pentakishomohopane-22R (T35)	ND		mg/kg	0.118	0.050	1
13b(H),17a(H)-20S-Diacholestane (S4)	0.512		mg/kg	0.118	0.039	1
13b(H),17a(H)-20R-Diacholestane (S5)	0.296		mg/kg	0.118	0.039	1
13b,17a-20S-Methyldiacholestane (S8)	0.295		mg/kg	0.118	0.039	1
17a(H)20SC27/C29dia	0.746		mg/kg	0.118	0.039	1
17a(H)20rc27/C29dia	0.851		mg/kg	0.118	0.039	1
Unknown Sterane (S18)	0.169		mg/kg	0.118	0.039	1
13a,17b-20S-Ethyldiacholestane (S19)	ND		mg/kg	0.118	0.039	1
14a,17a-20S-Methylcholestane (S20)	0.337		mg/kg	0.118	0.039	1
14a,17a-20R-Methylcholestane (S24)	0.429		mg/kg	0.118	0.039	1
14a(H),17a(H)-20S-Ethylcholestane (S25)	0.276		mg/kg	0.118	0.039	1
14a(H),17a(H)-20R-Ethylcholestane (S28)	0.403		mg/kg	0.118	0.039	1
14b(H),17b(H)-20R-Cholestane (S14)	0.444		mg/kg	0.118	0.039	1
14b(H),17b(H)-20S-Cholestane (S15)	0.432		mg/kg	0.118	0.039	1
14b,17b-20R-Methylcholestane (S22)	0.351		mg/kg	0.118	0.039	1
14b,17b-20S-Methylcholestane (S23)	0.457		mg/kg	0.118	0.039	1
14b(H),17b(H)-20R-Ethylcholestane (S26)	0.376		mg/kg	0.118	0.039	1
14b(H),17b(H)-20S-Ethylcholestane (S27)	0.519		mg/kg	0.118	0.039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
5B(H)Cholane-Surr	75		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-11 D
 Client ID: 2708-190514-004
 Sample Location: PORTLAND, OR

Date Collected: 05/14/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 08/02/19 16:16
 Analyst: ML
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:15
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
cis/trans-Decalin	ND		mg/kg	5.53	2.78	10
C1-Decalins	ND		mg/kg	11.1	2.78	10
C2-Decalins	ND		mg/kg	11.1	2.78	10
C3-Decalins	ND		mg/kg	11.1	2.78	10
C4-Decalins	ND		mg/kg	11.1	2.78	10
Naphthalene	998		mg/kg	11.1	3.18	10
C1-Naphthalenes	409		mg/kg	11.1	3.18	10
C2-Naphthalenes	331		mg/kg	11.1	3.18	10
C3-Naphthalenes	181		mg/kg	11.1	3.18	10
C4-Naphthalenes	64.9		mg/kg	11.1	3.18	10
2-Methylnaphthalene	330		mg/kg	11.1	2.85	10
1-Methylnaphthalene	273		mg/kg	11.1	3.48	10
Benzothiophene	96.9		mg/kg	11.1	3.46	10
C1-Benzo(b)thiophenes	51.9		mg/kg	11.1	3.46	10
C2-Benzo(b)thiophenes	46.8		mg/kg	11.1	3.46	10
C3-Benzo(b)thiophenes	28.8		mg/kg	11.1	3.46	10
C4-Benzo(b)thiophenes	11.7		mg/kg	11.1	3.46	10
Biphenyl	69.3		mg/kg	11.1	3.42	10
2,6-Dimethylnaphthalene	166		mg/kg	11.1	2.63	10
Dibenzofuran	147		mg/kg	11.1	3.48	10
Acenaphthylene	44.9		mg/kg	11.1	2.11	10
Acenaphthene	581		mg/kg	11.1	1.95	10
2,3,5-Trimethylnaphthalene	22.4		mg/kg	11.1	1.81	10
Fluorene	409		mg/kg	11.1	2.95	10
C1-Fluorenes	107		mg/kg	11.1	2.95	10
C2-Fluorenes	97.5		mg/kg	11.1	2.95	10
C3-Fluorenes	117		mg/kg	11.1	2.95	10
Dibenzothiophene	317		mg/kg	11.1	3.05	10

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-11 D
 Client ID: 2708-190514-004
 Sample Location: PORTLAND, OR

Date Collected: 05/14/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
4-Methyldibenzothiophene(4MDT)	46.4		mg/kg	11.1	3.05	10
2/3-Methyldibenzothiophene(2MDT)	60.9		mg/kg	11.1	3.05	10
1-Methyldibenzothiophene(1MDT)	15.2		mg/kg	11.1	3.05	10
C1-Dibenzothiophenes BS	147		mg/kg	11.1	3.05	10
C2-Dibenzothiophenes	115		mg/kg	11.1	3.05	10
C3-Dibenzothiophenes	63.1		mg/kg	11.1	3.05	10
C4-Dibenzothiophenes	22.8		mg/kg	11.1	3.05	10
Phenanthrene	6660		mg/kg	11.1	3.66	10
3-Methylphenanthrene (3MP)	303		mg/kg	11.1	3.66	10
2-Methylphenanthrene (2MP)	389		mg/kg	11.1	3.66	10
2-Methylanthracene (2MA)	136		mg/kg	11.1	3.66	10
9/4-Methylphenanthrene (9MP)	250		mg/kg	11.1	3.66	10
C1-Phenanthrenes/Anthracenes	1280		mg/kg	11.1	3.66	10
C2-Phenanthrenes/Anthr BS	517		mg/kg	11.1	3.66	10
C3-Phenanthrenes/Anthracenes	199		mg/kg	11.1	3.66	10
C4-Phenanthrenes/Anthracenes	69.0		mg/kg	11.1	3.66	10
Retene	ND		mg/kg	11.1	2.71	10
Anthracene	1590		mg/kg	11.1	2.28	10
Carbazole	1660		mg/kg	11.1	3.62	10
1-Methylphenanthrene	238		mg/kg	11.1	2.92	10
Fluoranthene	11100		mg/kg	11.1	3.51	10
Benzo(b)fluorene	1050		mg/kg	11.1	3.20	10
7H-Benzo(c)fluorene	210		mg/kg	11.1	3.20	10
2-Methylpyrene ¹	269		mg/kg	11.1	2.91	10
4-Methylpyrene ¹	268		mg/kg	11.1	2.91	10
1-Methylpyrene ¹	281		mg/kg	11.1	2.91	10
Pyrene	10100		mg/kg	11.1	2.91	10
C1-Fluoranthenes/Pyrenes	3000		mg/kg	11.1	2.91	10
C2-Fluoranthenes/Pyrenes	636		mg/kg	11.1	2.91	10
C3-Fluoranthenes/Pyrenes	265		mg/kg	11.1	2.91	10
C4-Fluoranthenes/Pyrenes	189		mg/kg	11.1	2.91	10
Naphthobenzothiophenes	741		mg/kg	11.1	3.10	10
C1-Naphthobenzothiophenes	166		mg/kg	11.1	3.10	10
C2-Naphthobenzothiophenes	65.6		mg/kg	11.1	3.10	10
C3-Naphthobenzothiophenes	69.2		mg/kg	11.1	3.10	10
C4-Naphthobenzothiophenes	24.8		mg/kg	11.1	3.10	10
Benz(a)anthracene	4670		mg/kg	11.1	2.26	10

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-11 D
 Client ID: 2708-190514-004
 Sample Location: PORTLAND, OR

Date Collected: 05/14/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Chrysene	4900		mg/kg	11.1	2.24	10
C1-Chrysenes	890		mg/kg	11.1	2.24	10
C2-Chrysenes BS	312		mg/kg	11.1	2.24	10
C3-Chrysenes	206		mg/kg	11.1	2.24	10
C4-Chrysenes	70.2		mg/kg	11.1	2.24	10
Benzo(b)fluoranthene	4600		mg/kg	11.1	2.88	10
Benzo(j)+(k)fluoranthene	4140		mg/kg	11.1	2.20	10
Benzo(a)fluoranthene	736		mg/kg	11.1	2.20	10
Benzo(e)pyrene	3340		mg/kg	11.1	2.28	10
Benzo(a)pyrene	5910		mg/kg	11.1	3.16	10
Perylene	1690		mg/kg	11.1	2.13	10
Indeno(1,2,3-cd)pyrene	3760		mg/kg	11.1	3.00	10
Dibenz(a,h)+(a,c)anthracene	710		mg/kg	11.1	2.99	10
Benzo(g,h,i)perylene	3950		mg/kg	11.1	2.94	10
C26,20R+C27,20S TAS	ND		mg/kg	11.1	2.46	10
C28,20S TAS	ND		mg/kg	11.1	2.46	10
C27,20R TAS	ND		mg/kg	11.1	2.46	10
C28,20R TAS	ND		mg/kg	11.1	2.46	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	104		50-130
Phenanthrene-d10	111		50-130
Benzo(a)pyrene-d12	111		50-130
5B(H)Cholane-Surr	98		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-12 F1
 Client ID: 2708-190520-1-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 07/30/19 20:34
 Analyst: MJS
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3585
 Extraction Date: 07/26/19 09:00
 Cleanup Method: EPA 3630(M)
 Cleanup Date: 07/29/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
Hopane (T19)	2.29		mg/kg	0.177	0.076	1
C23 Tricyclic Terpene (T4)	0.267		mg/kg	0.177	0.076	1
C24 Tricyclic Terpene (T5)	0.151	J	mg/kg	0.177	0.076	1
C25 Tricyclic Terpene (T6)	0.180		mg/kg	0.177	0.076	1
C24 Tetracyclic Terpene (T6a)	0.158	J	mg/kg	0.177	0.076	1
C26 Tricyclic Terpene-22S (T6b)	0.118	J	mg/kg	0.177	0.076	1
C26 Tricyclic Terpene-22R (T6c)	0.148	J	mg/kg	0.177	0.076	1
C28 Tricyclic Terpene-22S (T7)	0.121	J	mg/kg	0.177	0.076	1
C28 Tricyclic Terpene-22R (T8)	0.190		mg/kg	0.177	0.076	1
C29 Tricyclic Terpene-22S (T9)	0.165	J	mg/kg	0.177	0.076	1
C29 Tricyclic Terpene-22R (T10)	0.138	J	mg/kg	0.177	0.076	1
18a-22,29,30-Trisnorneohopane-TS (T11)	0.333		mg/kg	0.177	0.076	1
C30 Tricyclic Terpene-22S	ND		mg/kg	0.177	0.076	1
C30 Tricyclic Terpene-22R	ND		mg/kg	0.177	0.076	1
17a(H)-22,29,30-Trisnorhopane-TM (T12)	1.23		mg/kg	0.177	0.076	1
17a/b,21b/a 28,30-Bisnorhopane (T14a)	ND		mg/kg	0.177	0.076	1
17a(H),21b(H)-25-Norhopane (T14b)	ND		mg/kg	0.177	0.076	1
30-Norhopane (T15)	2.08		mg/kg	0.177	0.076	1
18a(H)-30-Norneohopane-C29Ts (T16)	0.221		mg/kg	0.177	0.076	1
17a(H)-Diahopane (X)	ND		mg/kg	0.177	0.076	1
30-Normoretane (T17)	0.648		mg/kg	0.177	0.076	1
18a(H)&18b(H)-Oleananes (T18)	ND		mg/kg	0.177	0.076	1
Moretane (T20)	0.862		mg/kg	0.177	0.076	1
30-Homohopane-22S (T21)	0.760		mg/kg	0.177	0.076	1
30-Homohopane-22R (T22)	0.518		mg/kg	0.177	0.076	1
Gammacerane/C32-Diahopane	ND		mg/kg	0.177	0.076	1
30,31-Bishomohopane-22S (T26)	0.285		mg/kg	0.177	0.076	1
30,31-Bishomohopane-22R (T27)	0.235		mg/kg	0.177	0.076	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-12 F1
 Client ID: 2708-190520-1-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Fractionated Biomarkers by GC/MS - Mansfield Lab						
30,31-Trishomohopane-22S (T30)	ND		mg/kg	0.177	0.076	1
30,31-Trishomohopane-22R (T31)	ND		mg/kg	0.177	0.076	1
Tetrakishomohopane-22S (T32)	ND		mg/kg	0.177	0.076	1
Tetrakishomohopane-22R (T33)	ND		mg/kg	0.177	0.076	1
Pentakishomohopane-22S (T34)	ND		mg/kg	0.177	0.076	1
Pentakishomohopane-22R (T35)	ND		mg/kg	0.177	0.076	1
13b(H),17a(H)-20S-Diacholestane (S4)	0.312		mg/kg	0.177	0.059	1
13b(H),17a(H)-20R-Diacholestane (S5)	0.222		mg/kg	0.177	0.059	1
13b,17a-20S-Methyldiacholestane (S8)	0.207		mg/kg	0.177	0.059	1
17a(H)20SC27/C29dia	0.526		mg/kg	0.177	0.059	1
17a(H)20rc27/C29dia	0.579		mg/kg	0.177	0.059	1
Unknown Sterane (S18)	0.124	J	mg/kg	0.177	0.059	1
13a,17b-20S-Ethyldiacholestane (S19)	ND		mg/kg	0.177	0.059	1
14a,17a-20S-Methylcholestane (S20)	0.253		mg/kg	0.177	0.059	1
14a,17a-20R-Methylcholestane (S24)	0.253		mg/kg	0.177	0.059	1
14a(H),17a(H)-20S-Ethylcholestane (S25)	0.302		mg/kg	0.177	0.059	1
14a(H),17a(H)-20R-Ethylcholestane (S28)	0.333		mg/kg	0.177	0.059	1
14b(H),17b(H)-20R-Cholestane (S14)	0.260		mg/kg	0.177	0.059	1
14b(H),17b(H)-20S-Cholestane (S15)	0.256		mg/kg	0.177	0.059	1
14b,17b-20R-Methylcholestane (S22)	0.240		mg/kg	0.177	0.059	1
14b,17b-20S-Methylcholestane (S23)	0.319		mg/kg	0.177	0.059	1
14b(H),17b(H)-20R-Ethylcholestane (S26)	0.354		mg/kg	0.177	0.059	1
14b(H),17b(H)-20S-Ethylcholestane (S27)	0.352		mg/kg	0.177	0.059	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
5B(H)Cholane-Surr	110		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-12 D2
 Client ID: 2708-190520-1-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 08/01/19 21:34
 Analyst: ML
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:15
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Naphthalene	28000		mg/kg	42.6	12.2	20
Phenanthrene	31100		mg/kg	42.6	14.1	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	106		50-130
Phenanthrene-d10	105		50-130
Benzo(a)pyrene-d12	101		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-12 D
 Client ID: 2708-190520-1-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8270D-SIM(M)
 Analytical Date: 08/02/19 20:38
 Analyst: ML
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:15
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
cis/trans-Decalin	ND		mg/kg	10.6	5.34	10
C1-Decalins	ND		mg/kg	21.3	5.34	10
C2-Decalins	ND		mg/kg	21.3	5.34	10
C3-Decalins	ND		mg/kg	21.3	5.34	10
C4-Decalins	ND		mg/kg	21.3	5.34	10
Naphthalene	29200	E	mg/kg	21.3	6.11	10
C1-Naphthalenes	10100		mg/kg	21.3	6.11	10
C2-Naphthalenes	1960		mg/kg	21.3	6.11	10
C3-Naphthalenes	467		mg/kg	21.3	6.11	10
C4-Naphthalenes	123		mg/kg	21.3	6.11	10
2-Methylnaphthalene	10300		mg/kg	21.3	5.49	10
1-Methylnaphthalene	4540		mg/kg	21.3	6.70	10
Benzothiophene	920		mg/kg	21.3	6.66	10
C1-Benzo(b)thiophenes	318		mg/kg	21.3	6.66	10
C2-Benzo(b)thiophenes	82.7		mg/kg	21.3	6.66	10
C3-Benzo(b)thiophenes	30.2		mg/kg	21.3	6.66	10
C4-Benzo(b)thiophenes	14.8	J	mg/kg	21.3	6.66	10
Biphenyl	3970		mg/kg	21.3	6.57	10
2,6-Dimethylnaphthalene	766		mg/kg	21.3	5.06	10
Dibenzofuran	9330		mg/kg	21.3	6.70	10
Acenaphthylene	228		mg/kg	21.3	4.06	10
Acenaphthene	16200		mg/kg	21.3	3.75	10
2,3,5-Trimethylnaphthalene	39.8		mg/kg	21.3	3.48	10
Fluorene	8400		mg/kg	21.3	5.68	10
C1-Fluorenes	464		mg/kg	21.3	5.68	10
C2-Fluorenes	145		mg/kg	21.3	5.68	10
C3-Fluorenes	192		mg/kg	21.3	5.68	10
Dibenzothiophene	1200		mg/kg	21.3	5.87	10

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-12 D
 Client ID: 2708-190520-1-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
4-Methyl dibenzothiophene(4MDT)	41.1		mg/kg	21.3	5.87	10
2/3-Methyl dibenzothiophene(2MDT)	76.6		mg/kg	21.3	5.87	10
1-Methyl dibenzothiophene(1MDT)	18.4	J	mg/kg	21.3	5.87	10
C1-Dibenzothiophenes BS	179		mg/kg	21.3	5.87	10
C2-Dibenzothiophenes	87.9		mg/kg	21.3	5.87	10
C3-Dibenzothiophenes	53.1		mg/kg	21.3	5.87	10
C4-Dibenzothiophenes	20.0	J	mg/kg	21.3	5.87	10
Phenanthrene	31300	E	mg/kg	21.3	7.05	10
3-Methylphenanthrene (3MP)	553		mg/kg	21.3	7.05	10
2-Methylphenanthrene (2MP)	668		mg/kg	21.3	7.05	10
2-Methylanthracene (2MA)	328		mg/kg	21.3	7.05	10
9/4-Methylphenanthrene (9MP)	421		mg/kg	21.3	7.05	10
C1-Phenanthrenes/Anthracenes	2300		mg/kg	21.3	7.05	10
C2-Phenanthrenes/Anthr BS	579		mg/kg	21.3	7.05	10
C3-Phenanthrenes/Anthracenes	150		mg/kg	21.3	7.05	10
C4-Phenanthrenes/Anthracenes	45.1		mg/kg	21.3	7.05	10
Retene	ND		mg/kg	21.3	5.22	10
Anthracene	8300		mg/kg	21.3	4.38	10
Carbazole	4000		mg/kg	21.3	6.96	10
1-Methylphenanthrene	392		mg/kg	21.3	5.62	10
Fluoranthene	15700		mg/kg	21.3	6.76	10
Benzo(b)fluorene	1000		mg/kg	21.3	6.16	10
7H-Benzo(c)fluorene	229		mg/kg	21.3	6.16	10
2-Methylpyrene ¹	242		mg/kg	21.3	5.60	10
4-Methylpyrene ¹	158		mg/kg	21.3	5.60	10
1-Methylpyrene ¹	158		mg/kg	21.3	5.60	10
Pyrene	12700		mg/kg	21.3	5.60	10
C1-Fluoranthenes/Pyrenes	2560		mg/kg	21.3	5.60	10
C2-Fluoranthenes/Pyrenes	413		mg/kg	21.3	5.60	10
C3-Fluoranthenes/Pyrenes	194		mg/kg	21.3	5.60	10
C4-Fluoranthenes/Pyrenes	152		mg/kg	21.3	5.60	10
Naphthobenzothiophenes	488		mg/kg	21.3	5.95	10
C1-Naphthobenzothiophenes	102		mg/kg	21.3	5.95	10
C2-Naphthobenzothiophenes	37.4		mg/kg	21.3	5.95	10
C3-Naphthobenzothiophenes	50.8		mg/kg	21.3	5.95	10
C4-Naphthobenzothiophenes	20.5	J	mg/kg	21.3	5.95	10
Benz(a)anthracene	4400		mg/kg	21.3	4.34	10

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-12 D
 Client ID: 2708-190520-1-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
PAHs - Mansfield Lab						
Chrysene	3930		mg/kg	21.3	4.30	10
C1-Chrysenes	659		mg/kg	21.3	4.30	10
C2-Chrysenes BS	174		mg/kg	21.3	4.30	10
C3-Chrysenes	168		mg/kg	21.3	4.30	10
C4-Chrysenes	60.8		mg/kg	21.3	4.30	10
Benzo(b)fluoranthene	3670		mg/kg	21.3	5.53	10
Benzo(j)+(k)fluoranthene	3090		mg/kg	21.3	4.22	10
Benzo(a)fluoranthene	815		mg/kg	21.3	4.22	10
Benzo(e)pyrene	2580		mg/kg	21.3	4.39	10
Benzo(a)pyrene	4990		mg/kg	21.3	6.07	10
Perylene	1470		mg/kg	21.3	4.11	10
Indeno(1,2,3-cd)pyrene	3060		mg/kg	21.3	5.77	10
Dibenz(a,h)+(a,c)anthracene	554		mg/kg	21.3	5.75	10
Benzo(g,h,i)perylene	3210		mg/kg	21.3	5.65	10
C26,20R+C27,20S TAS	ND		mg/kg	21.3	4.72	10
C28,20S TAS	ND		mg/kg	21.3	4.72	10
C27,20R TAS	ND		mg/kg	21.3	4.72	10
C28,20R TAS	ND		mg/kg	21.3	4.72	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	105		50-130
Phenanthrene-d10	105		50-130
Benzo(a)pyrene-d12	103		50-130
5B(H)Cholane-Surr	91		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM(M)
Analytical Date: 07/29/19 20:36
Analyst: ML

Extraction Method: EPA 3580A
Extraction Date: 07/26/19 09:00
Cleanup Method: - - - -
Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - Mansfield Lab for sample(s): 01-09,11-12 Batch: WG1264828-1					
cis/trans-Decalin	ND		mg/kg	1.50	0.753
C1-Decalins	ND		mg/kg	3.00	0.753
C2-Decalins	ND		mg/kg	3.00	0.753
C3-Decalins	ND		mg/kg	3.00	0.753
C4-Decalins	ND		mg/kg	3.00	0.753
Naphthalene	ND		mg/kg	3.00	0.862
C1-Naphthalenes	ND		mg/kg	3.00	0.862
C2-Naphthalenes	ND		mg/kg	3.00	0.862
C3-Naphthalenes	ND		mg/kg	3.00	0.862
C4-Naphthalenes	ND		mg/kg	3.00	0.862
2-Methylnaphthalene	ND		mg/kg	3.00	0.774
1-Methylnaphthalene	ND		mg/kg	3.00	0.945
Benzo(b)thiophene	ND		mg/kg	3.00	0.940
C1-Benzo(b)thiophenes	ND		mg/kg	3.00	0.940
C2-Benzo(b)thiophenes	ND		mg/kg	3.00	0.940
C3-Benzo(b)thiophenes	ND		mg/kg	3.00	0.940
C4-Benzo(b)thiophenes	ND		mg/kg	3.00	0.940
Biphenyl	ND		mg/kg	3.00	0.927
2,6-Dimethylnaphthalene	ND		mg/kg	3.00	0.713
Dibenzofuran	ND		mg/kg	3.00	0.945
Acenaphthylene	ND		mg/kg	3.00	0.572
Acenaphthene	ND		mg/kg	3.00	0.529
2,3,5-Trimethylnaphthalene	ND		mg/kg	3.00	0.491
Fluorene	ND		mg/kg	3.00	0.800
C1-Fluorenes	ND		mg/kg	3.00	0.800
C2-Fluorenes	ND		mg/kg	3.00	0.800
C3-Fluorenes	ND		mg/kg	3.00	0.800
Dibenzothiophene	ND		mg/kg	3.00	0.827
4-Methyldibenzothiophene(4MDT)	ND		mg/kg	3.00	0.827

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM(M)
Analytical Date: 07/29/19 20:36
Analyst: ML

Extraction Method: EPA 3580A
Extraction Date: 07/26/19 09:00
Cleanup Method: - - - -
Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - Mansfield Lab for sample(s): 01-09,11-12 Batch: WG1264828-1					
2/3-Methyldibenzothiophene(2MDT)	ND		mg/kg	3.00	0.827
1-Methyldibenzothiophene(1MDT)	ND		mg/kg	3.00	0.827
C1-Dibenzothiophenes BS	ND		mg/kg	3.00	0.827
C2-Dibenzothiophenes	ND		mg/kg	3.00	0.827
C3-Dibenzothiophenes	ND		mg/kg	3.00	0.827
C4-Dibenzothiophenes	ND		mg/kg	3.00	0.827
Phenanthrene	ND		mg/kg	3.00	0.994
3-Methylphenanthrene (3MP)	ND		mg/kg	3.00	0.994
2-Methylphenanthrene (2MP)	ND		mg/kg	3.00	0.994
2-Methylanthracene (2MA)	ND		mg/kg	3.00	0.994
9/4-Methylphenanthrene (9MP)	ND		mg/kg	3.00	0.994
C1-Phenanthrenes/Anthracenes	ND		mg/kg	3.00	0.994
C2-Phenanthrenes/Anthr BS	ND		mg/kg	3.00	0.994
C3-Phenanthrenes/Anthracenes	ND		mg/kg	3.00	0.994
C4-Phenanthrenes/Anthracenes	ND		mg/kg	3.00	0.994
Retene	ND		mg/kg	3.00	0.736
Anthracene	ND		mg/kg	3.00	0.618
Carbazole	ND		mg/kg	3.00	0.981
1-Methylphenanthrene	ND		mg/kg	3.00	0.792
Fluoranthene	ND		mg/kg	3.00	0.953
Benzo(b)fluorene	ND		mg/kg	3.00	0.869
7H-Benzo(c)fluorene	ND		mg/kg	3.00	0.869
2-Methylpyrene ¹	ND		mg/kg	3.00	0.789
4-Methylpyrene ¹	ND		mg/kg	3.00	0.789
1-Methylpyrene ¹	ND		mg/kg	3.00	0.789
Pyrene	ND		mg/kg	3.00	0.789
C1-Fluoranthenes/Pyrenes	ND		mg/kg	3.00	0.789
C2-Fluoranthenes/Pyrenes	ND		mg/kg	3.00	0.789
C3-Fluoranthenes/Pyrenes	ND		mg/kg	3.00	0.789

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM(M)
Analytical Date: 07/29/19 20:36
Analyst: ML

Extraction Method: EPA 3580A
Extraction Date: 07/26/19 09:00
Cleanup Method: - - - -
Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - Mansfield Lab for sample(s): 01-09,11-12 Batch: WG1264828-1					
C4-Fluoranthenes/Pyrenes	ND		mg/kg	3.00	0.789
Naphthobenzothiophenes	ND		mg/kg	3.00	0.839
C1-Naphthobenzothiophenes	ND		mg/kg	3.00	0.839
C2-Naphthobenzothiophenes	ND		mg/kg	3.00	0.839
C3-Naphthobenzothiophenes	ND		mg/kg	3.00	0.839
C4-Naphthobenzothiophenes	ND		mg/kg	3.00	0.839
Benzo(a)anthracene	ND		mg/kg	3.00	0.612
Chrysene	ND		mg/kg	3.00	0.606
C1-Chrysenes	ND		mg/kg	3.00	0.606
C2-Chrysenes BS	ND		mg/kg	3.00	0.606
C3-Chrysenes	ND		mg/kg	3.00	0.606
C4-Chrysenes	ND		mg/kg	3.00	0.606
Benzo(b)fluoranthene	ND		mg/kg	3.00	0.780
Benzo(j)+(k)fluoranthene	ND		mg/kg	3.00	0.595
Benzo(a)fluoranthene	ND		mg/kg	3.00	0.595
Benzo(e)pyrene	ND		mg/kg	3.00	0.619
Benzo(a)pyrene	ND		mg/kg	3.00	0.856
Perylene	ND		mg/kg	3.00	0.579
Indeno(1,2,3-cd)pyrene	ND		mg/kg	3.00	0.814
Dibenz(a,h)+(a,c)anthracene	ND		mg/kg	3.00	0.810
Benzo(g,h,i)perylene	ND		mg/kg	3.00	0.797
C26,20R+C27,20S TAS	ND		mg/kg	3.00	0.666
C28,20S TAS	ND		mg/kg	3.00	0.666
C27,20R TAS	ND		mg/kg	3.00	0.666
C28,20R TAS	ND		mg/kg	3.00	0.666

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM(M)
Analytical Date: 07/29/19 20:36
Analyst: ML

Extraction Method: EPA 3580A
Extraction Date: 07/26/19 09:00
Cleanup Method: - - - -
Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - Mansfield Lab for sample(s): 01-09,11-12 Batch: WG1264828-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	107		50-130
Phenanthrene-d10	97		50-130
Benzo(a)pyrene-d12	99		50-130
5B(H)Cholane-Surr	98		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM(M)
Analytical Date: 07/29/19 22:06
Analyst: MJS

Extraction Method: EPA 3580A
Extraction Date: 07/26/19 08:06

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - Mansfield Lab for sample(s): 10 Batch: WG1264844-1					
cis/trans-Decalin	ND		mg/kg	1.50	0.753
C1-Decalins	ND		mg/kg	3.00	0.753
C2-Decalins	ND		mg/kg	3.00	0.753
C3-Decalins	ND		mg/kg	3.00	0.753
C4-Decalins	ND		mg/kg	3.00	0.753
Naphthalene	ND		mg/kg	3.00	0.862
C1-Naphthalenes	ND		mg/kg	3.00	0.862
C2-Naphthalenes	ND		mg/kg	3.00	0.862
C3-Naphthalenes	ND		mg/kg	3.00	0.862
C4-Naphthalenes	ND		mg/kg	3.00	0.862
2-Methylnaphthalene	ND		mg/kg	3.00	0.774
1-Methylnaphthalene	ND		mg/kg	3.00	0.945
Benzothiophene	ND		mg/kg	3.00	0.940
C1-Benzo(b)thiophenes	ND		mg/kg	3.00	0.940
C2-Benzo(b)thiophenes	ND		mg/kg	3.00	0.940
C3-Benzo(b)thiophenes	ND		mg/kg	3.00	0.940
C4-Benzo(b)thiophenes	ND		mg/kg	3.00	0.940
Biphenyl	ND		mg/kg	3.00	0.927
2,6-Dimethylnaphthalene	ND		mg/kg	3.00	0.713
Dibenzofuran	ND		mg/kg	3.00	0.945
Acenaphthylene	ND		mg/kg	3.00	0.572
Acenaphthene	ND		mg/kg	3.00	0.529
2,3,5-Trimethylnaphthalene	ND		mg/kg	3.00	0.491
Fluorene	ND		mg/kg	3.00	0.800
C1-Fluorenes	ND		mg/kg	3.00	0.800
C2-Fluorenes	ND		mg/kg	3.00	0.800
C3-Fluorenes	ND		mg/kg	3.00	0.800
Dibenzothiophene	ND		mg/kg	3.00	0.827
4-Methyldibenzothiophene(4MDT)	ND		mg/kg	3.00	0.827

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM(M)
Analytical Date: 07/29/19 22:06
Analyst: MJS

Extraction Method: EPA 3580A
Extraction Date: 07/26/19 08:06

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - Mansfield Lab for sample(s): 10 Batch: WG1264844-1					
2/3-Methyldibenzothiophene(2MDT)	ND		mg/kg	3.00	0.827
1-Methyldibenzothiophene(1MDT)	ND		mg/kg	3.00	0.827
C1-Dibenzothiophenes BS	ND		mg/kg	3.00	0.827
C2-Dibenzothiophenes	ND		mg/kg	3.00	0.827
C3-Dibenzothiophenes	ND		mg/kg	3.00	0.827
C4-Dibenzothiophenes	ND		mg/kg	3.00	0.827
Phenanthrene	ND		mg/kg	3.00	0.994
3-Methylphenanthrene (3MP)	ND		mg/kg	3.00	0.994
2-Methylphenanthrene (2MP)	ND		mg/kg	3.00	0.994
2-Methylanthracene (2MA)	ND		mg/kg	3.00	0.994
9/4-Methylphenanthrene (9MP)	ND		mg/kg	3.00	0.994
C1-Phenanthrenes/Anthracenes	ND		mg/kg	3.00	0.994
C2-Phenanthrenes/Anthr BS	ND		mg/kg	3.00	0.994
C3-Phenanthrenes/Anthracenes	ND		mg/kg	3.00	0.994
C4-Phenanthrenes/Anthracenes	ND		mg/kg	3.00	0.994
Retene	ND		mg/kg	3.00	0.736
Anthracene	ND		mg/kg	3.00	0.618
Carbazole	ND		mg/kg	3.00	0.981
1-Methylphenanthrene	ND		mg/kg	3.00	0.792
Fluoranthene	ND		mg/kg	3.00	0.953
Benzo(b)fluorene	ND		mg/kg	3.00	0.869
7H-Benzo(c)fluorene	ND		mg/kg	3.00	0.869
2-Methylpyrene ¹	ND		mg/kg	3.00	0.789
4-Methylpyrene ¹	ND		mg/kg	3.00	0.789
1-Methylpyrene ¹	ND		mg/kg	3.00	0.789
Pyrene	ND		mg/kg	3.00	0.789
C1-Fluoranthenes/Pyrenes	ND		mg/kg	3.00	0.789
C2-Fluoranthenes/Pyrenes	ND		mg/kg	3.00	0.789
C3-Fluoranthenes/Pyrenes	ND		mg/kg	3.00	0.789

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM(M)
Analytical Date: 07/29/19 22:06
Analyst: MJS

Extraction Method: EPA 3580A
Extraction Date: 07/26/19 08:06

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - Mansfield Lab for sample(s): 10 Batch: WG1264844-1					
C4-Fluoranthenes/Pyrenes	ND		mg/kg	3.00	0.789
Naphthobenzothiophenes	ND		mg/kg	3.00	0.839
C1-Naphthobenzothiophenes	ND		mg/kg	3.00	0.839
C2-Naphthobenzothiophenes	ND		mg/kg	3.00	0.839
C3-Naphthobenzothiophenes	ND		mg/kg	3.00	0.839
C4-Naphthobenzothiophenes	ND		mg/kg	3.00	0.839
Benzo(a)anthracene	ND		mg/kg	3.00	0.612
Chrysene	ND		mg/kg	3.00	0.606
C1-Chrysenes	ND		mg/kg	3.00	0.606
C2-Chrysenes BS	ND		mg/kg	3.00	0.606
C3-Chrysenes	ND		mg/kg	3.00	0.606
C4-Chrysenes	ND		mg/kg	3.00	0.606
Benzo(b)fluoranthene	ND		mg/kg	3.00	0.780
Benzo(j)+(k)fluoranthene	ND		mg/kg	3.00	0.595
Benzo(a)fluoranthene	ND		mg/kg	3.00	0.595
Benzo(e)pyrene	ND		mg/kg	3.00	0.619
Benzo(a)pyrene	ND		mg/kg	3.00	0.856
Perylene	ND		mg/kg	3.00	0.579
Indeno(1,2,3-cd)pyrene	ND		mg/kg	3.00	0.814
Dibenz(a,h)+(a,c)anthracene	ND		mg/kg	3.00	0.810
Benzo(g,h,i)perylene	ND		mg/kg	3.00	0.797
C26,20R+C27,20S TAS	ND		mg/kg	3.00	0.666
C28,20S TAS	ND		mg/kg	3.00	0.666
C27,20R TAS	ND		mg/kg	3.00	0.666
C28,20R TAS	ND		mg/kg	3.00	0.666

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM(M)
Analytical Date: 07/29/19 22:06
Analyst: MJS

Extraction Method: EPA 3580A
Extraction Date: 07/26/19 08:06

Parameter	Result	Qualifier	Units	RL	MDL
PAHs - Mansfield Lab for sample(s): 10 Batch: WG1264844-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	112		50-130
Phenanthrene-d10	117		50-130
Benzo(a)pyrene-d12	116		50-130
5B(H)Cholane-Surr	122		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM(M)
Analytical Date: 07/29/19 22:22
Analyst: MJS

Extraction Method: EPA 3585
Extraction Date: 07/26/19 09:00
Cleanup Method: EPA 3630(M)
Cleanup Date: 07/29/19

Parameter	Result	Qualifier	Units	RL	MDL
Fractionated Biomarkers by GC/MS - Mansfield Lab for sample(s): 01-09,11-12 Batch: WG1265655-1 F1					
Hopane (T19)	ND		mg/kg	0.200	0.085
C23 Tricyclic Terpane (T4)	ND		mg/kg	0.200	0.085
C24 Tricyclic Terpane (T5)	ND		mg/kg	0.200	0.085
C25 Tricyclic Terpane (T6)	ND		mg/kg	0.200	0.085
C24 Tetracyclic Terpane (T6a)	ND		mg/kg	0.200	0.085
C26 Tricyclic Terpane-22S (T6b)	ND		mg/kg	0.200	0.085
C26 Tricyclic Terpane-22R (T6c)	ND		mg/kg	0.200	0.085
C28 Tricyclic Terpane-22S (T7)	ND		mg/kg	0.200	0.085
C28 Tricyclic Terpane-22R (T8)	ND		mg/kg	0.200	0.085
C29 Tricyclic Terpane-22S (T9)	ND		mg/kg	0.200	0.085
C29 Tricyclic Terpane-22R (T10)	ND		mg/kg	0.200	0.085
18a-22,29,30-Trisnorhopane-TS (T11)	ND		mg/kg	0.200	0.085
C30 Tricyclic Terpane-22S	ND		mg/kg	0.200	0.085
C30 Tricyclic Terpane-22R	ND		mg/kg	0.200	0.085
17a(H)-22,29,30-Trisnorhopane-TM (T12)	ND		mg/kg	0.200	0.085
17a/b,21b/a 28,30-Bisnorhopane (T14a)	ND		mg/kg	0.200	0.085
17a(H),21b(H)-25-Norhopane (T14b)	ND		mg/kg	0.200	0.085
30-Norhopane (T15)	ND		mg/kg	0.200	0.085
18a(H)-30-Norneohopane-C29Ts (T16)	ND		mg/kg	0.200	0.085
17a(H)-Diahopane (X)	ND		mg/kg	0.200	0.085
30-Normoretane (T17)	ND		mg/kg	0.200	0.085
18a(H)&18b(H)-Oleananes (T18)	ND		mg/kg	0.200	0.085
Moretane (T20)	ND		mg/kg	0.200	0.085
30-Homohopane-22S (T21)	ND		mg/kg	0.200	0.085
30-Homohopane-22R (T22)	ND		mg/kg	0.200	0.085
Gammacerane/C32-Diahopane	ND		mg/kg	0.200	0.085
30,31-Bishomohopane-22S (T26)	ND		mg/kg	0.200	0.085
30,31-Bishomohopane-22R (T27)	ND		mg/kg	0.200	0.085
30,31-Trishomohopane-22S (T30)	ND		mg/kg	0.200	0.085

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM(M)
Analytical Date: 07/29/19 22:22
Analyst: MJS

Extraction Method: EPA 3585
Extraction Date: 07/26/19 09:00
Cleanup Method: EPA 3630(M)
Cleanup Date: 07/29/19

Parameter	Result	Qualifier	Units	RL	MDL
Fractionated Biomarkers by GC/MS - Mansfield Lab for sample(s): 01-09,11-12 Batch: WG1265655-1 F1					
30,31-Trishomohopane-22R (T31)	ND		mg/kg	0.200	0.085
Tetrakishomohopane-22S (T32)	ND		mg/kg	0.200	0.085
Tetrakishomohopane-22R (T33)	ND		mg/kg	0.200	0.085
Pentakishomohopane-22S (T34)	ND		mg/kg	0.200	0.085
Pentakishomohopane-22R (T35)	ND		mg/kg	0.200	0.085
13b(H),17a(H)-20S-Diacholestane (S4)	ND		mg/kg	0.200	0.067
13b(H),17a(H)-20R-Diacholestane (S5)	ND		mg/kg	0.200	0.067
13b,17a-20S-Methylcholestane (S8)	ND		mg/kg	0.200	0.067
17a(H)20SC27/C29dia	ND		mg/kg	0.200	0.067
17a(H)20rc27/C29dia	ND		mg/kg	0.200	0.067
Unknown Sterane (S18)	ND		mg/kg	0.200	0.067
13a,17b-20S-Ethylcholestane (S19)	ND		mg/kg	0.200	0.067
14a,17a-20S-Methylcholestane (S20)	ND		mg/kg	0.200	0.067
14a,17a-20R-Methylcholestane (S24)	ND		mg/kg	0.200	0.067
14a(H),17a(H)-20S-Ethylcholestane (S25)	ND		mg/kg	0.200	0.067
14a(H),17a(H)-20R-Ethylcholestane (S28)	ND		mg/kg	0.200	0.067
14b(H),17b(H)-20R-Cholestane (S14)	ND		mg/kg	0.200	0.067
14b(H),17b(H)-20S-Cholestane (S15)	ND		mg/kg	0.200	0.067
14b,17b-20R-Methylcholestane (S22)	ND		mg/kg	0.200	0.067
14b,17b-20S-Methylcholestane (S23)	ND		mg/kg	0.200	0.067
14b(H),17b(H)-20R-Ethylcholestane (S26)	ND		mg/kg	0.200	0.067
14b(H),17b(H)-20S-Ethylcholestane (S27)	ND		mg/kg	0.200	0.067

Surrogate	%Recovery	Qualifier	Acceptance Criteria
5B(H)Cholane-Surr	95		50-130



Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM(M)
Analytical Date: 07/29/19 23:56
Analyst: MJS

Extraction Method: EPA 3580A
Extraction Date: 07/26/19 08:06
Cleanup Method: EPA 3630(M)
Cleanup Date: 07/29/19

Parameter	Result	Qualifier	Units	RL	MDL
Fractionated Biomarkers by GC/MS - Mansfield Lab for sample(s): 10 Batch: WG1265665-1 F1					
Hopane (T19)	ND		mg/kg	0.400	0.171
C23 Tricyclic Terpane (T4)	ND		mg/kg	0.400	0.171
C24 Tricyclic Terpane (T5)	ND		mg/kg	0.400	0.171
C25 Tricyclic Terpane (T6)	ND		mg/kg	0.400	0.171
C24 Tetracyclic Terpane (T6a)	ND		mg/kg	0.400	0.171
C26 Tricyclic Terpane-22S (T6b)	ND		mg/kg	0.400	0.171
C26 Tricyclic Terpane-22R (T6c)	ND		mg/kg	0.400	0.171
C28 Tricyclic Terpane-22S (T7)	ND		mg/kg	0.400	0.171
C28 Tricyclic Terpane-22R (T8)	ND		mg/kg	0.400	0.171
C29 Tricyclic Terpane-22S (T9)	ND		mg/kg	0.400	0.171
C29 Tricyclic Terpane-22R (T10)	ND		mg/kg	0.400	0.171
18a-22,29,30-Trisnorneohopane-TS (T11)	ND		mg/kg	0.400	0.171
C30 Tricyclic Terpane-22S	ND		mg/kg	0.400	0.171
C30 Tricyclic Terpane-22R	ND		mg/kg	0.400	0.171
17a(H)-22,29,30-Trisnorhopane-TM (T12)	ND		mg/kg	0.400	0.171
17a/b,21b/a 28,30-Bisnorhopane (T14a)	ND		mg/kg	0.400	0.171
17a(H),21b(H)-25-Norhopane (T14b)	ND		mg/kg	0.400	0.171
30-Norhopane (T15)	ND		mg/kg	0.400	0.171
18a(H)-30-Norneohopane-C29Ts (T16)	ND		mg/kg	0.400	0.171
17a(H)-Diahopane (X)	ND		mg/kg	0.400	0.171
30-Normoretane (T17)	ND		mg/kg	0.400	0.171
18a(H)&18b(H)-Oleananes (T18)	ND		mg/kg	0.400	0.171
Moretane (T20)	ND		mg/kg	0.400	0.171
30-Homohopane-22S (T21)	ND		mg/kg	0.400	0.171
30-Homohopane-22R (T22)	ND		mg/kg	0.400	0.171
Gammacerane/C32-Diahopane	ND		mg/kg	0.400	0.171
30,31-Bishomohopane-22S (T26)	ND		mg/kg	0.400	0.171
30,31-Bishomohopane-22R (T27)	ND		mg/kg	0.400	0.171
30,31-Trishomohopane-22S (T30)	ND		mg/kg	0.400	0.171

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM(M)
Analytical Date: 07/29/19 23:56
Analyst: MJS

Extraction Method: EPA 3580A
Extraction Date: 07/26/19 08:06
Cleanup Method: EPA 3630(M)
Cleanup Date: 07/29/19

Parameter	Result	Qualifier	Units	RL	MDL
Fractionated Biomarkers by GC/MS - Mansfield Lab for sample(s): 10 Batch: WG1265665-1 F1					
30,31-Trishomohopane-22R (T31)	ND		mg/kg	0.400	0.171
Tetrakishomohopane-22S (T32)	ND		mg/kg	0.400	0.171
Tetrakishomohopane-22R (T33)	ND		mg/kg	0.400	0.171
Pentakishomohopane-22S (T34)	ND		mg/kg	0.400	0.171
Pentakishomohopane-22R (T35)	ND		mg/kg	0.400	0.171
13b(H),17a(H)-20S-Diacholestane (S4)	ND		mg/kg	0.400	0.133
13b(H),17a(H)-20R-Diacholestane (S5)	ND		mg/kg	0.400	0.133
13b,17a-20S-Methylcholestane (S8)	ND		mg/kg	0.400	0.133
17a(H)20SC27/C29dia	ND		mg/kg	0.400	0.133
17a(H)20rc27/C29dia	ND		mg/kg	0.400	0.133
Unknown Sterane (S18)	ND		mg/kg	0.400	0.133
13a,17b-20S-Ethylcholestane (S19)	ND		mg/kg	0.400	0.133
14a,17a-20S-Methylcholestane (S20)	ND		mg/kg	0.400	0.133
14a,17a-20R-Methylcholestane (S24)	ND		mg/kg	0.400	0.133
14a(H),17a(H)-20S-Ethylcholestane (S25)	ND		mg/kg	0.400	0.133
14a(H),17a(H)-20R-Ethylcholestane (S28)	ND		mg/kg	0.400	0.133
14b(H),17b(H)-20R-Cholestane (S14)	ND		mg/kg	0.400	0.133
14b(H),17b(H)-20S-Cholestane (S15)	ND		mg/kg	0.400	0.133
14b,17b-20R-Methylcholestane (S22)	ND		mg/kg	0.400	0.133
14b,17b-20S-Methylcholestane (S23)	ND		mg/kg	0.400	0.133
14b(H),17b(H)-20R-Ethylcholestane (S26)	ND		mg/kg	0.400	0.133
14b(H),17b(H)-20S-Ethylcholestane (S27)	ND		mg/kg	0.400	0.133

Surrogate	%Recovery	Qualifier	Acceptance Criteria
5B(H)Cholane-Surr	115		50-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO

Lab Number: L1928037

Project Number: 000029-02

Report Date: 08/07/19

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
PAHs - Mansfield Lab Associated sample(s): 01-09,11-12 Batch: WG1264828-2 WG1264828-3								
Naphthalene	103		104		50-130	1		30
2-Methylnaphthalene	102		103		50-130	1		30
Acenaphthylene	98		98		50-130	0		30
Acenaphthene	101		102		50-130	1		30
Fluorene	99		100		50-130	1		30
Phenanthrene	99		100		50-130	1		30
Anthracene	107		107		50-130	0		30
Fluoranthene	87		88		50-130	1		30
Pyrene	86		87		50-130	1		30
Benz(a)anthracene	106		106		50-130	0		30
Chrysene	105		105		50-130	0		30
Benzo(b)fluoranthene	104		104		50-130	0		30
Benzo(j)+(k)fluoranthene	106		104		50-130	2		30
Benzo(a)pyrene	109		108		50-130	1		30
Indeno(1,2,3-cd)pyrene	103		101		50-130	2		30
Dibenz(a,h)+(a,c)anthracene	99		99		50-130	0		30
Benzo(g,h,i)perylene	102		102		50-130	0		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO

Lab Number: L1928037

Project Number: 000029-02

Report Date: 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PAHs - Mansfield Lab Associated sample(s): 01-09,11-12 Batch: WG1264828-2 WG1264828-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Naphthalene-d8	108		107		50-130
Phenanthrene-d10	100		99		50-130
Benzo(a)pyrene-d12	98		93		50-130
5B(H)Cholane-Surr	96		95		50-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO

Lab Number: L1928037

Project Number: 000029-02

Report Date: 08/07/19

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
PAHs - Mansfield Lab Associated sample(s): 10 Batch: WG1264844-2 WG1264844-3								
Naphthalene	109		111		50-130	2		30
2-Methylnaphthalene	112		113		50-130	1		30
Acenaphthylene	109		110		50-130	1		30
Acenaphthene	114		114		50-130	0		30
Fluorene	113		114		50-130	1		30
Phenanthrene	112		114		50-130	2		30
Anthracene	121		124		50-130	2		30
Fluoranthene	91		94		50-130	3		30
Pyrene	89		91		50-130	2		30
Benz(a)anthracene	111		112		50-130	1		30
Chrysene	110		110		50-130	0		30
Benzo(b)fluoranthene	113		115		50-130	2		30
Benzo(j)+(k)fluoranthene	112		112		50-130	0		30
Benzo(a)pyrene	123		125		50-130	2		30
Indeno(1,2,3-cd)pyrene	119		119		50-130	0		30
Dibenz(a,h)+(a,c)anthracene	120		120		50-130	0		30
Benzo(g,h,i)perylene	118		118		50-130	0		30

Lab Control Sample Analysis**Batch Quality Control****Project Name:** GASCO HYDROCARBON INVESTIGATIO**Lab Number:** L1928037**Project Number:** 000029-02**Report Date:** 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
PAHs - Mansfield Lab Associated sample(s): 10 Batch: WG1264844-2 WG1264844-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Naphthalene-d8	115		114		50-130
Phenanthrene-d10	118		118		50-130
Benzo(a)pyrene-d12	115		113		50-130
5B(H)Cholane-Surr	122		114		50-130

Matrix Spike Analysis

Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO

Lab Number: L1928037

Project Number: 000029-02

Report Date: 08/07/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
PAHs - Mansfield Lab Associated sample(s): 01-09,11-12 QC Batch ID: WG1264828-5 WG1264828-6 QC Sample: L1928037-11 Client ID: 2708-190514-004												
Naphthalene	998	14	1270	1940	Q	723	0	Q	50-150	55	Q	30
2-Methylnaphthalene	330	14	426	684	Q	245	0	Q	50-150	54	Q	30
Acenaphthylene	44.9	14	72.5	197	Q	43.1	0	Q	50-150	51	Q	30
Acenaphthene	581	14	748	1190	Q	526	0	Q	50-150	35	Q	30
Fluorene	409	14	547	984	Q	370	0	Q	50-150	39	Q	30
Phenanthrene	6660	14	8270	11500	Q	5900	0	Q	50-150	33	Q	30
Anthracene	1590	14	1960	2640	Q	1430	0	Q	50-150	31	Q	30
Fluoranthene	11100	14	13500	17100	Q	10200	0	Q	50-150	28		30
Pyrene	10100	14	12500	17100	Q	9310	0	Q	50-150	29		30
Benz(a)anthracene	4670	14	5660	7060	Q	4480	0	Q	50-150	23		30
Chrysene/Triphenylene	4900	14	5840	6700	Q	4640	0	Q	50-150	23		30
Benzo(b)fluoranthene	4600	14	5480	6270	Q	4570	0	Q	50-150	18		30
Benzo(j)+(k)fluoranthene	4140	14	5100	6840	Q	3870	0	Q	50-150	27		30
Benzo(a)pyrene	5910	14	7170	8980	Q	5740	0	Q	50-150	22		30
Indeno(1,2,3-cd)pyrene	3760	14	4650	6340	Q	3680	0	Q	50-150	23		30
Dibenz(a,h)+(a,c)anthracene	710	14	1040	2350	Q	695	0	Q	50-150	40	Q	30
Benzo(g,h,i)perylene	3950	14	4880	6630	Q	3850	0	Q	50-150	24		30

<i>Surrogate</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
5B(H)Cholane-Surr	86		115		50-130
Benzo(a)pyrene-d12	130		118		50-130
Naphthalene-d8	113		105		50-130
Phenanthrene-d10	117		110		50-130

Lab Duplicate Analysis

Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO

Project Number: 000029-02

Lab Number: L1928037

Report Date: 08/07/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
PAHs - Mansfield Lab Associated sample(s): 01-09,11-12 QC Batch ID: WG1264828-4 QC Sample: L1928037-09 Client ID: 2708-190521-010						
cis/trans-Decalin	ND	ND	mg/kg	NC		30
C1-Decalins	ND	ND	mg/kg	NC		30
C2-Decalins	ND	ND	mg/kg	NC		30
C3-Decalins	ND	ND	mg/kg	NC		30
C4-Decalins	ND	ND	mg/kg	NC		30
Naphthalene	6070	6670	mg/kg	9		30
C1-Naphthalenes	2160	2370	mg/kg	9		30
C2-Naphthalenes	420	464	mg/kg	10		30
C3-Naphthalenes	100	112	mg/kg	11		30
C4-Naphthalenes	26.6	28.9	mg/kg	8		30
2-Methylnaphthalene	2220	2440	mg/kg	9		30
1-Methylnaphthalene	980	1060	mg/kg	8		30
Benzothiophene	193	210	mg/kg	8		30
C1-Benzo(b)thiophenes	68.5	74.9	mg/kg	9		30
C2-Benzo(b)thiophenes	18.7	20.7	mg/kg	10		30
C3-Benzo(b)thiophenes	7.96	7.98	mg/kg	0		30
C4-Benzo(b)thiophenes	3.31J	3.90J	mg/kg	NC		30
Biphenyl	868	959	mg/kg	10		30
2,6-Dimethylnaphthalene	168	188	mg/kg	11		30
Dibenzofuran	2010	2270	mg/kg	12		30
Acenaphthylene	60.0	57.6	mg/kg	4		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
PAHs - Mansfield Lab Associated sample(s): 01-09,11-12 QC Batch ID: WG1264828-4 QC Sample: L1928037-09 Client ID: 2708-190521-010						
Acenaphthene	3460	3880	mg/kg	11		30
2,3,5-Trimethylnaphthalene	8.83	9.55	mg/kg	8		30
Fluorene	1810	2080	mg/kg	14		30
C1-Fluorenes	99.6	112	mg/kg	12		30
C2-Fluorenes	32.1	35.1	mg/kg	9		30
C3-Fluorenes	43.9	50.8	mg/kg	15		30
Dibenzothiophene	267	297	mg/kg	11		30
4-Methyldibenzothiophene(4MDT)	11.0	11.8	mg/kg	7		30
2/3-Methyldibenzothiophene(2MDT)	17.6	19.6	mg/kg	11		30
1-Methyldibenzothiophene(1MDT)	3.29J	4.73J	mg/kg	NC		30
C1-Dibenzothiophenes BS	41.8	45.7	mg/kg	9		30
C2-Dibenzothiophenes	18.9	20.6	mg/kg	9		30
C3-Dibenzothiophenes	11.8	12.2	mg/kg	3		30
C4-Dibenzothiophenes	4.58J	4.66J	mg/kg	NC		30
Phenanthrene	6720	7570	mg/kg	12		30
3-Methylphenanthrene (3MP)	123	135	mg/kg	9		30
2-Methylphenanthrene (2MP)	149	164	mg/kg	10		30
2-Methylanthracene (2MA)	71.5	89.2	mg/kg	22		30
9/4-Methylphenanthrene (9MP)	92.2	99.7	mg/kg	8		30
C1-Phenanthrenes/Anthracenes	509	568	mg/kg	11		30
C2-Phenanthrenes/Anthr BS	131	144	mg/kg	9		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
PAHs - Mansfield Lab Associated sample(s): 01-09,11-12 QC Batch ID: WG1264828-4 QC Sample: L1928037-09 Client ID: 2708-190521-010						
C3-Phenanthrenes/Anthracenes	34.2	36.6	mg/kg	7		30
C4-Phenanthrenes/Anthracenes	9.70	10.8	mg/kg	11		30
Retene	ND	ND	mg/kg	NC		30
Anthracene	1750	2790	mg/kg	46	Q	30
Carbazole	841	1180	mg/kg	34	Q	30
1-Methylphenanthrene	86.4	95.5	mg/kg	10		30
Fluoranthene	3450	3810	mg/kg	10		30
Benzo(b)fluorene	218	246	mg/kg	12		30
7H-Benzo(c)fluorene	50.4	56.6	mg/kg	12		30
2-Methylpyrene ¹	52.9	58.4	mg/kg	10		30
4-Methylpyrene ¹	34.4	37.9	mg/kg	10		30
1-Methylpyrene ¹	34.8	38.4	mg/kg	10		30
Pyrene	2790	3070	mg/kg	10		30
C1-Fluoranthenes/Pyrenes	549	609	mg/kg	10		30
C2-Fluoranthenes/Pyrenes	89.4	99.8	mg/kg	11		30
C3-Fluoranthenes/Pyrenes	44.1	48.2	mg/kg	9		30
C4-Fluoranthenes/Pyrenes	34.1	37.5	mg/kg	9		30
Naphthobenzothiophenes	112	121	mg/kg	8		30
C1-Naphthobenzothiophenes	23.0	25.4	mg/kg	10		30
C2-Naphthobenzothiophenes	8.14	9.28	mg/kg	13		30
C3-Naphthobenzothiophenes	11.5	12.6	mg/kg	9		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
PAHs - Mansfield Lab Associated sample(s): 01-09,11-12 QC Batch ID: WG1264828-4 QC Sample: L1928037-09 Client ID: 2708-190521-010						
C4-Naphthobenzothiophenes	4.11J	4.62J	mg/kg	NC		30
Benz(a)anthracene	997	1080	mg/kg	8		30
Chrysene	876	984	mg/kg	12		30
C1-Chrysenes	143	154	mg/kg	7		30
C2-Chrysenes BS	36.2	39.9	mg/kg	10		30
C3-Chrysenes	36.7	43.4	mg/kg	17		30
C4-Chrysenes	18.9	22.6	mg/kg	18		30
Benzo(b)fluoranthene	822	788	mg/kg	4		30
Benzo(j)+(k)fluoranthene	693	856	mg/kg	21		30
Benzo(a)fluoranthene	182	195	mg/kg	7		30
Benzo(e)pyrene	584	639	mg/kg	9		30
Benzo(a)pyrene	1130	1240	mg/kg	9		30
Perylene	331	362	mg/kg	9		30
Indeno(1,2,3-cd)pyrene	692	785	mg/kg	13		30
Dibenz(a,h)+(a,c)anthracene	109	122	mg/kg	11		30
Benzo(g,h,i)perylene	727	788	mg/kg	8		30
C26,20R+C27,20S TAS	ND	ND	mg/kg	NC		30
C28,20S TAS	ND	ND	mg/kg	NC		30
C27,20R TAS	ND	ND	mg/kg	NC		30
C28,20R TAS	ND	ND	mg/kg	NC		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO

Project Number: 000029-02

Lab Number: L1928037

Report Date: 08/07/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
PAHs - Mansfield Lab Associated sample(s): 01-09,11-12 QC Batch ID: WG1264828-4 QC Sample: L1928037-09 Client ID: 2708-190521-010						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Naphthalene-d8	109		117		50-130
Phenanthrene-d10	106		114		50-130
Benzo(a)pyrene-d12	104		116		50-130
5B(H)Cholane-Surr	102		101		50-130

Lab Duplicate Analysis

Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Fractionated Biomarkers by GC/MS - Mansfield Lab Associated sample(s): 01-09,11-12 QC Batch ID: WG1265655-2 QC Sample: L1928037-09 Client ID: 2708-190521-010						
Hopane (T19)	1.21	1.15	mg/kg	5		30
C23 Tricyclic Terpane (T4)	0.226	0.208	mg/kg	8		30
C24 Tricyclic Terpane (T5)	0.147	0.163	mg/kg	10		30
C25 Tricyclic Terpane (T6)	0.180	0.185	mg/kg	3		30
C24 Tetracyclic Terpane (T6a)	0.088	0.115	mg/kg	26		30
C26 Tricyclic Terpane-22S (T6b)	0.082	0.086	mg/kg	5		30
C26 Tricyclic Terpane-22R (T6c)	0.079	0.074	mg/kg	6		30
C28 Tricyclic Terpane-22S (T7)	0.091	0.085	mg/kg	6		30
C28 Tricyclic Terpane-22R (T8)	0.10	0.092	mg/kg	8		30
C29 Tricyclic Terpane-22S (T9)	0.103	0.126	mg/kg	20		30
C29 Tricyclic Terpane-22R (T10)	0.093	0.092	mg/kg	1		30
18a-22,29,30-Trisnorneohopane-TS (T11)	0.198	0.230	mg/kg	15		30
C30 Tricyclic Terpane-22S	0.088	0.105	mg/kg	18		30
C30 Tricyclic Terpane-22R	ND	ND	mg/kg	NC		30
17a(H)-22,29,30-Trisnorhopane-TM (T12)	0.402	0.391	mg/kg	3		30
17a/b,21b/a 28,30-Bisnorhopane (T14a)	0.116	0.125	mg/kg	7		30
17a(H),21b(H)-25-Norhopane (T14b)	ND	ND	mg/kg	NC		30
30-Norhopane (T15)	0.693	0.838	mg/kg	19		30
18a(H)-30-Norneohopane-C29Ts (T16)	0.158	0.201	mg/kg	24		30
17a(H)-Diahopane (X)	0.062J	ND	mg/kg	NC		30
30-Normoretane (T17)	0.226	0.247	mg/kg	9		30

Lab Duplicate Analysis

Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Fractionated Biomarkers by GC/MS - Mansfield Lab Associated sample(s): 01-09,11-12 QC Batch ID: WG1265655-2 QC Sample: L1928037-09 Client ID: 2708-190521-010						
18a(H)&18b(H)-Oleananes (T18)	0.123	0.146	mg/kg	17		30
Moretane (T20)	0.258	0.299	mg/kg	15		30
30-Homohopane-22S (T21)	0.306	0.302	mg/kg	1		30
30-Homohopane-22R (T22)	0.266	0.210	mg/kg	24		30
Gammacerane/C32-Diahopane	ND	ND	mg/kg	NC		30
30,31-Bishomohopane-22S (T26)	0.160	0.132	mg/kg	19		30
30,31-Bishomohopane-22R (T27)	0.108	0.106	mg/kg	2		30
30,31-Trishomohopane-22S (T30)	ND	ND	mg/kg	NC		30
30,31-Trishomohopane-22R (T31)	ND	ND	mg/kg	NC		30
Tetrakishomohopane-22S (T32)	ND	ND	mg/kg	NC		30
Tetrakishomohopane-22R (T33)	ND	ND	mg/kg	NC		30
Pentakishomohopane-22S (T34)	ND	ND	mg/kg	NC		30
Pentakishomohopane-22R (T35)	ND	ND	mg/kg	NC		30
13b(H),17a(H)-20S-Diacholestane (S4)	0.297	0.316	mg/kg	6		30
13b(H),17a(H)-20R-Diacholestane (S5)	0.140	0.169	mg/kg	19		30
13b,17a-20S-Methyldiacholestane (S8)	0.229	0.236	mg/kg	3		30
17a(H)20SC27/C29dia	0.479	0.514	mg/kg	7		30
17a(H)20rc27/C29dia	0.493	0.572	mg/kg	15		30
Unknown Sterane (S18)	0.123	0.154	mg/kg	22		30
13a,17b-20S-Ethyldiacholestane (S19)	ND	ND	mg/kg	NC		30
14a,17a-20S-Methylcholestane (S20)	0.173	0.213	mg/kg	21		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Fractionated Biomarkers by GC/MS - Mansfield Lab Associated sample(s): 01-09,11-12 QC Batch ID: WG1265655-2 QC Sample: L1928037-09 Client ID: 2708-190521-010						
14a,17a-20R-Methylcholestane (S24)	0.230	0.256	mg/kg	11		30
14a(H),17a(H)-20S-Ethylcholestane (S25)	0.149	0.200	mg/kg	29		30
14a(H),17a(H)-20R-Ethylcholestane (S28)	0.225	0.275	mg/kg	20		30
14b(H),17b(H)-20R-Cholestane (S14)	0.199	0.199	mg/kg	0		30
14b(H),17b(H)-20S-Cholestane (S15)	0.222	0.223	mg/kg	0		30
14b,17b-20R-Methylcholestane (S22)	0.245	0.241	mg/kg	2		30
14b,17b-20S-Methylcholestane (S23)	0.310	0.323	mg/kg	4		30
14b(H),17b(H)-20R-Ethylcholestane (S26)	0.290	0.299	mg/kg	3		30
14b(H),17b(H)-20S-Ethylcholestane (S27)	0.227	0.241	mg/kg	6		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
5B(H)Cholane-Surr	102		114		50-130



PETROLEUM HYDROCARBONS

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-01
 Client ID: 2708-190528-015P
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 10:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8015D(M)
 Analytical Date: 07/31/19 04:16
 Analyst: WR
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Nonane (C9)	ND		mg/kg	117	34.7	1
n-Decane (C10)	ND		mg/kg	117	37.4	1
n-Undecane (C11)	ND		mg/kg	117	35.0	1
n-Dodecane (C12)	87.8	J	mg/kg	117	25.5	1
n-Tridecane (C13)	ND		mg/kg	117	32.1	1
2,6,10-Trimethyldodecane (1380)	ND		mg/kg	117	17.6	1
n-Tetradecane (C14)	ND		mg/kg	117	17.6	1
2,6,10-Trimethyltridecane (1470)	30.1	J	mg/kg	117	14.0	1
n-Pentadecane (C15)	ND		mg/kg	117	14.0	1
n-Hexadecane (C16)	ND		mg/kg	117	17.6	1
Norpristane (1650)	76.1	J	mg/kg	117	38.6	1
n-Heptadecane (C17)	ND		mg/kg	117	38.6	1
Pristane	ND		mg/kg	117	25.0	1
n-Octadecane (C18)	7470	G	mg/kg	117	23.5	1
Phytane	2300	G	mg/kg	117	14.7	1
n-Nonadecane (C19)	35.2	J	mg/kg	117	30.1	1
n-Eicosane (C20)	ND		mg/kg	117	16.6	1
n-Heneicosane (C21)	39.7	J	mg/kg	117	14.0	1
n-Docosane (C22)	ND		mg/kg	117	12.2	1
n-Tricosane (C23)	605		mg/kg	117	14.9	1
n-Tetracosane (C24)	48.2	J	mg/kg	117	19.6	1
n-Pentacosane (C25)	8480	G	mg/kg	117	62.0	1
n-Hexacosane (C26)	372		mg/kg	117	17.2	1
n-Heptacosane (C27)	ND		mg/kg	117	14.1	1
n-Octacosane (C28)	ND		mg/kg	117	25.1	1
n-Nonacosane (C29)	5300	G	mg/kg	117	78.0	1
n-Triacontane (C30)	477		mg/kg	117	13.4	1
n-Hentriacontane (C31)	374		mg/kg	117	16.6	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-01
 Client ID: 2708-190528-015P
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 10:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Dotriacontane (C32)	325		mg/kg	117	14.8	1
n-Tritriacontane (C33)	ND		mg/kg	117	16.5	1
n-Tetratriacontane (C34)	ND		mg/kg	117	18.6	1
n-Pentatriacontane (C35)	285		mg/kg	117	20.4	1
n-Hexatriacontane (C36)	ND		mg/kg	117	23.3	1
n-Heptatriacontane (C37)	476		mg/kg	117	26.0	1
n-Octatriacontane (C38)	ND		mg/kg	117	27.3	1
n-Nonatriacontane (C39)	ND		mg/kg	117	38.0	1
n-Tetracontane (C40)	ND		mg/kg	117	38.0	1
Total Petroleum Hydrocarbons (C9-C44)	251000		mg/kg	3860	850.	1
Total Saturated Hydrocarbons	26800	J	mg/kg	117	58.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	102		50-130
d50-Tetracosane	132	Q	50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-02
 Client ID: 2708-190528-015T
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 10:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8015D(M)
 Analytical Date: 07/31/19 05:44
 Analyst: WR
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Nonane (C9)	ND		mg/kg	107	31.9	1
n-Decane (C10)	ND		mg/kg	107	34.3	1
n-Undecane (C11)	ND		mg/kg	107	32.1	1
n-Dodecane (C12)	246		mg/kg	107	23.4	1
n-Tridecane (C13)	29.6	J	mg/kg	107	29.5	1
2,6,10-Trimethyldodecane (1380)	40.9	J	mg/kg	107	16.2	1
n-Tetradecane (C14)	78.1	J	mg/kg	107	16.2	1
2,6,10-Trimethyltridecane (1470)	125		mg/kg	107	12.8	1
n-Pentadecane (C15)	ND		mg/kg	107	12.8	1
n-Hexadecane (C16)	ND		mg/kg	107	16.2	1
Norpristane (1650)	109		mg/kg	107	35.4	1
n-Heptadecane (C17)	44.2	J	mg/kg	107	35.4	1
Pristane	53.8	J	mg/kg	107	22.9	1
n-Octadecane (C18)	7490	G	mg/kg	107	21.6	1
Phytane	2230	G	mg/kg	107	13.5	1
n-Nonadecane (C19)	38.2	J	mg/kg	107	27.6	1
n-Eicosane (C20)	ND		mg/kg	107	15.2	1
n-Heneicosane (C21)	33.0	J	mg/kg	107	12.9	1
n-Docosane (C22)	30.2	J	mg/kg	107	11.2	1
n-Tricosane (C23)	653		mg/kg	107	13.7	1
n-Tetracosane (C24)	53.7	J	mg/kg	107	18.0	1
n-Pentacosane (C25)	7900	G	mg/kg	107	56.9	1
n-Hexacosane (C26)	379		mg/kg	107	15.8	1
n-Heptacosane (C27)	ND		mg/kg	107	12.9	1
n-Octacosane (C28)	ND		mg/kg	107	23.0	1
n-Nonacosane (C29)	4940	G	mg/kg	107	71.6	1
n-Triacontane (C30)	332		mg/kg	107	12.3	1
n-Hentriacontane (C31)	350		mg/kg	107	15.2	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-02
 Client ID: 2708-190528-015T
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 10:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Dotriacontane (C32)	294		mg/kg	107	13.5	1
n-Tritriacontane (C33)	ND		mg/kg	107	15.1	1
n-Tetratriacontane (C34)	73.0	J	mg/kg	107	17.1	1
n-Pentatriacontane (C35)	152		mg/kg	107	18.7	1
n-Hexatriacontane (C36)	ND		mg/kg	107	21.4	1
n-Heptatriacontane (C37)	435		mg/kg	107	23.9	1
n-Octatriacontane (C38)	ND		mg/kg	107	25.0	1
n-Nonatriacontane (C39)	ND		mg/kg	107	34.9	1
n-Tetracontane (C40)	ND		mg/kg	107	34.9	1
Total Petroleum Hydrocarbons (C9-C44)	249000		mg/kg	3540	780.	1
Total Saturated Hydrocarbons	26100	J	mg/kg	107	53.7	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	101		50-130
d50-Tetracosane	138	Q	50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-03
 Client ID: 2708-190528-016
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 11:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8015D(M)
 Analytical Date: 07/31/19 07:12
 Analyst: WR
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Nonane (C9)	ND		mg/kg	63.7	18.9	1
n-Decane (C10)	ND		mg/kg	63.7	20.3	1
n-Undecane (C11)	ND		mg/kg	63.7	19.0	1
n-Dodecane (C12)	22.5	J	mg/kg	63.7	13.9	1
n-Tridecane (C13)	ND		mg/kg	63.7	17.5	1
2,6,10-Trimethyldodecane (1380)	ND		mg/kg	63.7	9.58	1
n-Tetradecane (C14)	ND		mg/kg	63.7	9.58	1
2,6,10-Trimethyltridecane (1470)	8.22	J	mg/kg	63.7	7.60	1
n-Pentadecane (C15)	ND		mg/kg	63.7	7.60	1
n-Hexadecane (C16)	22.7	J	mg/kg	63.7	9.59	1
Norpristane (1650)	61.7	J	mg/kg	63.7	21.0	1
n-Heptadecane (C17)	ND		mg/kg	63.7	21.0	1
Pristane	ND		mg/kg	63.7	13.6	1
n-Octadecane (C18)	6210	G	mg/kg	63.7	12.8	1
Phytane	1890	G	mg/kg	63.7	8.00	1
n-Nonadecane (C19)	28.0	J	mg/kg	63.7	16.4	1
n-Eicosane (C20)	11.7	J	mg/kg	63.7	9.02	1
n-Heneicosane (C21)	24.0	J	mg/kg	63.7	7.63	1
n-Docosane (C22)	12.9	J	mg/kg	63.7	6.64	1
n-Tricosane (C23)	512		mg/kg	63.7	8.10	1
n-Tetracosane (C24)	47.1	J	mg/kg	63.7	10.6	1
n-Pentacosane (C25)	6960	G	mg/kg	63.7	33.7	1
n-Hexacosane (C26)	221		mg/kg	63.7	9.36	1
n-Heptacosane (C27)	ND		mg/kg	63.7	7.67	1
n-Octacosane (C28)	ND		mg/kg	63.7	13.7	1
n-Nonacosane (C29)	4380	G	mg/kg	63.7	42.4	1
n-Triacontane (C30)	370		mg/kg	63.7	7.31	1
n-Hentriacontane (C31)	292		mg/kg	63.7	9.03	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-03
 Client ID: 2708-190528-016
 Sample Location: PORTLAND, OR

Date Collected: 05/28/19 11:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Dotriacontane (C32)	193		mg/kg	63.7	8.03	1
n-Tritriacontane (C33)	ND		mg/kg	63.7	8.96	1
n-Tettratriacontane (C34)	ND		mg/kg	63.7	10.1	1
n-Pentatriacontane (C35)	464		mg/kg	63.7	11.1	1
n-Hexatriacontane (C36)	ND		mg/kg	63.7	12.7	1
n-Heptatriacontane (C37)	370		mg/kg	63.7	14.2	1
n-Octatriacontane (C38)	ND		mg/kg	63.7	14.8	1
n-Nonatriacontane (C39)	ND		mg/kg	63.7	20.7	1
n-Tetracontane (C40)	ND		mg/kg	63.7	20.7	1
Total Petroleum Hydrocarbons (C9-C44)	213000		mg/kg	2100	463.	1
Total Saturated Hydrocarbons	22100	J	mg/kg	63.7	31.8	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	98		50-130
d50-Tetracosane	128		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-04
 Client ID: 2708-190513-002
 Sample Location: PORTLAND, OR

Date Collected: 05/13/19 16:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8015D(M)
 Analytical Date: 07/31/19 08:40
 Analyst: WR
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Nonane (C9)	ND		mg/kg	58.4	17.3	1
n-Decane (C10)	ND		mg/kg	58.4	18.6	1
n-Undecane (C11)	ND		mg/kg	58.4	17.4	1
n-Dodecane (C12)	72.3		mg/kg	58.4	12.7	1
n-Tridecane (C13)	ND		mg/kg	58.4	16.0	1
2,6,10-Trimethyldodecane (1380)	9.28	J	mg/kg	58.4	8.78	1
n-Tetradecane (C14)	ND		mg/kg	58.4	8.78	1
2,6,10-Trimethyltridecane (1470)	30.2	J	mg/kg	58.4	6.96	1
n-Pentadecane (C15)	ND		mg/kg	58.4	6.96	1
n-Hexadecane (C16)	28.8	J	mg/kg	58.4	8.79	1
Norpristane (1650)	63.7		mg/kg	58.4	19.2	1
n-Heptadecane (C17)	ND		mg/kg	58.4	19.2	1
Pristane	20.6	J	mg/kg	58.4	12.5	1
n-Octadecane (C18)	5130	G	mg/kg	58.4	11.7	1
Phytane	1530	G	mg/kg	58.4	7.33	1
n-Nonadecane (C19)	21.5	J	mg/kg	58.4	15.0	1
n-Eicosane (C20)	ND		mg/kg	58.4	8.26	1
n-Heneicosane (C21)	17.7	J	mg/kg	58.4	6.98	1
n-Docosane (C22)	16.9	J	mg/kg	58.4	6.09	1
n-Tricosane (C23)	431		mg/kg	58.4	7.42	1
n-Tetracosane (C24)	27.8	J	mg/kg	58.4	9.76	1
n-Pentacosane (C25)	5550	G	mg/kg	58.4	30.9	1
n-Hexacosane (C26)	255		mg/kg	58.4	8.57	1
n-Heptacosane (C27)	ND		mg/kg	58.4	7.03	1
n-Octacosane (C28)	ND		mg/kg	58.4	12.5	1
n-Nonacosane (C29)	3490	G	mg/kg	58.4	38.9	1
n-Triacontane (C30)	290		mg/kg	58.4	6.69	1
n-Hentriacontane (C31)	241		mg/kg	58.4	8.27	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-04
 Client ID: 2708-190513-002
 Sample Location: PORTLAND, OR

Date Collected: 05/13/19 16:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Dotriacontane (C32)	266		mg/kg	58.4	7.35	1
n-Tritriacontane (C33)	ND		mg/kg	58.4	8.21	1
n-Tetatriacontane (C34)	ND		mg/kg	58.4	9.28	1
n-Pentatriacontane (C35)	360		mg/kg	58.4	10.2	1
n-Hexatriacontane (C36)	ND		mg/kg	58.4	11.6	1
n-Heptatriacontane (C37)	312		mg/kg	58.4	13.0	1
n-Octatriacontane (C38)	ND		mg/kg	58.4	13.6	1
n-Nonatriacontane (C39)	ND		mg/kg	58.4	18.9	1
n-Tetracontane (C40)	ND		mg/kg	58.4	18.9	1
Total Petroleum Hydrocarbons (C9-C44)	180000		mg/kg	1920	424.	1
Total Saturated Hydrocarbons	18200	J	mg/kg	58.4	29.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	98		50-130
d50-Tetracosane	121		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-05
 Client ID: 2708-190513-003
 Sample Location: PORTLAND, OR

Date Collected: 05/13/19 16:05
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8015D(M)
 Analytical Date: 07/31/19 10:10
 Analyst: WR
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Nonane (C9)	ND		mg/kg	60.7	18.0	1
n-Decane (C10)	ND		mg/kg	60.7	19.4	1
n-Undecane (C11)	ND		mg/kg	60.7	18.1	1
n-Dodecane (C12)	23.6	J	mg/kg	60.7	13.2	1
n-Tridecane (C13)	ND		mg/kg	60.7	16.6	1
2,6,10-Trimethyldodecane (1380)	ND		mg/kg	60.7	9.13	1
n-Tetradecane (C14)	ND		mg/kg	60.7	9.13	1
2,6,10-Trimethyltridecane (1470)	10.1	J	mg/kg	60.7	7.24	1
n-Pentadecane (C15)	ND		mg/kg	60.7	7.24	1
n-Hexadecane (C16)	21.3	J	mg/kg	60.7	9.14	1
Norpristane (1650)	62.5		mg/kg	60.7	20.0	1
n-Heptadecane (C17)	ND		mg/kg	60.7	20.0	1
Pristane	ND		mg/kg	60.7	13.0	1
n-Octadecane (C18)	6130	G	mg/kg	60.7	12.2	1
Phytane	1870	G	mg/kg	60.7	7.62	1
n-Nonadecane (C19)	27.3	J	mg/kg	60.7	15.6	1
n-Eicosane (C20)	10.5	J	mg/kg	60.7	8.59	1
n-Heneicosane (C21)	21.5	J	mg/kg	60.7	7.26	1
n-Docosane (C22)	11.5	J	mg/kg	60.7	6.33	1
n-Tricosane (C23)	522		mg/kg	60.7	7.72	1
n-Tetracosane (C24)	31.2	J	mg/kg	60.7	10.2	1
n-Pentacosane (C25)	6740	G	mg/kg	60.7	32.1	1
n-Hexacosane (C26)	269		mg/kg	60.7	8.91	1
n-Heptacosane (C27)	ND		mg/kg	60.7	7.30	1
n-Octacosane (C28)	ND		mg/kg	60.7	13.0	1
n-Nonacosane (C29)	4190	G	mg/kg	60.7	40.4	1
n-Triacontane (C30)	316		mg/kg	60.7	6.96	1
n-Hentriacontane (C31)	289		mg/kg	60.7	8.60	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-05
 Client ID: 2708-190513-003
 Sample Location: PORTLAND, OR

Date Collected: 05/13/19 16:05
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Dotriacontane (C32)	306		mg/kg	60.7	7.64	1
n-Tritriacontane (C33)	ND		mg/kg	60.7	8.54	1
n-Tettratriacontane (C34)	ND		mg/kg	60.7	9.65	1
n-Pentatriacontane (C35)	447		mg/kg	60.7	10.6	1
n-Hexatriacontane (C36)	ND		mg/kg	60.7	12.1	1
n-Heptatriacontane (C37)	348		mg/kg	60.7	13.5	1
n-Octatriacontane (C38)	ND		mg/kg	60.7	14.1	1
n-Nonatriacontane (C39)	ND		mg/kg	60.7	19.7	1
n-Tetracontane (C40)	ND		mg/kg	60.7	19.7	1
Total Petroleum Hydrocarbons (C9-C44)	212000		mg/kg	2000	441.	1
Total Saturated Hydrocarbons	21600	J	mg/kg	60.7	30.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	97		50-130
d50-Tetracosane	121		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-06
 Client ID: 2708-190520-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8015D(M)
 Analytical Date: 07/31/19 11:40
 Analyst: WR
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Nonane (C9)	ND		mg/kg	102	30.2	1
n-Decane (C10)	420		mg/kg	102	32.5	1
n-Undecane (C11)	ND		mg/kg	102	30.4	1
n-Dodecane (C12)	938		mg/kg	102	22.2	1
n-Tridecane (C13)	ND		mg/kg	102	27.9	1
2,6,10-Trimethyldodecane (1380)	58.2	J	mg/kg	102	15.3	1
n-Tetradecane (C14)	ND		mg/kg	102	15.3	1
2,6,10-Trimethyltridecane (1470)	235		mg/kg	102	12.1	1
n-Pentadecane (C15)	ND		mg/kg	102	12.1	1
n-Hexadecane (C16)	135		mg/kg	102	15.3	1
Norpristane (1650)	1180		mg/kg	102	33.6	1
n-Heptadecane (C17)	122		mg/kg	102	33.6	1
Pristane	95.4	J	mg/kg	102	21.8	1
Phytane	9250	G	mg/kg	102	12.8	1
n-Nonadecane (C19)	101	J	mg/kg	102	26.2	1
n-Eicosane (C20)	46.1	J	mg/kg	102	14.4	1
n-Heneicosane (C21)	59.0	J	mg/kg	102	12.2	1
n-Docosane (C22)	57.9	J	mg/kg	102	10.6	1
n-Tricosane (C23)	350		mg/kg	102	13.0	1
n-Tetracosane (C24)	60.7	J	mg/kg	102	17.0	1
n-Pentacosane (C25)	5010	G	mg/kg	102	53.9	1
n-Hexacosane (C26)	217		mg/kg	102	15.0	1
n-Heptacosane (C27)	ND		mg/kg	102	12.3	1
n-Octacosane (C28)	ND		mg/kg	102	21.8	1
n-Nonacosane (C29)	2950	G	mg/kg	102	67.8	1
n-Triacontane (C30)	220		mg/kg	102	11.7	1
n-Hentriacontane (C31)	330		mg/kg	102	14.4	1
n-Dotriacontane (C32)	202		mg/kg	102	12.8	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-06
 Client ID: 2708-190520-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Tritriacontane (C33)	ND		mg/kg	102	14.3	1
n-Tetratriacontane (C34)	ND		mg/kg	102	16.2	1
n-Pentatriacontane (C35)	ND		mg/kg	102	17.8	1
n-Hexatriacontane (C36)	ND		mg/kg	102	20.2	1
n-Heptatriacontane (C37)	221		mg/kg	102	22.6	1
n-Octatriacontane (C38)	ND		mg/kg	102	23.7	1
n-Nonatriacontane (C39)	ND		mg/kg	102	33.1	1
n-Tetracontane (C40)	ND		mg/kg	102	33.1	1
Total Petroleum Hydrocarbons (C9-C44)	367000		mg/kg	3360	740.	1
Total Saturated Hydrocarbons	52300	J	mg/kg	102	50.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	94		50-130
d50-Tetracosane	104		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-06 D
 Client ID: 2708-190520-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8015D(M)
 Analytical Date: 08/06/19 17:44
 Analyst: WR
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Saturated Hydrocarbons by GC-FID - Mansfield Lab						
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n-Octadecane (C18)	30000		mg/kg	1020	204.	10
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	98		50-130
d50-Tetracosane	114		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-07
 Client ID: 2708-190523-012
 Sample Location: PORTLAND, OR

Date Collected: 05/23/19 12:50
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8015D(M)
 Analytical Date: 07/31/19 17:39
 Analyst: WR
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Nonane (C9)	ND		mg/kg	58.9	17.5	1
n-Decane (C10)	223		mg/kg	58.9	18.8	1
n-Undecane (C11)	23.2	J	mg/kg	58.9	17.6	1
n-Dodecane (C12)	683		mg/kg	58.9	12.8	1
n-Tridecane (C13)	ND		mg/kg	58.9	16.2	1
2,6,10-Trimethyldodecane (1380)	64.3		mg/kg	58.9	8.86	1
n-Tetradecane (C14)	70.0		mg/kg	58.9	8.86	1
2,6,10-Trimethyltridecane (1470)	214		mg/kg	58.9	7.03	1
n-Pentadecane (C15)	ND		mg/kg	58.9	7.03	1
n-Hexadecane (C16)	93.1		mg/kg	58.9	8.87	1
Norpristane (1650)	646		mg/kg	58.9	19.4	1
n-Heptadecane (C17)	91.6		mg/kg	58.9	19.4	1
Pristane	87.4		mg/kg	58.9	12.6	1
Phytane	5160	G	mg/kg	58.9	7.40	1
n-Nonadecane (C19)	57.7	J	mg/kg	58.9	15.1	1
n-Eicosane (C20)	36.8	J	mg/kg	58.9	8.34	1
n-Heneicosane (C21)	32.9	J	mg/kg	58.9	7.05	1
n-Docosane (C22)	35.7	J	mg/kg	58.9	6.14	1
n-Tricosane (C23)	230		mg/kg	58.9	7.49	1
n-Tetracosane (C24)	30.8	J	mg/kg	58.9	9.86	1
n-Pentacosane (C25)	2940	G	mg/kg	58.9	31.2	1
n-Hexacosane (C26)	131		mg/kg	58.9	8.65	1
n-Heptacosane (C27)	ND		mg/kg	58.9	7.09	1
n-Octacosane (C28)	ND		mg/kg	58.9	12.6	1
n-Nonacosane (C29)	1720	G	mg/kg	58.9	39.2	1
n-Triacontane (C30)	125		mg/kg	58.9	6.76	1
n-Hentriacontane (C31)	189		mg/kg	58.9	8.35	1
n-Dotriacontane (C32)	132		mg/kg	58.9	7.42	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-07
 Client ID: 2708-190523-012
 Sample Location: PORTLAND, OR

Date Collected: 05/23/19 12:50
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Tritriacontane (C33)	ND		mg/kg	58.9	8.29	1
n-Tetratriacontane (C34)	ND		mg/kg	58.9	9.37	1
n-Pentatriacontane (C35)	ND		mg/kg	58.9	10.3	1
n-Hexatriacontane (C36)	ND		mg/kg	58.9	11.7	1
n-Heptatriacontane (C37)	134		mg/kg	58.9	13.1	1
n-Octatriacontane (C38)	ND		mg/kg	58.9	13.7	1
n-Nonatriacontane (C39)	ND		mg/kg	58.9	19.1	1
n-Tetracontane (C40)	ND		mg/kg	58.9	19.1	1
Total Petroleum Hydrocarbons (C9-C44)	200000		mg/kg	1940	428.	1
Total Saturated Hydrocarbons	29300	J	mg/kg	58.9	29.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	91		50-130
d50-Tetracosane	101		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-07 D
 Client ID: 2708-190523-012
 Sample Location: PORTLAND, OR

Date Collected: 05/23/19 12:50
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8015D(M)
 Analytical Date: 08/06/19 19:13
 Analyst: WR
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Octadecane (C18)	15600		mg/kg	589	118.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	92		50-130
d50-Tetracosane	103		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-08
 Client ID: 2708-190521-009
 Sample Location: PORTLAND, OR

Date Collected: 05/21/19 11:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8015D(M)
 Analytical Date: 07/31/19 19:08
 Analyst: WR
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Nonane (C9)	ND		mg/kg	53.2	15.8	1
n-Decane (C10)	195		mg/kg	53.2	17.0	1
n-Undecane (C11)	ND		mg/kg	53.2	15.9	1
n-Dodecane (C12)	466		mg/kg	53.2	11.6	1
n-Tridecane (C13)	ND		mg/kg	53.2	14.6	1
2,6,10-Trimethyldodecane (1380)	24.1	J	mg/kg	53.2	8.00	1
n-Tetradecane (C14)	ND		mg/kg	53.2	8.00	1
2,6,10-Trimethyltridecane (1470)	103		mg/kg	53.2	6.34	1
n-Pentadecane (C15)	ND		mg/kg	53.2	6.34	1
n-Hexadecane (C16)	92.9		mg/kg	53.2	8.01	1
Norpristane (1650)	560		mg/kg	53.2	17.5	1
n-Heptadecane (C17)	59.8		mg/kg	53.2	17.5	1
Pristane	40.7	J	mg/kg	53.2	11.4	1
Phytane	4880	G	mg/kg	53.2	6.68	1
n-Nonadecane (C19)	44.8	J	mg/kg	53.2	13.7	1
n-Eicosane (C20)	25.4	J	mg/kg	53.2	7.52	1
n-Heneicosane (C21)	28.3	J	mg/kg	53.2	6.36	1
n-Docosane (C22)	25.1	J	mg/kg	53.2	5.54	1
n-Tricosane (C23)	151		mg/kg	53.2	6.76	1
n-Tetracosane (C24)	27.8	J	mg/kg	53.2	8.89	1
n-Pentacosane (C25)	2340	G	mg/kg	53.2	28.1	1
n-Hexacosane (C26)	86.7		mg/kg	53.2	7.81	1
n-Heptacosane (C27)	ND		mg/kg	53.2	6.40	1
n-Octacosane (C28)	12.6	J	mg/kg	53.2	11.4	1
n-Nonacosane (C29)	1340	G	mg/kg	53.2	35.4	1
n-Triacontane (C30)	92.1		mg/kg	53.2	6.10	1
n-Hentriacontane (C31)	149		mg/kg	53.2	7.53	1
n-Dotriacontane (C32)	93.8		mg/kg	53.2	6.70	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-08
 Client ID: 2708-190521-009
 Sample Location: PORTLAND, OR

Date Collected: 05/21/19 11:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Tritriacontane (C33)	ND		mg/kg	53.2	7.48	1
n-Tetratriacontane (C34)	ND		mg/kg	53.2	8.46	1
n-Pentatriacontane (C35)	ND		mg/kg	53.2	9.28	1
n-Hexatriacontane (C36)	ND		mg/kg	53.2	10.6	1
n-Heptatriacontane (C37)	99.2		mg/kg	53.2	11.8	1
n-Octatriacontane (C38)	ND		mg/kg	53.2	12.4	1
n-Nonatriacontane (C39)	ND		mg/kg	53.2	17.3	1
n-Tetracontane (C40)	ND		mg/kg	53.2	17.3	1
Total Petroleum Hydrocarbons (C9-C44)	167000		mg/kg	1750	386.	1
Total Saturated Hydrocarbons	25400	J	mg/kg	53.2	26.6	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	92		50-130
d50-Tetracosane	100		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-08 D
 Client ID: 2708-190521-009
 Sample Location: PORTLAND, OR

Date Collected: 05/21/19 11:55
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8015D(M)
 Analytical Date: 08/06/19 20:41
 Analyst: WR
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Saturated Hydrocarbons by GC-FID - Mansfield Lab						
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n-Octadecane (C18)	14000		mg/kg	532	107.	10
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	93		50-130
d50-Tetracosane	98		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-09
 Client ID: 2708-190521-010
 Sample Location: PORTLAND, OR

Date Collected: 05/21/19 15:30
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8015D(M)
 Analytical Date: 07/31/19 20:37
 Analyst: WR
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:00
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Nonane (C9)	ND		mg/kg	37.5	11.1	1
n-Decane (C10)	69.8		mg/kg	37.5	12.0	1
n-Undecane (C11)	ND		mg/kg	37.5	11.2	1
n-Dodecane (C12)	205		mg/kg	37.5	8.16	1
n-Tridecane (C13)	ND		mg/kg	37.5	10.3	1
2,6,10-Trimethyldodecane (1380)	6.14	J	mg/kg	37.5	5.63	1
n-Tetradecane (C14)	ND		mg/kg	37.5	5.63	1
2,6,10-Trimethyltridecane (1470)	53.9		mg/kg	37.5	4.47	1
n-Pentadecane (C15)	27.4	J	mg/kg	37.5	4.47	1
n-Hexadecane (C16)	67.6		mg/kg	37.5	5.64	1
Norpristane (1650)	233		mg/kg	37.5	12.4	1
n-Heptadecane (C17)	26.4	J	mg/kg	37.5	12.4	1
Pristane	44.3		mg/kg	37.5	8.00	1
n-Octadecane (C18)	6030	G	mg/kg	37.5	7.52	1
Phytane	1790	G	mg/kg	37.5	4.70	1
n-Nonadecane (C19)	19.6	J	mg/kg	37.5	9.63	1
n-Eicosane (C20)	14.4	J	mg/kg	37.5	5.30	1
n-Heneicosane (C21)	21.6	J	mg/kg	37.5	4.48	1
n-Docosane (C22)	8.84	J	mg/kg	37.5	3.91	1
n-Tricosane (C23)	66.2		mg/kg	37.5	4.76	1
n-Tetracosane (C24)	10.8	J	mg/kg	37.5	6.27	1
n-Pentacosane (C25)	1020	G	mg/kg	37.5	19.8	1
n-Hexacosane (C26)	32.9	J	mg/kg	37.5	5.50	1
n-Heptacosane (C27)	ND		mg/kg	37.5	4.51	1
n-Octacosane (C28)	ND		mg/kg	37.5	8.04	1
n-Nonacosane (C29)	582	G	mg/kg	37.5	25.0	1
n-Triacontane (C30)	36.5	J	mg/kg	37.5	4.30	1
n-Hentriacontane (C31)	64.8		mg/kg	37.5	5.31	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-09
 Client ID: 2708-190521-010
 Sample Location: PORTLAND, OR

Date Collected: 05/21/19 15:30
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Dotriacontane (C32)	33.5	J	mg/kg	37.5	4.72	1
n-Tritriacontane (C33)	ND		mg/kg	37.5	5.27	1
n-Tettratriacontane (C34)	ND		mg/kg	37.5	5.96	1
n-Pentatriacontane (C35)	ND		mg/kg	37.5	6.54	1
n-Hexatriacontane (C36)	ND		mg/kg	37.5	7.45	1
n-Heptatriacontane (C37)	46.4		mg/kg	37.5	8.32	1
n-Octatriacontane (C38)	ND		mg/kg	37.5	8.73	1
n-Nonatriacontane (C39)	ND		mg/kg	37.5	12.2	1
n-Tetracontane (C40)	ND		mg/kg	37.5	12.2	1
Total Petroleum Hydrocarbons (C9-C44)	70400		mg/kg	1240	272.	1
Total Saturated Hydrocarbons	10500	J	mg/kg	37.5	18.7	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	94		50-130
d50-Tetracosane	100		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-10
 Client ID: 2708-190606-OIL
 Sample Location: PORTLAND, OR

Date Collected: 06/06/19 14:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Oil
 Analytical Method: 1,8015D(M)
 Analytical Date: 07/31/19 17:26
 Analyst: GP
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 08:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Nonane (C9)	99.0	J	mg/kg	170	50.5	1
n-Decane (C10)	228		mg/kg	170	54.3	1
n-Undecane (C11)	502		mg/kg	170	50.9	1
n-Dodecane (C12)	9340		mg/kg	170	37.1	1
n-Tridecane (C13)	2140		mg/kg	170	46.7	1
2,6,10-Trimethyldodecane (1380)	ND		mg/kg	170	25.6	1
n-Tetradecane (C14)	3040		mg/kg	170	25.6	1
2,6,10-Trimethyltridecane (1470)	ND		mg/kg	170	20.3	1
n-Pentadecane (C15)	2600		mg/kg	170	20.3	1
n-Hexadecane (C16)	2230		mg/kg	170	25.6	1
Norpristane (1650)	ND		mg/kg	170	56.2	1
n-Heptadecane (C17)	1420		mg/kg	170	56.2	1
Pristane	1980		mg/kg	170	36.4	1
n-Octadecane (C18)	13000		mg/kg	170	34.2	1
Phytane	2550		mg/kg	170	21.4	1
n-Nonadecane (C19)	381		mg/kg	170	43.8	1
n-Eicosane (C20)	223		mg/kg	170	24.1	1
n-Heneicosane (C21)	187		mg/kg	170	20.4	1
n-Docosane (C22)	139	J	mg/kg	170	17.8	1
n-Tricosane (C23)	450		mg/kg	170	21.7	1
n-Tetracosane (C24)	66.3	J	mg/kg	170	28.5	1
n-Pentacosane (C25)	1350		mg/kg	170	90.2	1
n-Hexacosane (C26)	96.4	J	mg/kg	170	25.0	1
n-Heptacosane (C27)	88.1	J	mg/kg	170	20.5	1
n-Octacosane (C28)	94.7	J	mg/kg	170	36.5	1
n-Nonacosane (C29)	ND		mg/kg	170	113.	1
n-Triacontane (C30)	62.7	J	mg/kg	170	19.5	1
n-Hentriacontane (C31)	24.2	J	mg/kg	170	24.1	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-10
 Client ID: 2708-190606-OIL
 Sample Location: PORTLAND, OR

Date Collected: 06/06/19 14:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Dotriacontane (C32)	76.5	J	mg/kg	170	21.5	1
n-Tritriacontane (C33)	40.7	J	mg/kg	170	24.0	1
n-Tetratriacontane (C34)	27.9	J	mg/kg	170	27.1	1
n-Pentatriacontane (C35)	ND		mg/kg	170	29.7	1
n-Hexatriacontane (C36)	ND		mg/kg	170	33.9	1
n-Heptatriacontane (C37)	ND		mg/kg	170	37.8	1
n-Octatriacontane (C38)	ND		mg/kg	170	39.7	1
n-Nonatriacontane (C39)	ND		mg/kg	170	55.3	1
n-Tetracontane (C40)	ND		mg/kg	170	55.3	1
Total Petroleum Hydrocarbons (C9-C44)	493000		mg/kg	5620	1240	1
Total Saturated Hydrocarbons	42400	J	mg/kg	170	85.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	103		50-130
d50-Tetracosane	105		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-11
 Client ID: 2708-190514-004
 Sample Location: PORTLAND, OR

Date Collected: 05/14/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8015D(M)
 Analytical Date: 07/31/19 23:34
 Analyst: WR
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:15
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Nonane (C9)	ND		mg/kg	73.7	21.9	1
n-Decane (C10)	ND		mg/kg	73.7	23.5	1
n-Undecane (C11)	ND		mg/kg	73.7	22.0	1
n-Dodecane (C12)	107		mg/kg	73.7	16.1	1
n-Tridecane (C13)	ND		mg/kg	73.7	20.2	1
2,6,10-Trimethyldodecane (1380)	12.2	J	mg/kg	73.7	11.1	1
n-Tetradecane (C14)	12.9	J	mg/kg	73.7	11.1	1
2,6,10-Trimethyltridecane (1470)	49.4	J	mg/kg	73.7	8.80	1
n-Pentadecane (C15)	ND		mg/kg	73.7	8.80	1
n-Hexadecane (C16)	36.7	J	mg/kg	73.7	11.1	1
Norpristane (1650)	70.2	J	mg/kg	73.7	24.3	1
n-Heptadecane (C17)	24.5	J	mg/kg	73.7	24.3	1
Pristane	27.4	J	mg/kg	73.7	15.8	1
n-Octadecane (C18)	5770	G	mg/kg	73.7	14.8	1
Phytane	1630	G	mg/kg	73.7	9.26	1
n-Nonadecane (C19)	22.1	J	mg/kg	73.7	19.0	1
n-Eicosane (C20)	ND		mg/kg	73.7	10.4	1
n-Heneicosane (C21)	15.1	J	mg/kg	73.7	8.83	1
n-Docosane (C22)	23.1	J	mg/kg	73.7	7.69	1
n-Tricosane (C23)	426		mg/kg	73.7	9.38	1
n-Tetracosane (C24)	26.8	J	mg/kg	73.7	12.3	1
n-Pentacosane (C25)	5630	G	mg/kg	73.7	39.0	1
n-Hexacosane (C26)	160		mg/kg	73.7	10.8	1
n-Heptacosane (C27)	ND		mg/kg	73.7	8.88	1
n-Octacosane (C28)	ND		mg/kg	73.7	15.8	1
n-Nonacosane (C29)	3360	G	mg/kg	73.7	49.1	1
n-Triacontane (C30)	265		mg/kg	73.7	8.46	1
n-Hentriacontane (C31)	229		mg/kg	73.7	10.4	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-11
Client ID: 2708-190514-004
Sample Location: PORTLAND, OR

Date Collected: 05/14/19 15:00
Date Received: 06/26/19
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Dotriacontane (C32)	252		mg/kg	73.7	9.29	1
n-Tritriacontane (C33)	ND		mg/kg	73.7	10.4	1
n-Tetatriacontane (C34)	32.3	J	mg/kg	73.7	11.7	1
n-Pentatriacontane (C35)	328		mg/kg	73.7	12.9	1
n-Hexatriacontane (C36)	ND		mg/kg	73.7	14.7	1
n-Heptatriacontane (C37)	286		mg/kg	73.7	16.4	1
n-Octatriacontane (C38)	ND		mg/kg	73.7	17.2	1
n-Nonatriacontane (C39)	ND		mg/kg	73.7	23.9	1
n-Tetracontane (C40)	ND		mg/kg	73.7	23.9	1
Total Petroleum Hydrocarbons (C9-C44)	179000		mg/kg	2430	536.	1
Total Saturated Hydrocarbons	18800	J	mg/kg	73.7	36.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	99		50-130
d50-Tetracosane	122		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-12
 Client ID: 2708-190520-1-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8015D(M)
 Analytical Date: 08/01/19 03:58
 Analyst: WR
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:15
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Nonane (C9)	ND		mg/kg	142	42.1	1
n-Decane (C10)	398		mg/kg	142	45.2	1
n-Undecane (C11)	ND		mg/kg	142	42.4	1
n-Dodecane (C12)	948		mg/kg	142	30.9	1
n-Tridecane (C13)	ND		mg/kg	142	38.9	1
2,6,10-Trimethyldodecane (1380)	53.9	J	mg/kg	142	21.3	1
n-Tetradecane (C14)	ND		mg/kg	142	21.3	1
2,6,10-Trimethyltridecane (1470)	216		mg/kg	142	16.9	1
n-Pentadecane (C15)	ND		mg/kg	142	16.9	1
n-Hexadecane (C16)	333		mg/kg	142	21.4	1
Norpristane (1650)	1110		mg/kg	142	46.8	1
n-Heptadecane (C17)	127	J	mg/kg	142	46.8	1
Pristane	92.0	J	mg/kg	142	30.3	1
Phytane	8700	G	mg/kg	142	17.8	1
n-Nonadecane (C19)	95.0	J	mg/kg	142	36.4	1
n-Eicosane (C20)	55.2	J	mg/kg	142	20.1	1
n-Heneicosane (C21)	82.4	J	mg/kg	142	17.0	1
n-Docosane (C22)	44.7	J	mg/kg	142	14.8	1
n-Tricosane (C23)	310		mg/kg	142	18.0	1
n-Tetracosane (C24)	52.9	J	mg/kg	142	23.7	1
n-Pentacosane (C25)	4680	G	mg/kg	142	75.1	1
n-Hexacosane (C26)	177		mg/kg	142	20.8	1
n-Heptacosane (C27)	ND		mg/kg	142	17.1	1
n-Octacosane (C28)	ND		mg/kg	142	30.4	1
n-Nonacosane (C29)	2580	G	mg/kg	142	94.5	1
n-Triacontane (C30)	199		mg/kg	142	16.3	1
n-Hentriacontane (C31)	290		mg/kg	142	20.1	1
n-Dotriacontane (C32)	176		mg/kg	142	17.9	1

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-12
 Client ID: 2708-190520-1-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Saturated Hydrocarbons by GC-FID - Mansfield Lab						
n-Tritriacontane (C33)	ND		mg/kg	142	20.0	1
n-Tetratriacontane (C34)	ND		mg/kg	142	22.6	1
n-Pentatriacontane (C35)	ND		mg/kg	142	24.8	1
n-Hexatriacontane (C36)	ND		mg/kg	142	28.2	1
n-Heptatriacontane (C37)	192		mg/kg	142	31.5	1
n-Octatriacontane (C38)	ND		mg/kg	142	33.1	1
n-Nonatriacontane (C39)	ND		mg/kg	142	46.0	1
n-Tetracontane (C40)	ND		mg/kg	142	46.0	1
Total Petroleum Hydrocarbons (C9-C44)	338000		mg/kg	4680	1030	1
Total Saturated Hydrocarbons	49300	J	mg/kg	142	70.9	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	94		50-130
d50-Tetracosane	105		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

SAMPLE RESULTS

Lab ID: L1928037-12 D
 Client ID: 2708-190520-1-006
 Sample Location: PORTLAND, OR

Date Collected: 05/20/19 15:00
 Date Received: 06/26/19
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8015D(M)
 Analytical Date: 08/06/19 22:09
 Analyst: WR
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3580A
 Extraction Date: 07/26/19 09:15
 Cleanup Method: - - - -
 Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Saturated Hydrocarbons by GC-FID - Mansfield Lab						
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n-Octadecane (C18)	30200		mg/kg	1420	285.	10
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	104		50-130
d50-Tetracosane	117		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8015D(M)
Analytical Date: 07/30/19 19:25
Analyst: WR

Extraction Method: EPA 3580A
Extraction Date: 07/26/19 09:00
Cleanup Method: - - - -
Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL
Saturated Hydrocarbons by GC-FID - Mansfield Lab for sample(s): 01-09,11-12 Batch: WG1264828-1					
n-Nonane (C9)	ND		mg/kg	200	59.3
n-Decane (C10)	ND		mg/kg	200	63.8
n-Undecane (C11)	ND		mg/kg	200	59.7
n-Dodecane (C12)	ND		mg/kg	200	43.6
n-Tridecane (C13)	ND		mg/kg	200	54.9
2,6,10-Trimethyldodecane (1380)	ND		mg/kg	200	30.1
n-Tetradecane (C14)	ND		mg/kg	200	30.1
2,6,10-Trimethyltridecane (1470)	ND		mg/kg	200	23.9
n-Pentadecane (C15)	87.0	JC	mg/kg	200	23.9
n-Hexadecane (C16)	ND		mg/kg	200	30.1
Norpristane (1650)	ND		mg/kg	200	66.0
n-Heptadecane (C17)	ND		mg/kg	200	66.0
Pristane	ND		mg/kg	200	42.7
n-Octadecane (C18)	ND		mg/kg	200	40.1
Phytane	ND		mg/kg	200	25.1
n-Nonadecane (C19)	ND		mg/kg	200	51.4
n-Eicosane (C20)	ND		mg/kg	200	28.3
n-Heneicosane (C21)	ND		mg/kg	200	23.9
n-Docosane (C22)	ND		mg/kg	200	20.9
n-Tricosane (C23)	38.0	JC	mg/kg	200	25.4
n-Tetracosane (C24)	ND		mg/kg	200	33.5
n-Pentacosane (C25)	ND		mg/kg	200	106.
n-Hexacosane (C26)	ND		mg/kg	200	29.4
n-Heptacosane (C27)	ND		mg/kg	200	24.1
n-Octacosane (C28)	52.2	J	mg/kg	200	42.9
n-Nonacosane (C29)	ND		mg/kg	200	133.
n-Triacontane (C30)	ND		mg/kg	200	22.9
n-Hentriacontane (C31)	ND		mg/kg	200	28.3
n-Dotriacontane (C32)	ND		mg/kg	200	25.2

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8015D(M)
Analytical Date: 07/30/19 19:25
Analyst: WR

Extraction Method: EPA 3580A
Extraction Date: 07/26/19 09:00
Cleanup Method: - - - -
Cleanup Date: 07/27/19

Parameter	Result	Qualifier	Units	RL	MDL
Saturated Hydrocarbons by GC-FID - Mansfield Lab for sample(s): 01-09,11-12 Batch: WG1264828-1					
n-Tritriacontane (C33)	ND		mg/kg	200	28.1
n-Tetratriacontane (C34)	ND		mg/kg	200	31.8
n-Pentatriacontane (C35)	ND		mg/kg	200	34.9
n-Hexatriacontane (C36)	ND		mg/kg	200	39.8
n-Heptatriacontane (C37)	ND		mg/kg	200	44.4
n-Octatriacontane (C38)	ND		mg/kg	200	46.6
n-Nonatriacontane (C39)	ND		mg/kg	200	64.9
n-Tetracontane (C40)	ND		mg/kg	200	64.9
Total Petroleum Hydrocarbons (C9-C44)	ND		mg/kg	6600	1450
Total Saturated Hydrocarbons	177	J	mg/kg	200	100.

Surrogate	%Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	100		50-130
d50-Tetracosane	100		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8015D(M)
Analytical Date: 07/31/19 04:09
Analyst: GP

Extraction Method: EPA 3580A
Extraction Date: 07/26/19 08:06

Parameter	Result	Qualifier	Units	RL	MDL
Saturated Hydrocarbons by GC-FID - Mansfield Lab for sample(s): 10 Batch: WG1264844-1					
n-Nonane (C9)	ND		mg/kg	200	59.3
n-Decane (C10)	ND		mg/kg	200	63.8
n-Undecane (C11)	ND		mg/kg	200	59.7
n-Dodecane (C12)	ND		mg/kg	200	43.6
n-Tridecane (C13)	ND		mg/kg	200	54.9
2,6,10-Trimethyldodecane (1380)	ND		mg/kg	200	30.1
n-Tetradecane (C14)	ND		mg/kg	200	30.1
2,6,10-Trimethyltridecane (1470)	ND		mg/kg	200	23.9
n-Pentadecane (C15)	ND		mg/kg	200	23.9
n-Hexadecane (C16)	ND		mg/kg	200	30.1
Norpristane (1650)	ND		mg/kg	200	66.0
n-Heptadecane (C17)	ND		mg/kg	200	66.0
Pristane	ND		mg/kg	200	42.7
n-Octadecane (C18)	ND		mg/kg	200	40.1
Phytane	ND		mg/kg	200	25.1
n-Nonadecane (C19)	ND		mg/kg	200	51.4
n-Eicosane (C20)	ND		mg/kg	200	28.3
n-Heneicosane (C21)	ND		mg/kg	200	23.9
n-Docosane (C22)	ND		mg/kg	200	20.9
n-Tricosane (C23)	ND		mg/kg	200	25.4
n-Tetracosane (C24)	ND		mg/kg	200	33.5
n-Pentacosane (C25)	ND		mg/kg	200	106.
n-Hexacosane (C26)	ND		mg/kg	200	29.4
n-Heptacosane (C27)	ND		mg/kg	200	24.1
n-Octacosane (C28)	ND		mg/kg	200	42.9
n-Nonacosane (C29)	ND		mg/kg	200	133.
n-Triacontane (C30)	ND		mg/kg	200	22.9
n-Hentriacontane (C31)	ND		mg/kg	200	28.3
n-Dotriacontane (C32)	ND		mg/kg	200	25.2

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8015D(M)
Analytical Date: 07/31/19 04:09
Analyst: GP

Extraction Method: EPA 3580A
Extraction Date: 07/26/19 08:06

Parameter	Result	Qualifier	Units	RL	MDL
Saturated Hydrocarbons by GC-FID - Mansfield Lab for sample(s): 10 Batch: WG1264844-1					
n-Tritriacontane (C33)	ND		mg/kg	200	28.1
n-Tetratriacontane (C34)	ND		mg/kg	200	31.8
n-Pentatriacontane (C35)	ND		mg/kg	200	34.9
n-Hexatriacontane (C36)	ND		mg/kg	200	39.8
n-Heptatriacontane (C37)	ND		mg/kg	200	44.4
n-Octatriacontane (C38)	ND		mg/kg	200	46.6
n-Nonatriacontane (C39)	ND		mg/kg	200	64.9
n-Tetracontane (C40)	ND		mg/kg	200	64.9
Total Petroleum Hydrocarbons (C9-C44)	11400		mg/kg	6600	1450
Total Saturated Hydrocarbons	ND		mg/kg	200	100.

Surrogate	%Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	100		50-130
d50-Tetracosane	97		50-130

Lab Control Sample Analysis Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Saturated Hydrocarbons by GC-FID - Mansfield Lab Associated sample(s): 01-09,11-12 Batch: WG1264828-2 WG1264828-3								
n-Nonane (C9)	89		89		50-130	0		30
n-Decane (C10)	81		85		50-130	5		30
n-Dodecane (C12)	78		78		50-130	0		30
n-Tetradecane (C14)	94		92		50-130	2		30
n-Hexadecane (C16)	103		105		50-130	2		30
n-Octadecane (C18)	103		104		50-130	1		30
n-Nonadecane (C19)	92		93		50-130	1		30
n-Eicosane (C20)	99		100		50-130	1		30
n-Docosane (C22)	97		99		50-130	2		30
n-Tetracosane (C24)	100		101		50-130	1		30
n-Hexacosane (C26)	97		99		50-130	2		30
n-Octacosane (C28)	103		102		50-130	1		30
n-Triacontane (C30)	96		98		50-130	2		30
n-Hexatriacontane (C36)	92		93		50-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
ortho-terphenyl	101		101		50-130
d50-Tetracosane	100		99		50-130



Lab Control Sample Analysis Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Saturated Hydrocarbons by GC-FID - Mansfield Lab Associated sample(s): 10 Batch: WG1264844-2 WG1264844-3								
n-Nonane (C9)	97		97		50-130	0		30
n-Decane (C10)	99		99		50-130	0		30
n-Dodecane (C12)	100		98		50-130	2		30
n-Tetradecane (C14)	96		96		50-130	0		30
n-Hexadecane (C16)	102		102		50-130	0		30
n-Octadecane (C18)	102		100		50-130	2		30
n-Nonadecane (C19)	95		95		50-130	0		30
n-Eicosane (C20)	95		95		50-130	0		30
n-Docosane (C22)	95		94		50-130	1		30
n-Tetracosane (C24)	97		96		50-130	1		30
n-Hexacosane (C26)	95		96		50-130	1		30
n-Octacosane (C28)	93		93		50-130	0		30
n-Triacontane (C30)	93		91		50-130	2		30
n-Hexatriacontane (C36)	86		82		50-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
ortho-terphenyl	101		101		50-130
d50-Tetracosane	96		93		50-130



Matrix Spike Analysis Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Saturated Hydrocarbons by GC-FID - Mansfield Lab Associated sample(s): 01-09,11-12 QC Batch ID: WG1264828-5 WG1264828-6 QC Sample: L1928037-11 Client ID: 2708-190514-004												
n-Nonane (C9)	ND	280	236	84		258	85		50-150	9		30
n-Decane (C10)	ND	280	227	81		242	80		50-150	6		30
n-Dodecane (C12)	107	280	382	98		347	79		50-150	10		30
n-Tetradecane (C14)	12.9J	280	266	95		273	90		50-150	3		30
n-Hexadecane (C16)	36.7J	280	310	110		345	114		50-150	11		30
n-Octadecane (C18)	5770G	280	7020G	446	Q	5340G	0	Q	50-150	27		30
n-Nonadecane (C19)	22.1J	280	274	98		304	101		50-150	10		30
n-Eicosane (C20)	ND	280	337	120		350	116		50-150	4		30
n-Docosane (C22)	23.1J	280	316	113		319	105		50-150	1		30
n-Tetracosane (C24)	26.8J	280	323	115		341	113		50-150	5		30
n-Hexacosane (C26)	160	280	532	133		515	117		50-150	3		30
n-Octacosane (C28)	ND	280	296	105		331	109		50-150	11		30
n-Triacontane (C30)	265	280	681	148		790	174	Q	50-150	15		30
n-Hexatriacontane (C36)	ND	280	327	117		372	123		50-150	13		30

Surrogate	MS		MSD		Acceptance Criteria
	% Recovery	Qualifier	% Recovery	Qualifier	
d50-Tetracosane	123		116		50-130
ortho-terphenyl	94		95		50-130



Lab Duplicate Analysis

Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Saturated Hydrocarbons by GC-FID - Mansfield Lab Associated sample(s): 01-09,11-12 QC Batch ID: WG1264828-4 QC Sample: L1928037-09 Client ID: 2708-190521-010						
n-Nonane (C9)	ND	ND	mg/kg	NC		30
n-Decane (C10)	69.8	75.1	mg/kg	7		30
n-Undecane (C11)	ND	ND	mg/kg	NC		30
n-Dodecane (C12)	205	218	mg/kg	6		30
n-Tridecane (C13)	ND	ND	mg/kg	NC		30
2,6,10-Trimethyldodecane (1380)	6.14J	8.51J	mg/kg	NC		30
n-Tetradecane (C14)	ND	ND	mg/kg	NC		30
2,6,10-Trimethyltridecane (1470)	53.9	48.5	mg/kg	11		30
n-Pentadecane (C15)	27.4J	21.5J	mg/kg	NC		30
n-Hexadecane (C16)	67.6	66.4	mg/kg	2		30
Norpristane (1650)	233	251	mg/kg	7		30
n-Heptadecane (C17)	26.4J	27.6J	mg/kg	NC		30
Pristane	44.3	19.3J	mg/kg	NC		30
n-Octadecane (C18)	6030G	6370G	mg/kg	5		30
Phytane	1790G	2580G	mg/kg	36	Q	30
n-Nonadecane (C19)	19.6J	19.2J	mg/kg	NC		30
n-Eicosane (C20)	14.4J	16.9J	mg/kg	NC		30
n-Heneicosane (C21)	21.6J	24.7J	mg/kg	NC		30
n-Docosane (C22)	8.84J	10.2J	mg/kg	NC		30
n-Tricosane (C23)	66.2	69.8	mg/kg	5		30
n-Tetracosane (C24)	10.8J	13.3J	mg/kg	NC		30

Lab Duplicate Analysis
Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Saturated Hydrocarbons by GC-FID - Mansfield Lab Associated sample(s): 01-09,11-12 QC Batch ID: WG1264828-4 QC Sample: L1928037-09 Client ID: 2708-190521-010						
n-Pentacosane (C25)	1020G	1080G	mg/kg	6		30
n-Hexacosane (C26)	32.9J	32.8J	mg/kg	NC		30
n-Heptacosane (C27)	ND	ND	mg/kg	NC		30
n-Octacosane (C28)	ND	ND	mg/kg	NC		30
n-Nonacosane (C29)	582G	585G	mg/kg	1		30
n-Triacontane (C30)	36.5J	50.1	mg/kg	NC		30
n-Hentriacontane (C31)	64.8	66.6	mg/kg	3		30
n-Dotriacontane (C32)	33.5J	33.3J	mg/kg	NC		30
n-Tritriacontane (C33)	ND	ND	mg/kg	NC		30
n-Tetratriacontane (C34)	ND	ND	mg/kg	NC		30
n-Pentatriacontane (C35)	ND	ND	mg/kg	NC		30
n-Hexatriacontane (C36)	ND	ND	mg/kg	NC		30
n-Heptatriacontane (C37)	46.4	43.8	mg/kg	6		30
n-Octatriacontane (C38)	ND	ND	mg/kg	NC		30
n-Nonatriacontane (C39)	ND	ND	mg/kg	NC		30
n-Tetracontane (C40)	ND	ND	mg/kg	NC		30
Total Petroleum Hydrocarbons (C9-C44)	70400	73400	mg/kg	4		30
Total Saturated Hydrocarbons	10500J	11700J	mg/kg	NC		

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
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Lab Duplicate Analysis

Batch Quality Control

Project Name: GASCO HYDROCARBON INVESTIGATIO

Project Number: 000029-02

Lab Number: L1928037

Report Date: 08/07/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Saturated Hydrocarbons by GC-FID - Mansfield Lab Associated sample(s): 01-09,11-12 QC Batch ID: WG1264828-4 QC Sample: L1928037-09 Client ID: 2708-190521-010						

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
ortho-terphenyl	94		96		50-130
d50-Tetracosane	100		101		50-130

Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Serial_No:08071917:12
Lab Number: L1928037
Report Date: 08/07/19

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler **Custody Seal**
A Present/Intact

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1928037-01A	Glass 120ml/4oz unpreserved	A	NA		1.9	Y	Present/Intact		A2-SHC(14),A2-ALKPAH(14),A2-NFF1BIOMARKERS(14)
L1928037-02A	Glass 120ml/4oz unpreserved	A	NA		1.9	Y	Present/Intact		A2-SHC(14),A2-ALKPAH(14),A2-NFF1BIOMARKERS(14)
L1928037-03A	Glass 120ml/4oz unpreserved	A	NA		1.9	Y	Present/Intact		A2-SHC(14),A2-ALKPAH(14),A2-NFF1BIOMARKERS(14)
L1928037-04A	Glass 120ml/4oz unpreserved	A	NA		1.9	Y	Present/Intact		A2-SHC(14),A2-ALKPAH(14),A2-NFF1BIOMARKERS(14)
L1928037-05A	Glass 120ml/4oz unpreserved	A	NA		1.9	Y	Present/Intact		A2-SHC(14),A2-ALKPAH(14),A2-NFF1BIOMARKERS(14)
L1928037-06A	Glass 120ml/4oz unpreserved	A	NA		1.9	Y	Present/Intact		A2-SHC(14),A2-ALKPAH(14),A2-NFF1BIOMARKERS(14)
L1928037-07A	Glass 120ml/4oz unpreserved	A	NA		1.9	Y	Present/Intact		A2-SHC(14),A2-ALKPAH(14),A2-NFF1BIOMARKERS(14)
L1928037-08A	Glass 120ml/4oz unpreserved	A	NA		1.9	Y	Present/Intact		A2-SHC(14),A2-ALKPAH(14),A2-NFF1BIOMARKERS(14)
L1928037-09A	Glass 120ml/4oz unpreserved	A	NA		1.9	Y	Present/Intact		A2-SHC(14),A2-ALKPAH(14),A2-NFF1BIOMARKERS(14)
L1928037-10A	Glass 60mL/2oz unpreserved	A	NA		1.9	Y	Present/Intact		A2-NFF1BIOMARKERS(365),A2-SHC(365),A2-ALKPAH(365)
L1928037-11A	Glass 120ml/4oz unpreserved	A	NA		1.9	Y	Present/Intact		A2-SHC(14),A2-ALKPAH(14),A2-NFF1BIOMARKERS(14)
L1928037-11B	Glass 120ml/4oz unpreserved	A	NA		1.9	Y	Present/Intact		A2-SHC(14),A2-ALKPAH(14),A2-NFF1BIOMARKERS(14)
L1928037-12A	Glass 120ml/4oz unpreserved	A	NA		1.9	Y	Present/Intact		A2-SHC(14),A2-ALKPAH(14),A2-NFF1BIOMARKERS(14)

*Values in parentheses indicate holding time in days



Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: DU Report with 'J' Qualifiers



Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



Project Name: GASCO HYDROCARBON INVESTIGATIO
Project Number: 000029-02

Lab Number: L1928037
Report Date: 08/07/19

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



ANS BIO F1

Quality Control Sample Summary Report

Data Path.....: O:\Forensics\Data\PAH9\2019\AUG19\AUG05\
 Data File.....: A908051904.D
 Data name.....: WG1266127-6,0.10144
 Miscellaneous.....: WG1266127

Method Path.....: O:\Forensics\Data\PAH9\2019\AUG19\AUG05\
 Method File.....: BIO9051919.M
 Method Title.....: Decalins & Alkylated PAH's
 Last Update.....: Mon May 20 10:00:03 2019

QC Name.....: ANS BIO F1
 Final Volume.....: 1.00
 Sample Size.....: 10.1440
 Dilution.....: 1.00000

No	Compound	Type	mg/Kg	Spike	Rec Q	Low	High
2	Hopane (T19)	A1	217.535	166.000	131	65	135
3	17a(H),21B(H)-hopane - C	A2	217.535	166.000	131	65	135
4	C23 Tricyclic Terpane (T	A2	89.587	65.300	137 #	65	135
5	C24 Tricyclic Terpane (T	A2	51.137	40.900	125	65	135
6	C25 Tricyclic Terpane (T	A2	50.502	37.900	133	65	135
7	C24 Tetracyclic Terpane	A2	17.905	13.800	130	65	135
8	C26 Tricyclic Terpane-22	A2	17.721	13.700	129	65	135
9	C26 Tricyclic Terpane-22	A2	17.254	13.800	125	65	135
10	C28 Tricyclic Terpane-22	A2	20.211	14.900	136 #	65	135
11	C28 Tricyclic Terpane-22	A2	22.394	17.300	129	65	135
12	C29 Tricyclic Terpane-22	A2	24.895	20.000	124	65	135
13	C29 Tricyclic Terpane-22	A2	26.833	19.800	136 #	65	135
14	18a-22,29,30-Trisnorneoh	A2	35.794	27.800	129	65	135
15	C30 Tricyclic Terpane-22	A2	19.849	16.500	120	65	135
16	C30 Tricyclic Terpane-22	A2	17.309	14.200	122	65	135
17	17a(H)-22,29,30-Trisnorh	A2	45.289	35.200	129	65	135
18	17a/b,21b/a 28,30-Bisnor	A2	8.777	8.700	101	65	135
19	17a(H),21b(H)-25-Norhopa	A2	9.418	8.900	106	65	135
20	30-Norhopane (T15)	A2	121.588	95.800	127	65	135
21	18a(H)-30-Norneohopane-C	A2	30.519	25.500	120	65	135
22	17a(H)-Diahopane (X)	A2	15.159	13.400	113	65	135
23	30-Normoretane (T17)	A2	14.257	10.500	136 #	65	135
25	Moretane (T20)	A2	18.796	16.300	115	65	135
26	30-Homohopane-22S (T21)	A2	86.925	69.900	124	65	135
27	30-Homohopane-22R (T22)	A2	73.258	58.800	125	65	135
29	30,31-Bishomohopane-22S	A2	62.175	50.700	123	65	135
30	30,31-Bishomohopane-22R	A2	44.582	36.900	121	65	135
31	30,31-Trishomohopane-22S	A2	47.962	39.900	120	65	135
32	30,31-Trishomohopane-22R	A2	31.238	26.200	119	65	135
33	Tetrakishomohopane-22S (	A2	36.445	28.300	129	65	135
34	Tetrakishomohopane-22R (	A2	24.271	20.000	121	65	135
35	Pentakishomohopane-22S (	A2	33.493	29.300	114	65	135
36	Pentakishomohopane-22R (	A2	27.172	22.000	124	65	135
38	13b(H),17a(H)-20S-Diacho	A2	49.852	45.000	111	65	135
39	13b(H),17a(H)-20R-Diacho	A2	29.029	26.400	110	65	135
40	13b,17a-20S-Methyldiacho	A2	27.454	25.000	110	65	135
41	14a,17a-20S-Chol/13b,17a	A2	67.633	64.400	105	65	135
42	14a,17a-20R-Chol/13b,17a	A2	77.893	71.900	108	65	135
43	Unknown Sterane (S18)	A2	20.344	20.200	101	65	135
44	13a,17b-20S-Ethyldiacho	A2	3.638	3.400	107	65	135
45	14a,17a-20S-Methylcholes	A2	32.442	30.600	106	65	135
46	14a,17a-20R-Methylcholes	A2	33.332	31.200	107	65	135

Page 1

		ANS	BIO	F1			
47	14a(H),17a(H)-20S-Ethylc	A2	34.037	29.900	114	65	135
48	14a(H),17a(H)-20R-Ethylc	A2	44.473	40.600	110	65	135
49	14b(H),17b(H)-20R-Choles	A2	43.964	41.700	105	65	135
50	14b(H),17b(H)-20S-Choles	A2	46.302	42.100	110	65	135
51	14b,17b-20R-Methylcholes	A2	47.994	43.500	110	65	135
52	14b,17b-20S-Methylcholes	A2	57.725	52.600	110	65	135
53	14b(H),17b(H)-20R-Ethylc	A2	62.420	57.700	108	65	135
54	14b(H),17b(H)-20S-Ethylc	A2	43.240	38.700	112	65	135

Surrogate Results

No	Compound	Type	ng	Spike	Rec Q	Low	High
37	5B(H)Cholane - Surr	SA1	1060.308	1000.000	106	50	130

Quant File: \BIO9051919.RES

Printed: 08/07/19

Page: 1

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

SUBCONTRACT ORDER

Apex Laboratories

A9F0691

L1928037 W 8

SENDING LABORATORY:

Apex Laboratories
6700 S.W. Sandburg Street
Tigard, OR 97223
Phone: (503) 718-2323
Fax: (503) 718-0333
Project Manager: Darwin Thomas

RECEIVING LABORATORY:

Alpha Analytical, INC
320 Forbes Boulevard
Mansfield, MA 02048
Phone :(508) 822-9300
Fax:

Sample Name: 2708-190528-015P **Solid** **Sampled: 05/28/19 10:55** **Subsampled from A9E0903-01 (A9F0691-01)**

Analysis	Due	Expires	Comments
Relinquish Samples	06/20/19 17:00	05/28/19 10:55	
<i>Containers Supplied:</i> (A)4 oz Glass Jar			

Sample Name: 2708-190528-015T **Solid** **Sampled: 05/28/19 10:55** **Subsampled from A9E0903-01 (A9F0691-02)**

Analysis	Due	Expires	Comments
Relinquish Samples	06/20/19 17:00	05/28/19 10:55	
<i>Containers Supplied:</i> (A)4 oz Glass Jar			

Sample Name: 2708-190928-016 **Solid** **Sampled: 05/28/19 11:00** **Subsampled from A9E0903-02 (A9F0691-03)**

Analysis	Due	Expires	Comments
Relinquish Samples	06/20/19 17:00	05/28/19 11:00	
<i>Containers Supplied:</i> (A)4 oz Glass Jar			

Sample Name: 2708-190513-002 **Solid** **Sampled: 05/13/19 16:00** **Subsampled from A9E0508-02 (A9F0691-04)**

Analysis	Due	Expires	Comments
Relinquish Samples	06/20/19 17:00	05/13/19 16:00	
<i>Containers Supplied:</i> (A)4 oz Glass Jar			

All data/invoicing to go to Anchor QEA c/o Jessica Gorn

Released By: [Signature] Date: 6/24/19 Received By: [Signature] Date: 6/26/19 12:47
 Released By: UPS (Shipper) Date: Received By: Date:

SUBCONTRACT ORDER

Apex Laboratories

A9F0691

L192803

WJ 8

Subsampled from A9E0508-03
Sample Name: 2708-190513-003 Solid Sampled: 05/13/19 16:05 (A9F0691-05)

Analysis Due Expires Comments
Relinquish Samples 06/20/19 17:00 05/13/19 16:05
Containers Supplied:
(A)4 oz Glass Jar

Subsampled from A9E0677-01
Sample Name: 2708-190520-006 Solid Sampled: 05/20/19 15:00 (A9F0691-06)

Analysis Due Expires Comments
Relinquish Samples 06/20/19 17:00 05/20/19 15:00
Containers Supplied:
(A)4 oz Glass Jar

Subsampled from A9E0832-01
Sample Name: 2708-190523-012 Solid Sampled: 05/23/19 12:50 (A9F0691-07)

Analysis Due Expires Comments
Relinquish Samples 06/20/19 17:00 05/23/19 12:50
Containers Supplied:
(A)4 oz Glass Jar

Subsampled from A9E0723-03
Sample Name: 2708-190521-009 Solid Sampled: 05/21/19 11:55 (A9F0691-08)

Analysis Due Expires Comments
Relinquish Samples 06/20/19 17:00 05/21/19 11:55
Containers Supplied:
(A)4 oz Glass Jar

Subsampled from A9E0723-04
Sample Name: 2708-190521-010 Solid Sampled: 05/21/19 15:30 (A9F0691-09)

Analysis Due Expires Comments
Relinquish Samples 06/20/19 17:00 05/21/19 15:30
Containers Supplied:
(A)4 oz Glass Jar

Subsampled from A9F0287-01
Sample Name: 2708-190606-oil Oil Sampled: 06/06/19 14:00 (A9F0691-10)

Analysis Due Expires Comments
Relinquish Samples 06/20/19 17:00 06/06/19 14:00
Containers Supplied:
(A)4 oz Glass Jar

All data/invoicing to go to Anchor Q&A c/o Jessica Goun

Shanhead
Released By

6/24/19
Date

UPS (Shipper)

Received By

Date

Kw... - AA

6/20/19 12:47
Date

Released By

Date

Received By

Date

L192803

W3 (8)

SUBCONTRACT ORDER

Apex Laboratories

A9F0691

Sample Name: 2708-190514-004	Solid	Sampled: 05/14/19 15:00	Subsampled from A9E0508-01 (A9F0691-11)
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Analysis	Due	Expires	Comments
Relinquish Samples	06/20/19 17:00	05/14/19 15:00	
<i>Containers Supplied:</i>			
(A)4 oz Glass Jar			
(B)4 oz Glass Jar			

Sample Name: 2708-190520-1-006	Solid	Sampled: 05/20/19 15:00	Subsampled from A9E0677-01 (A9F0691-12)
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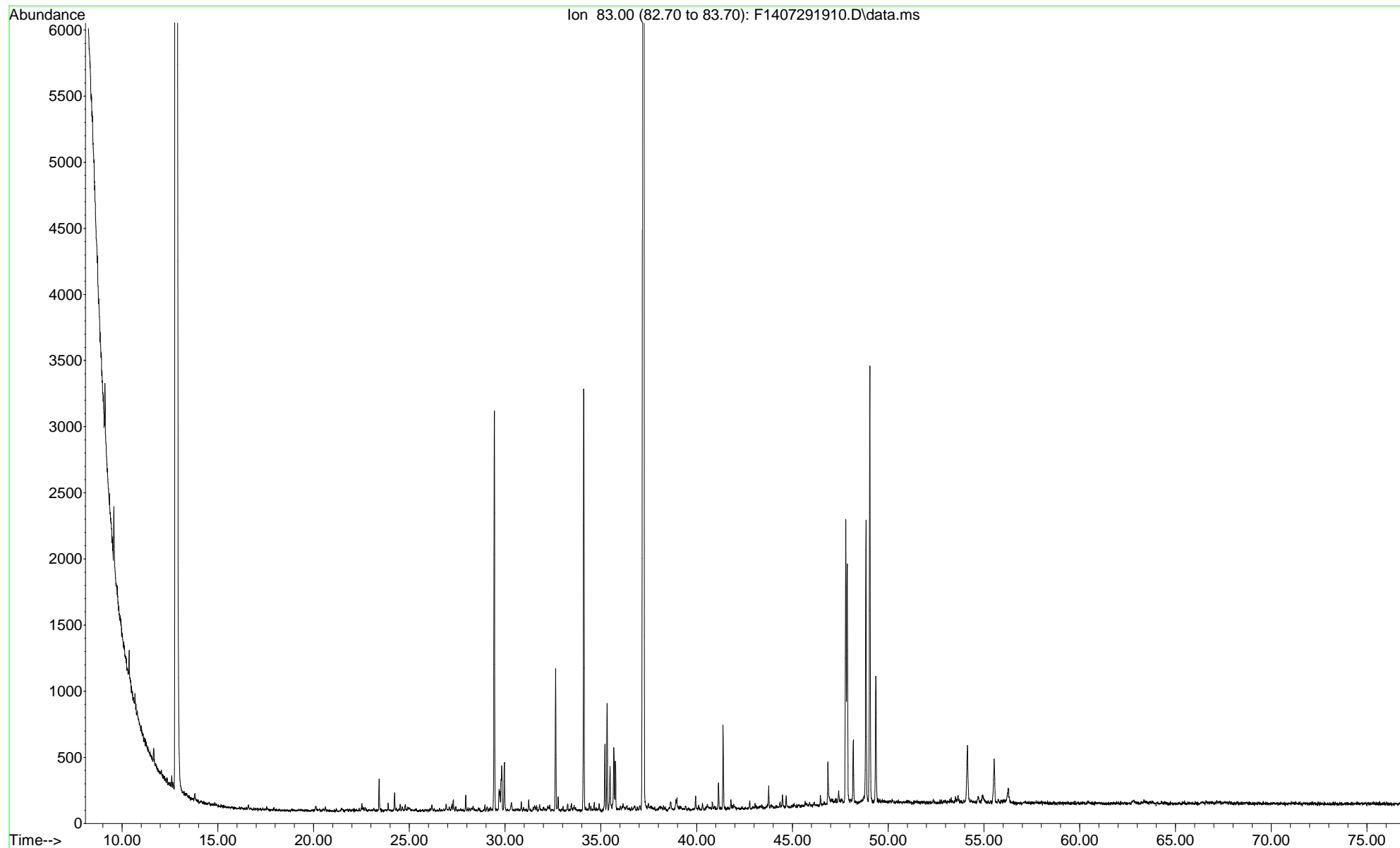
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<i>Containers Supplied:</i>			
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All data/invoicing to go to Anchor QEA c/o Jessica Goun

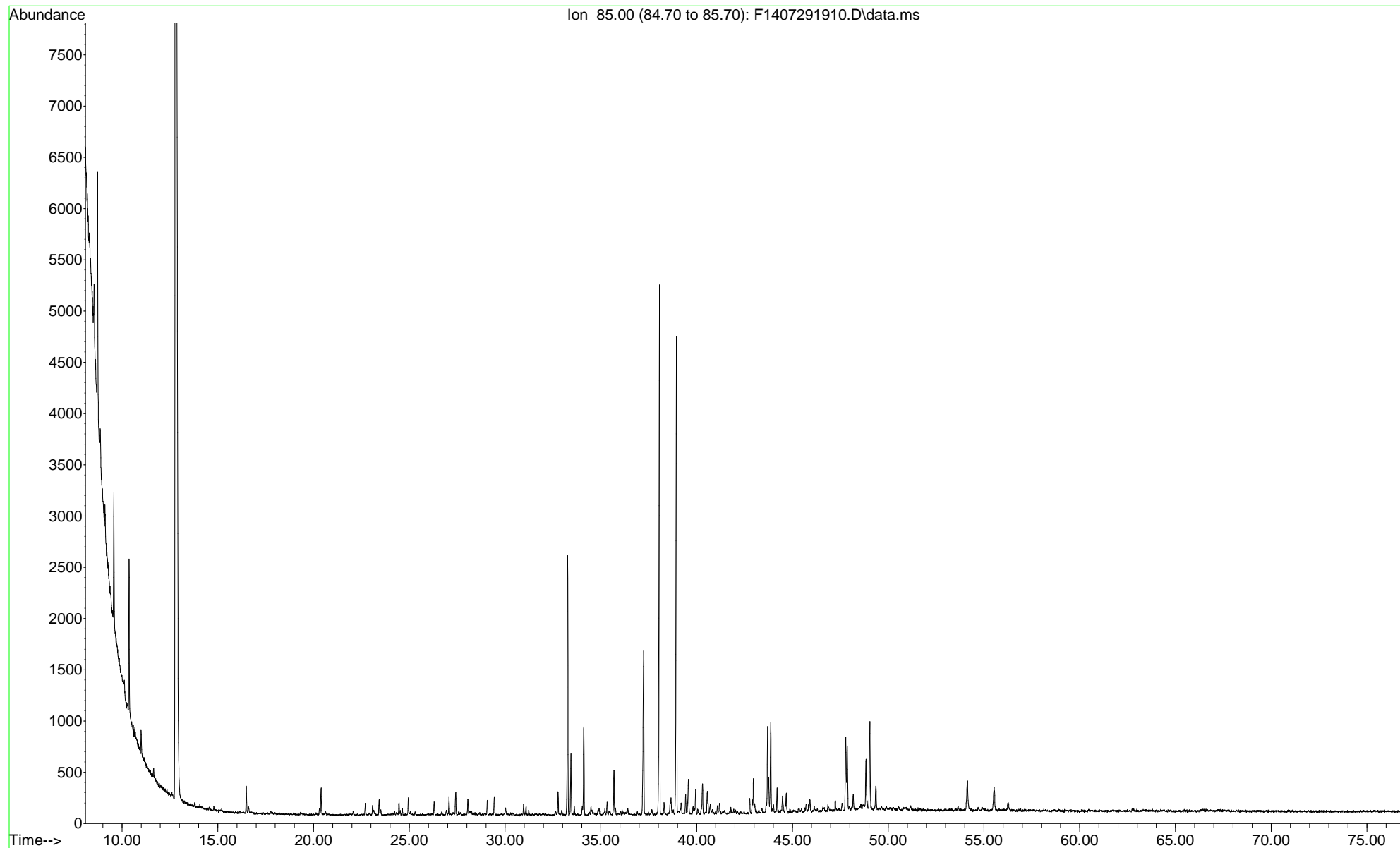
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Ion Chromatograms

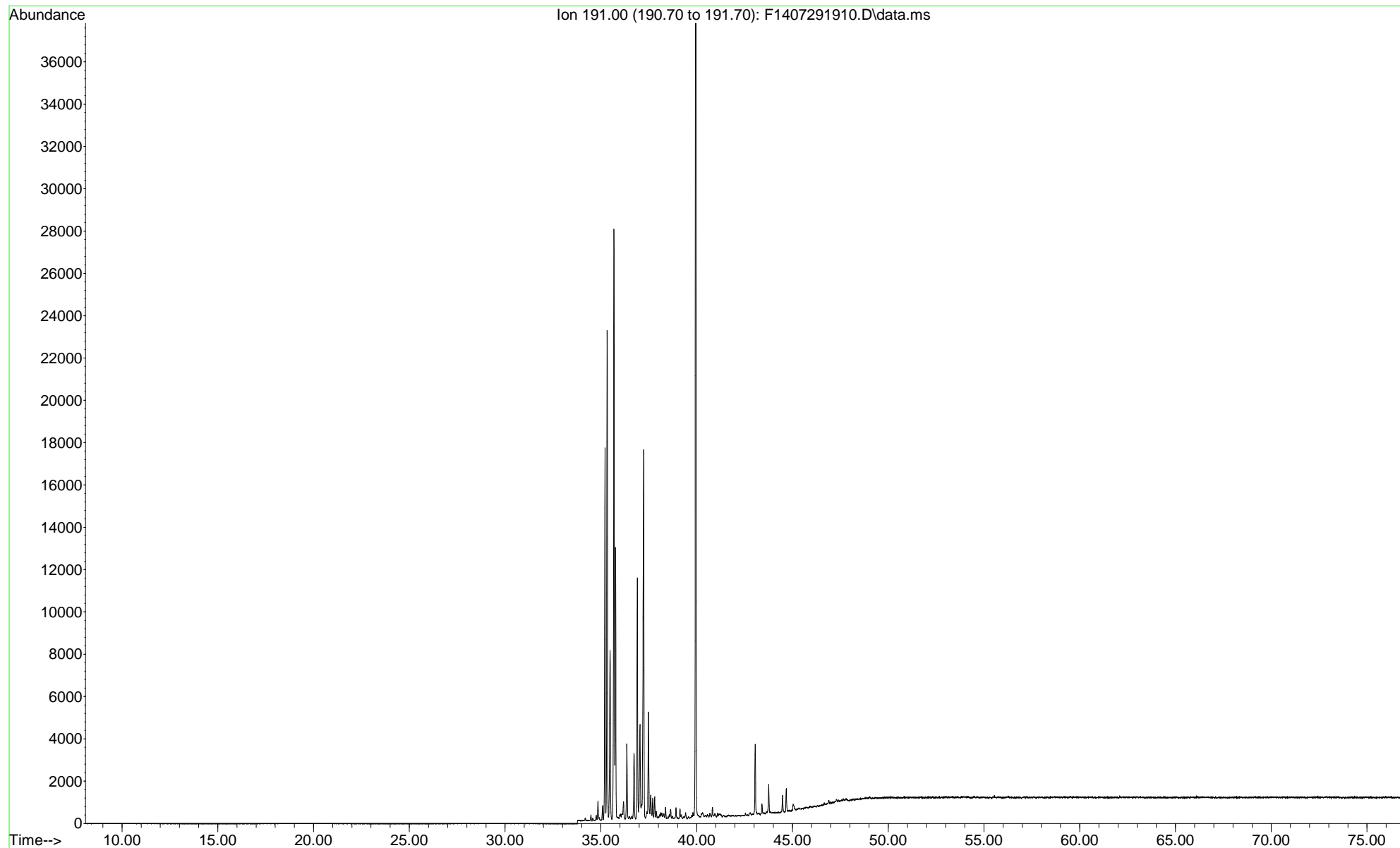
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Vial Number: 9



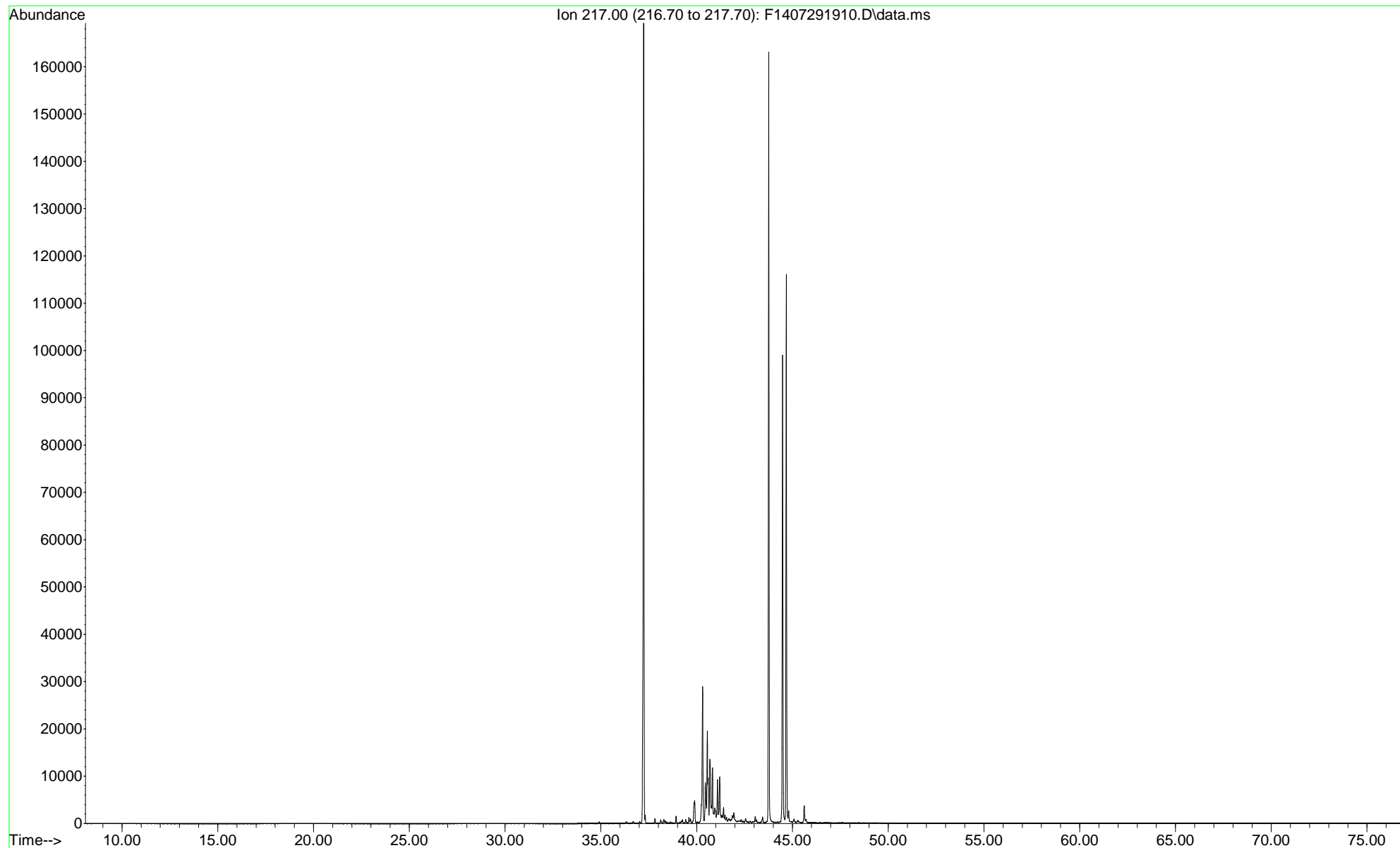
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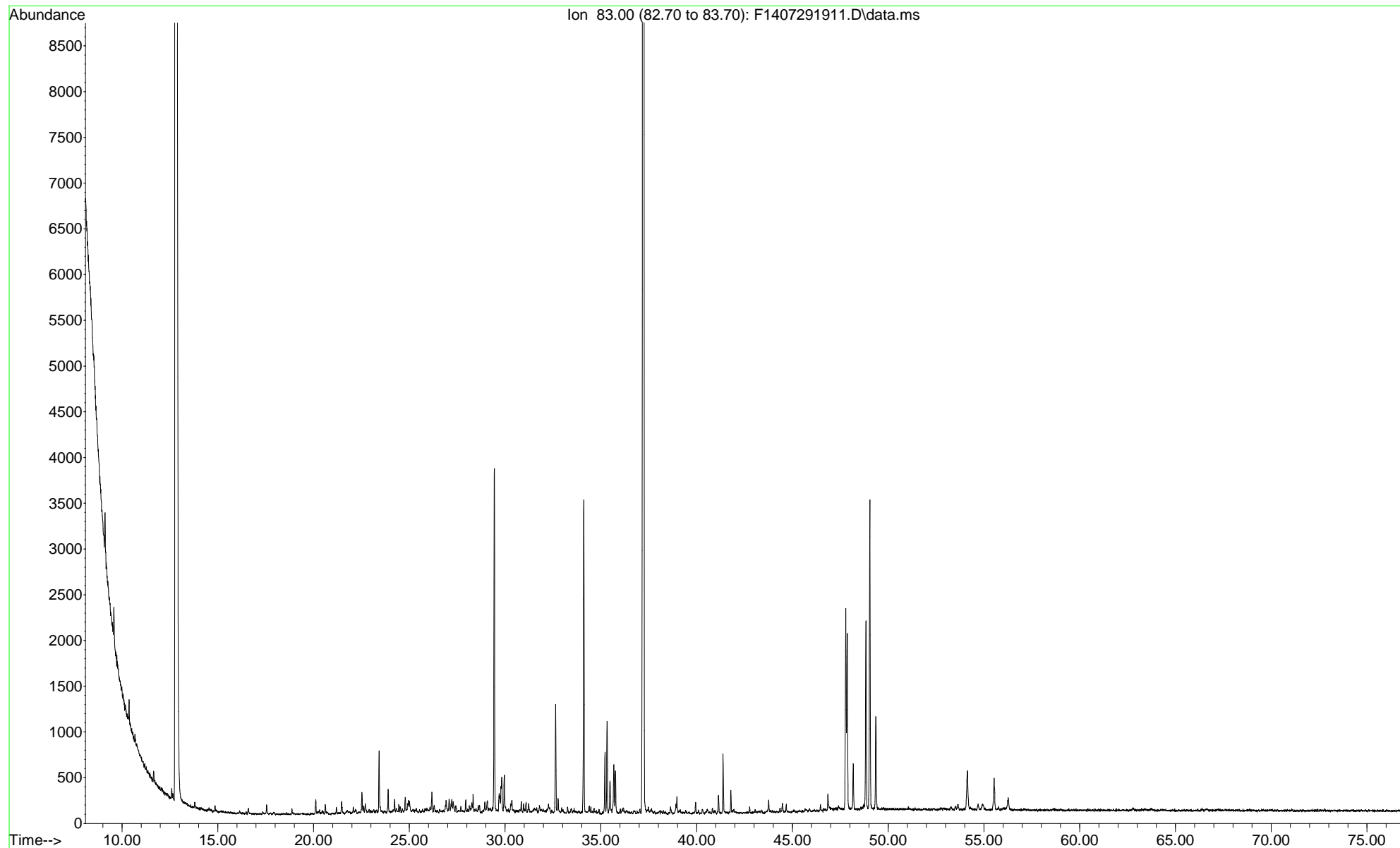
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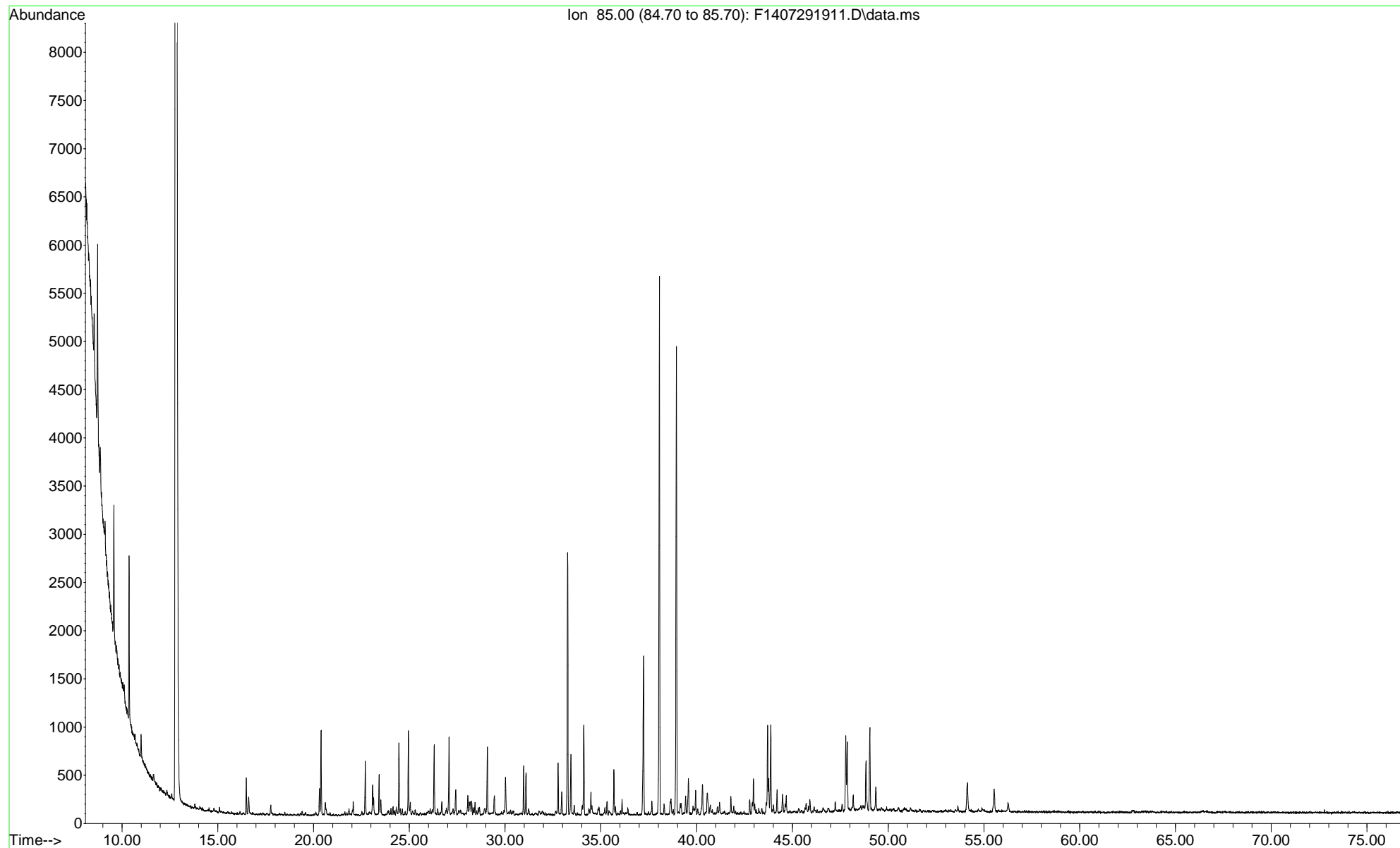
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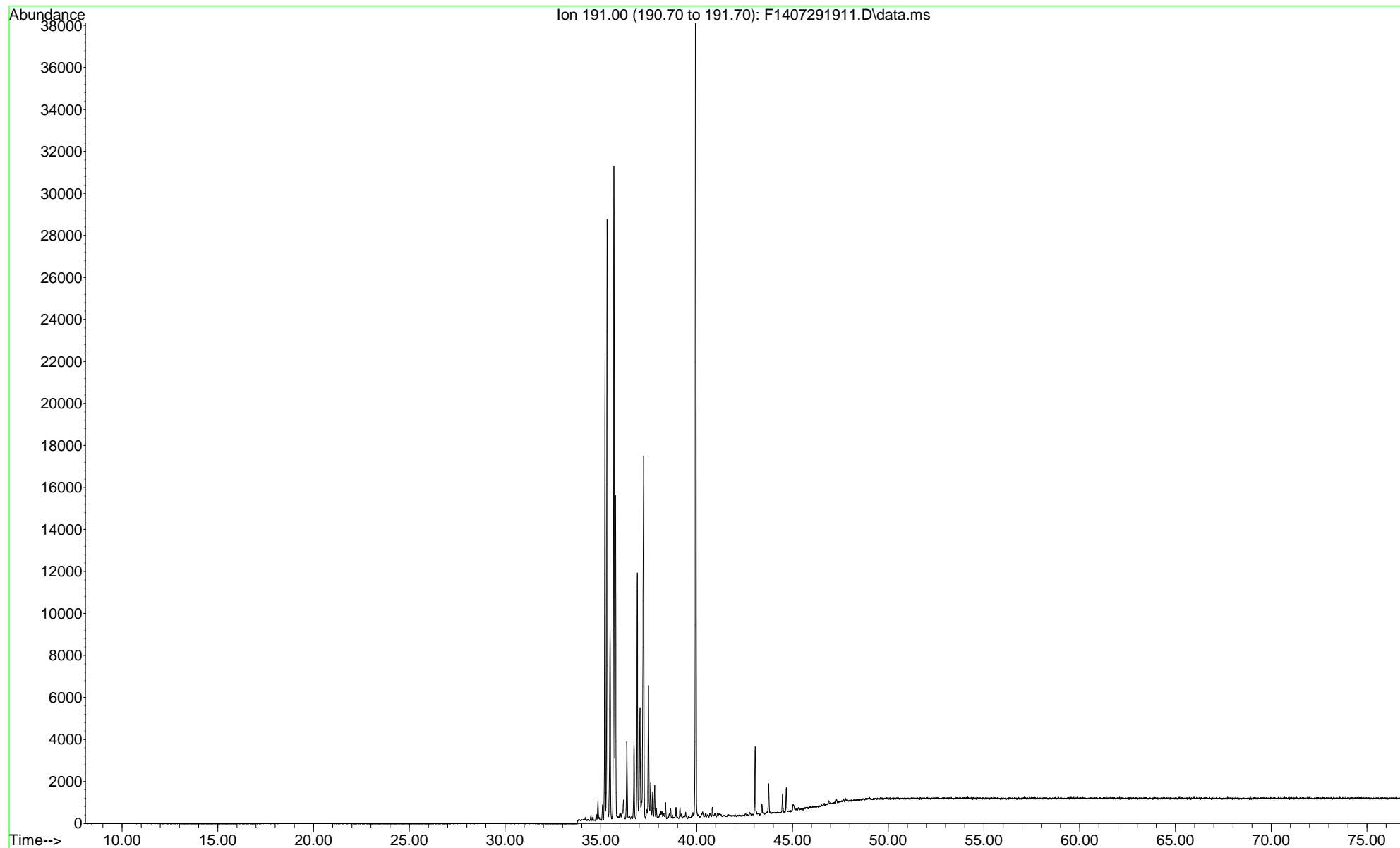
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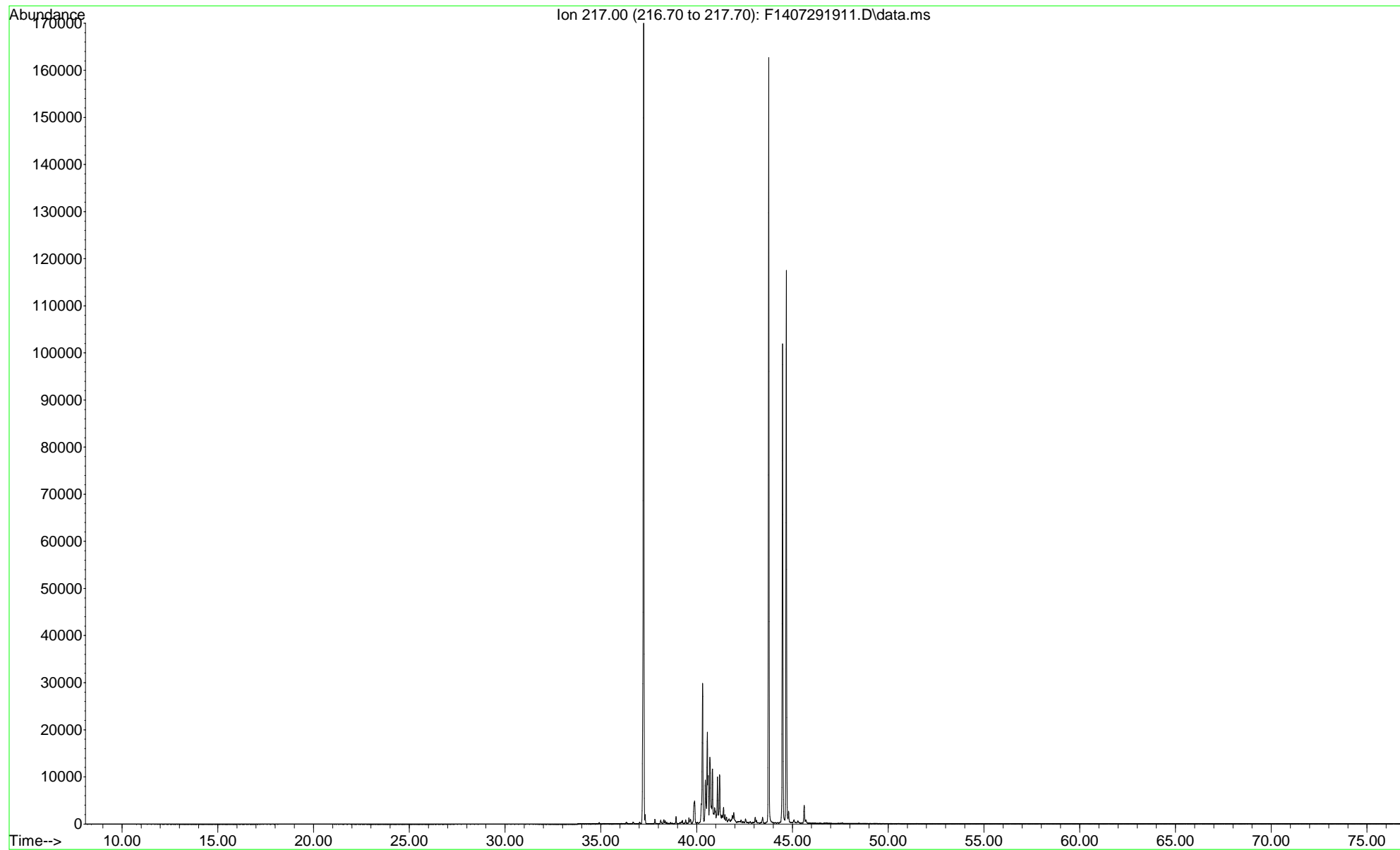
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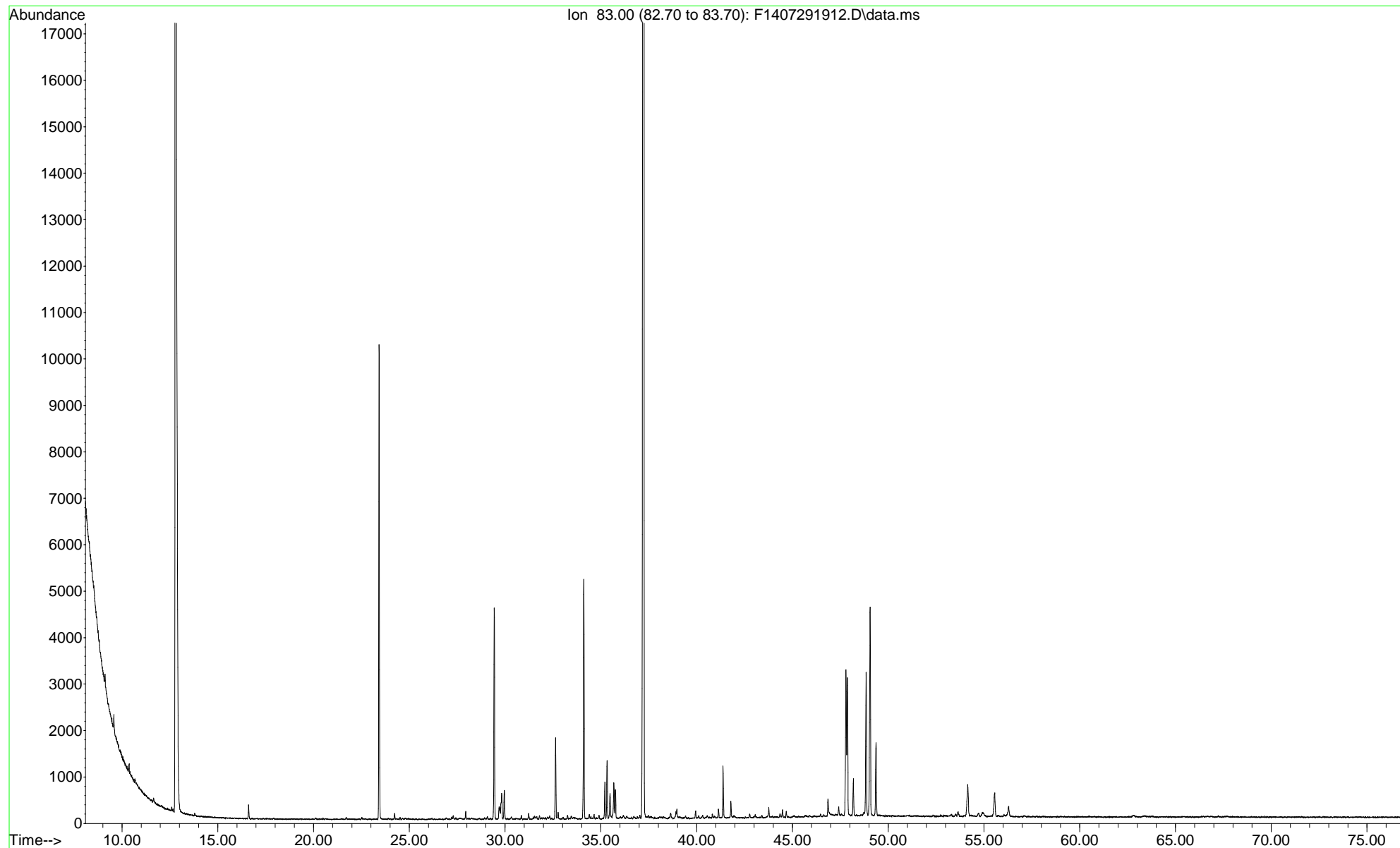
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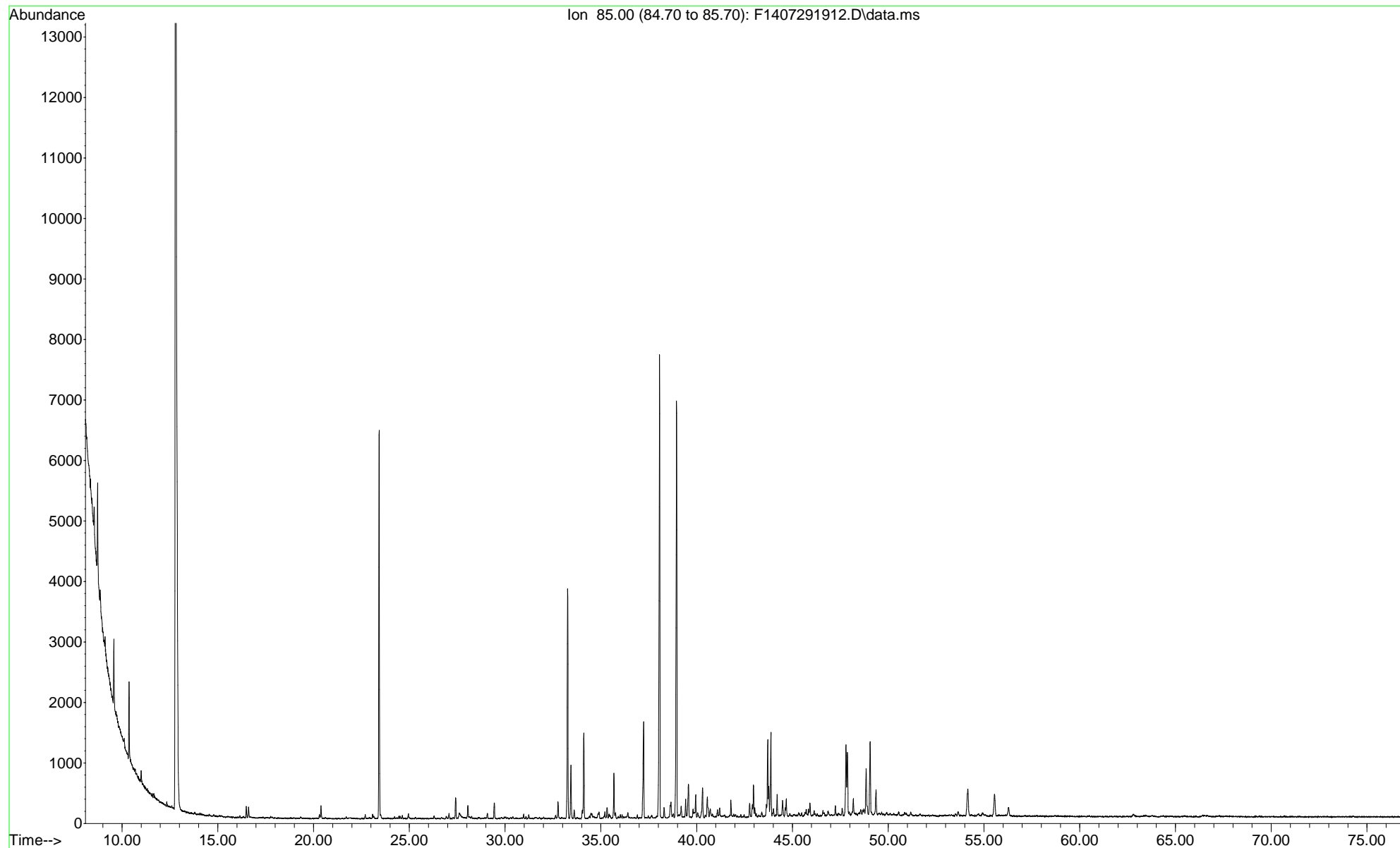
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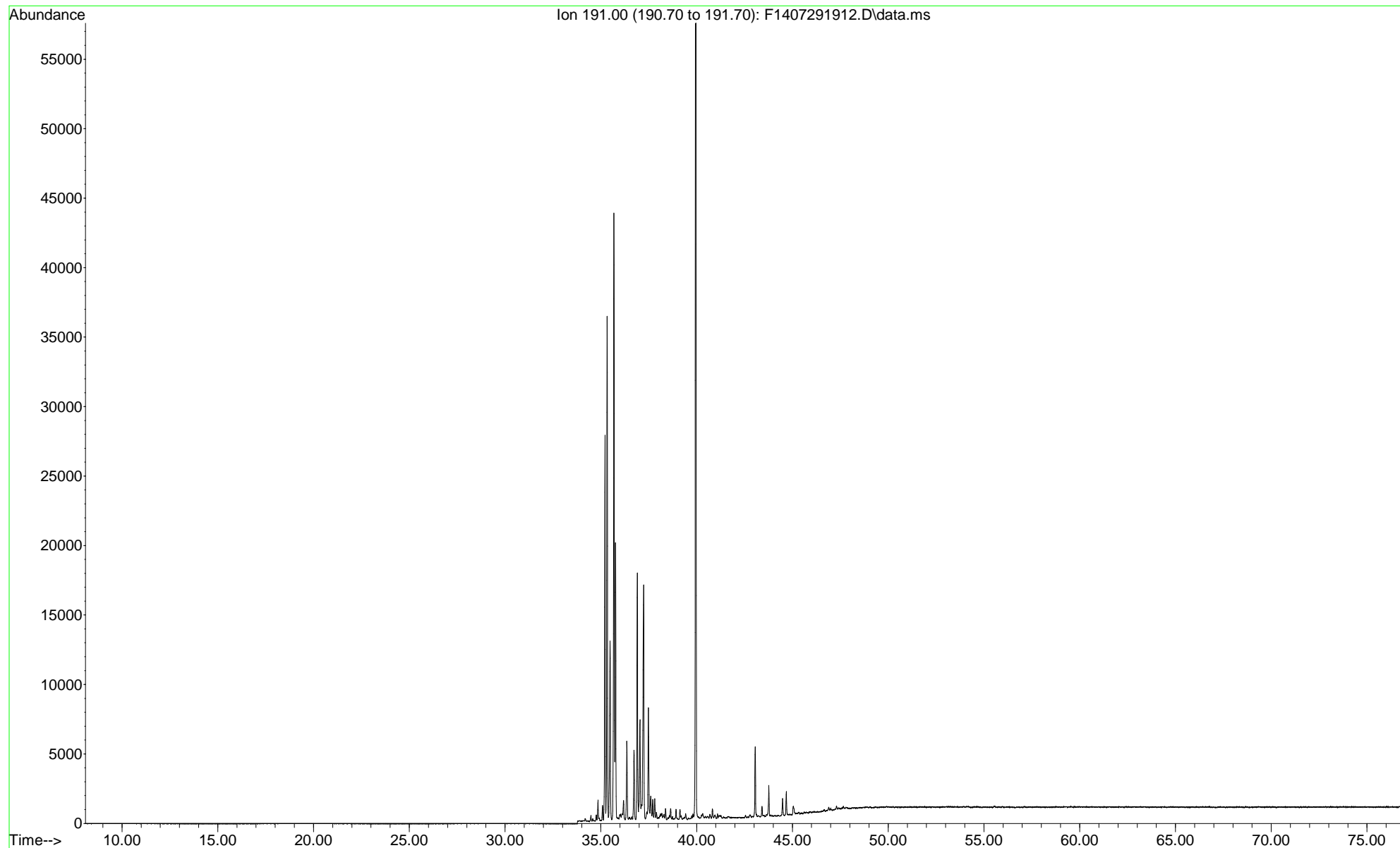
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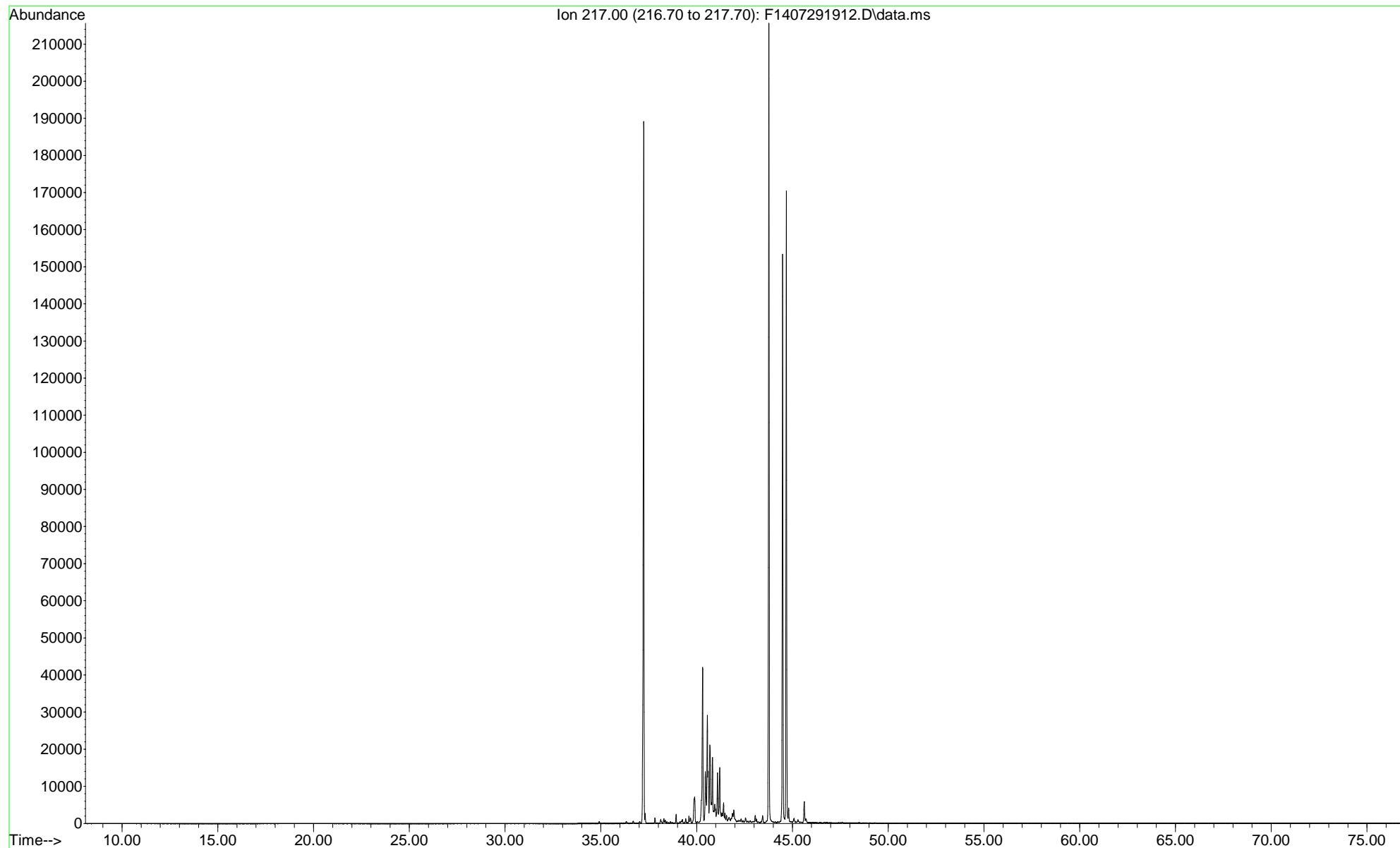
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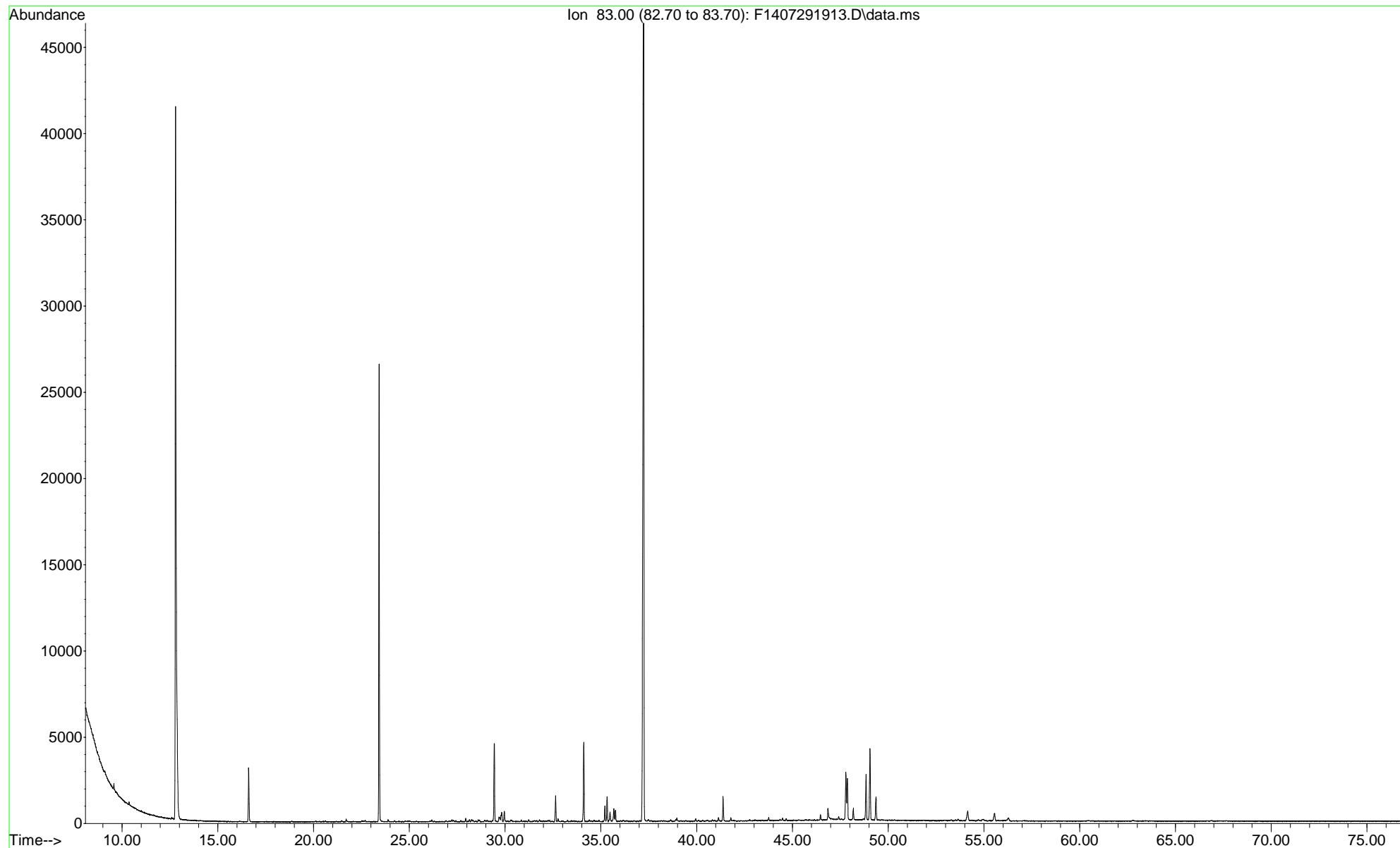
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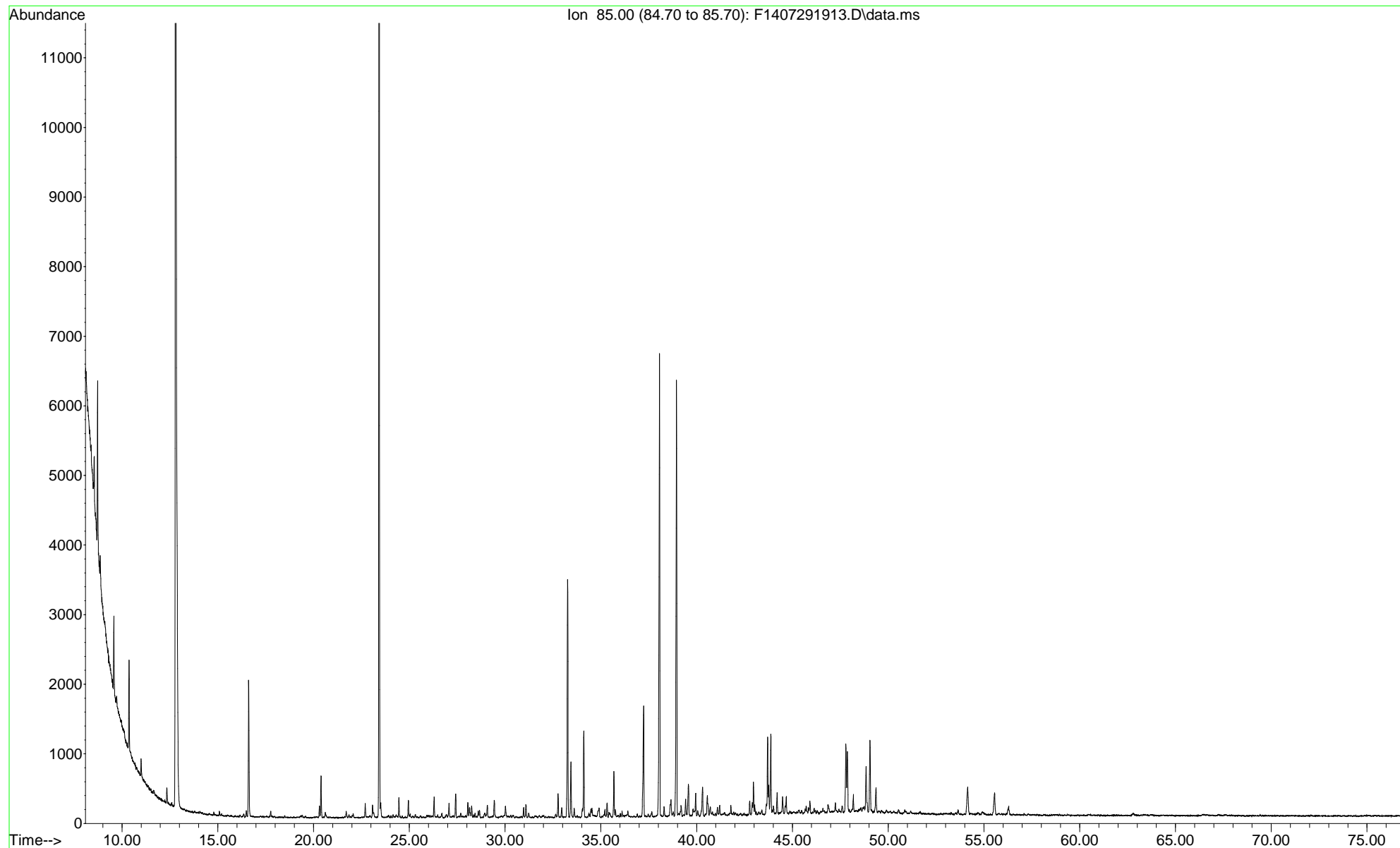
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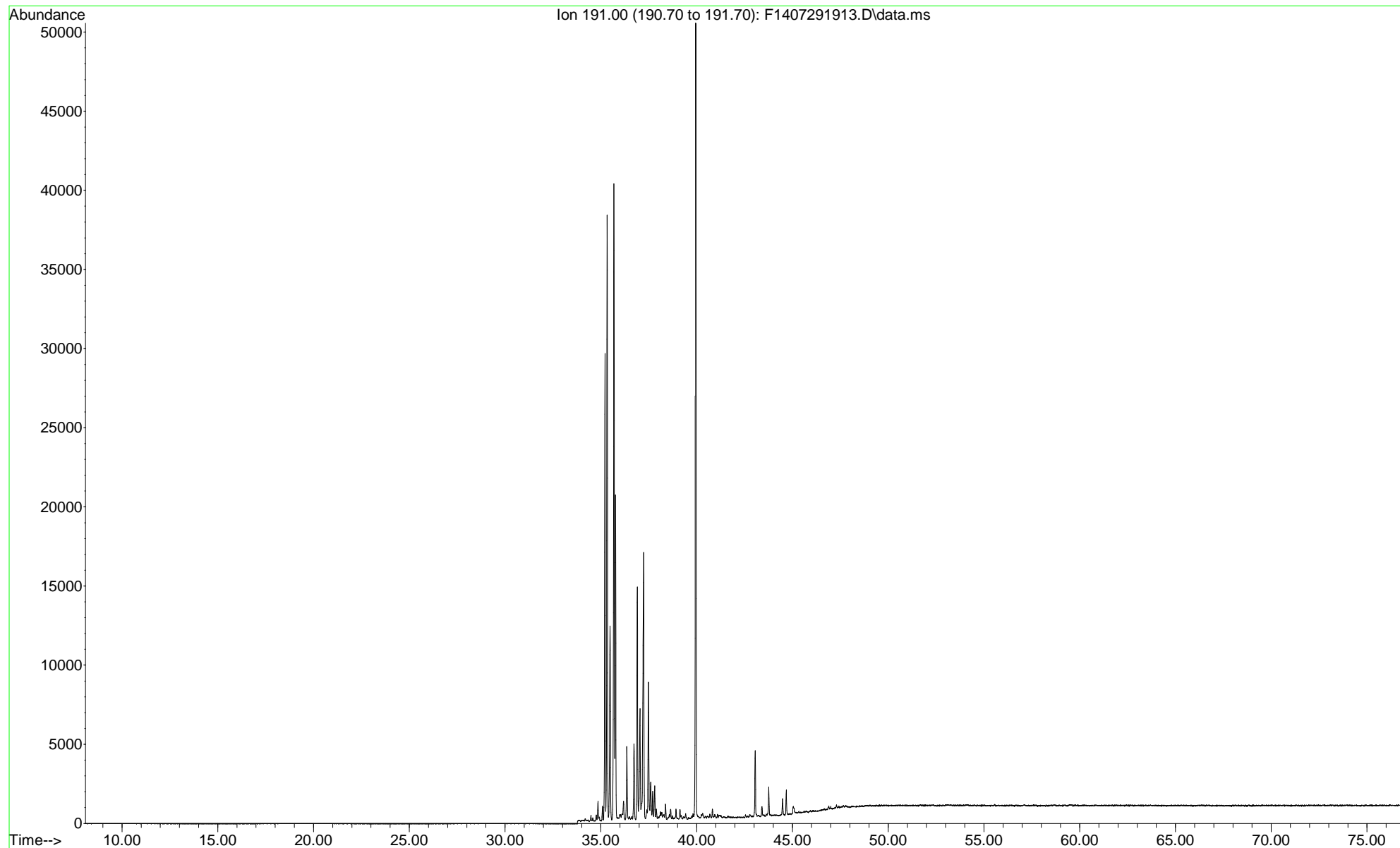
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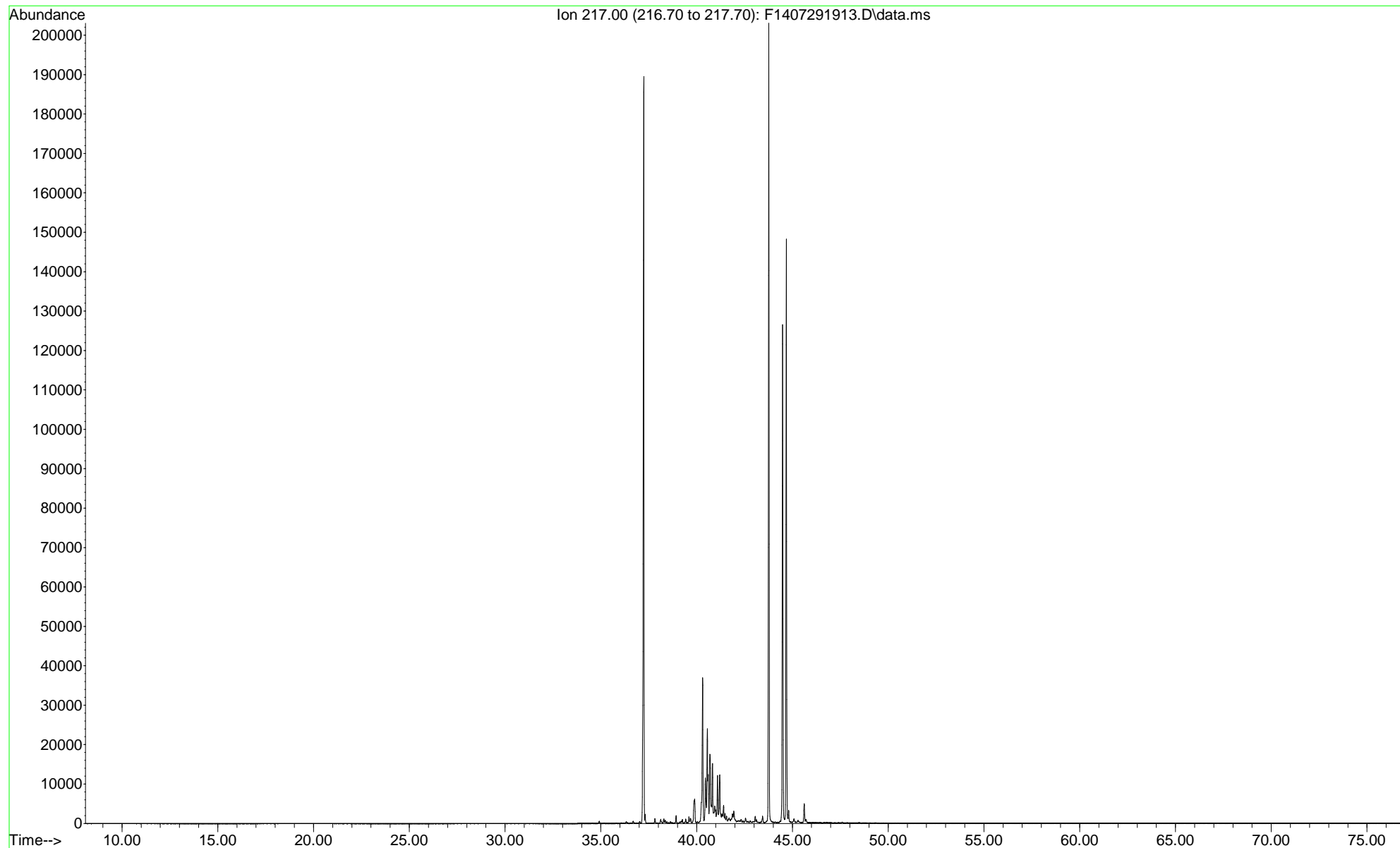
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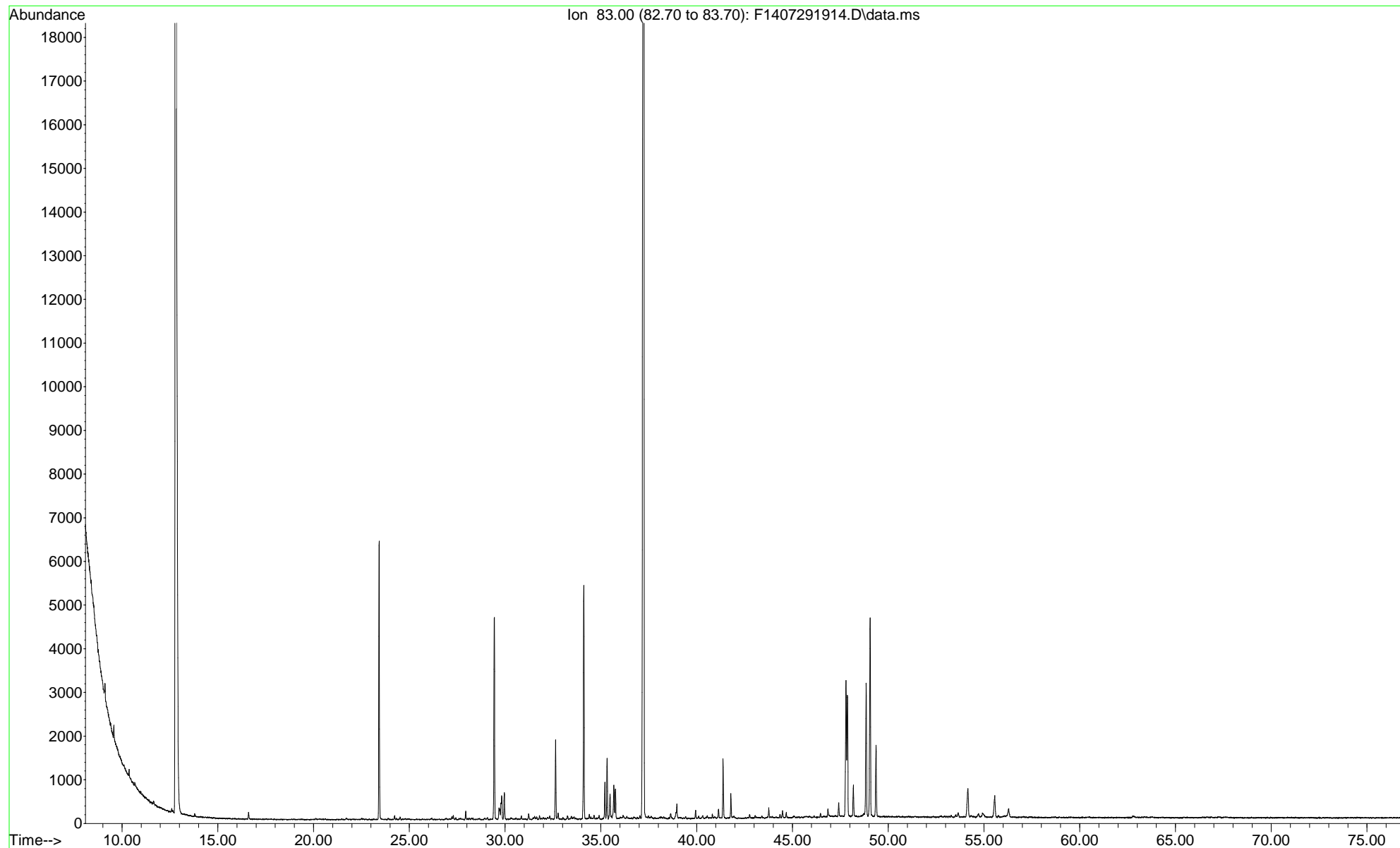
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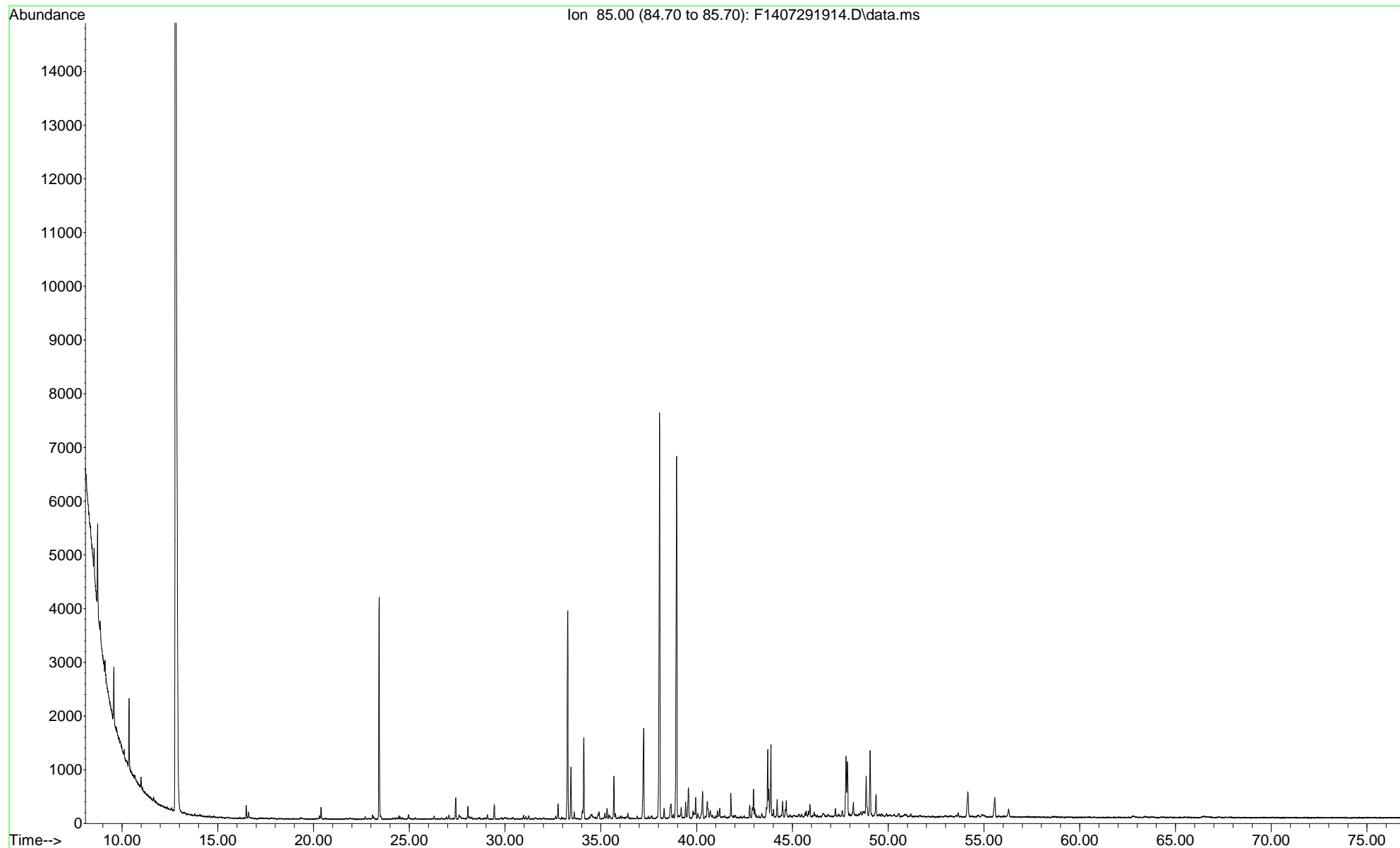
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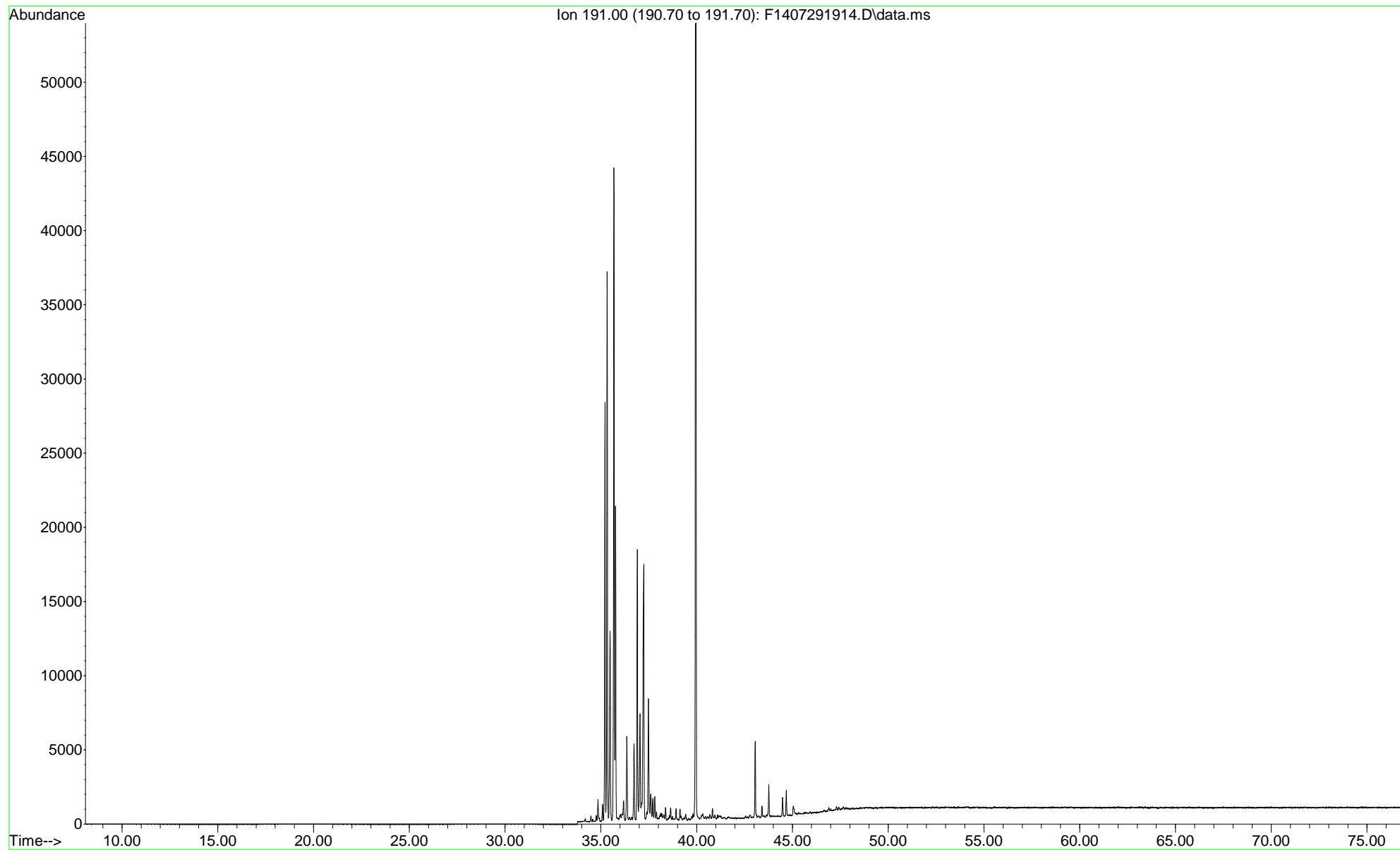
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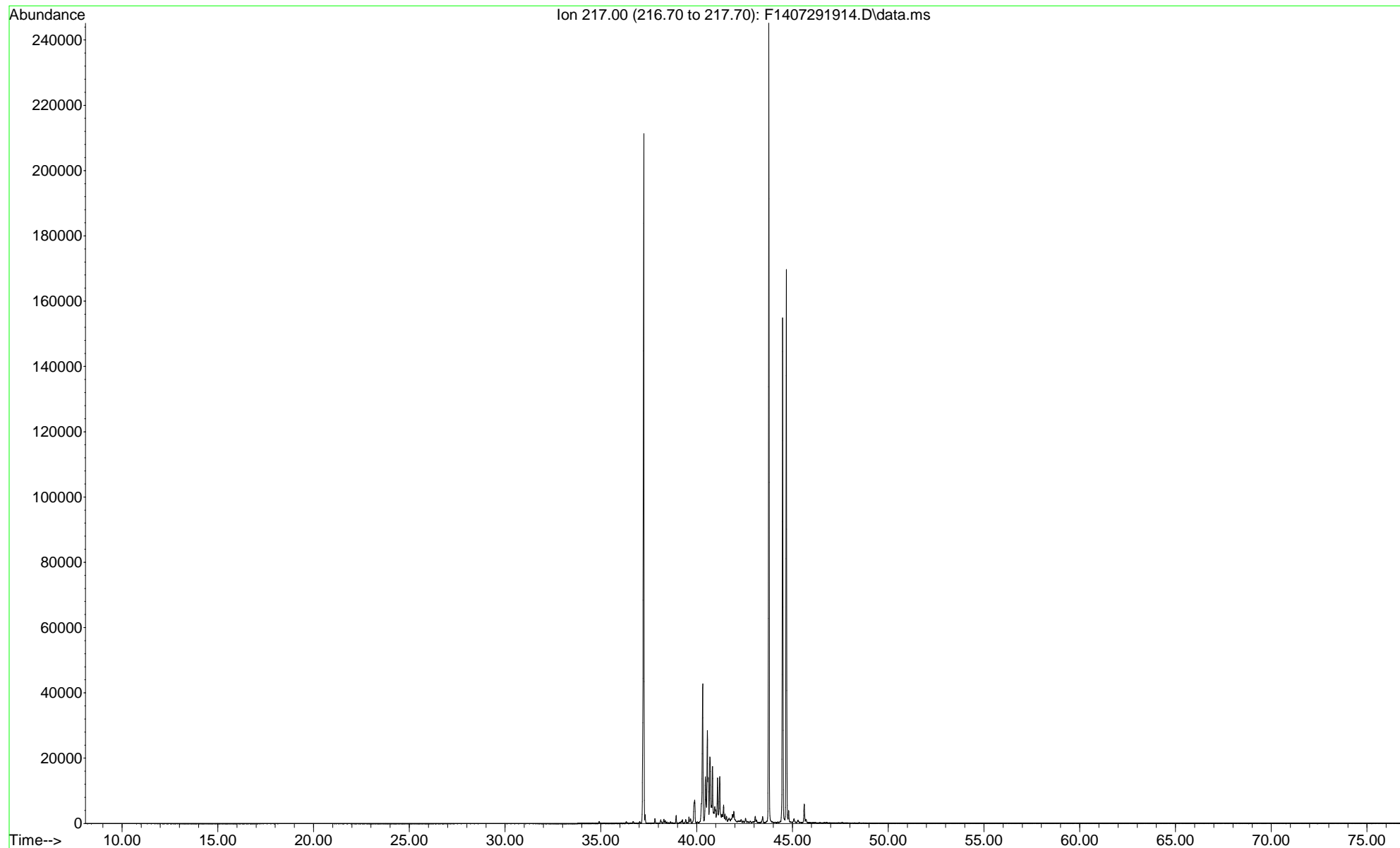
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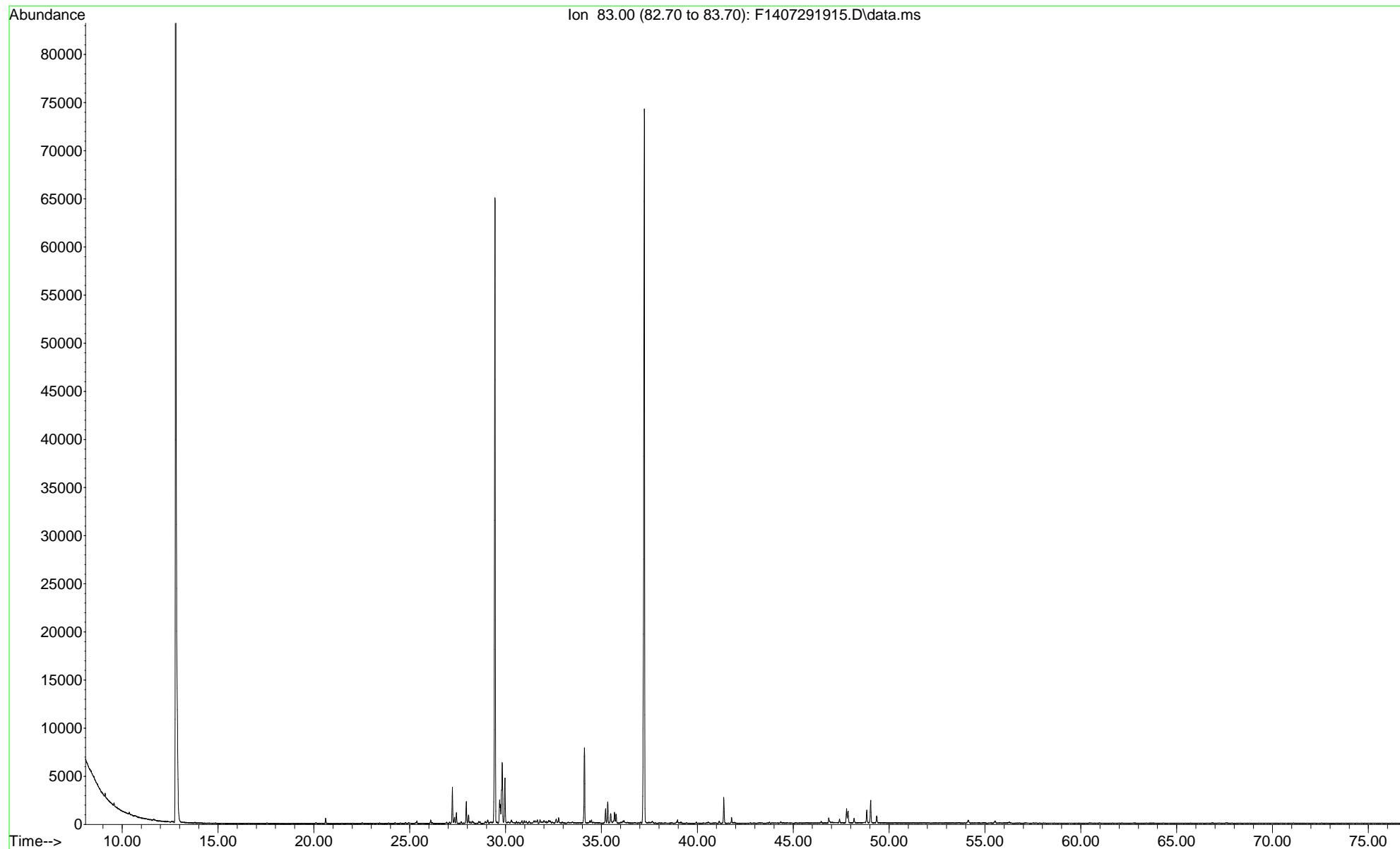
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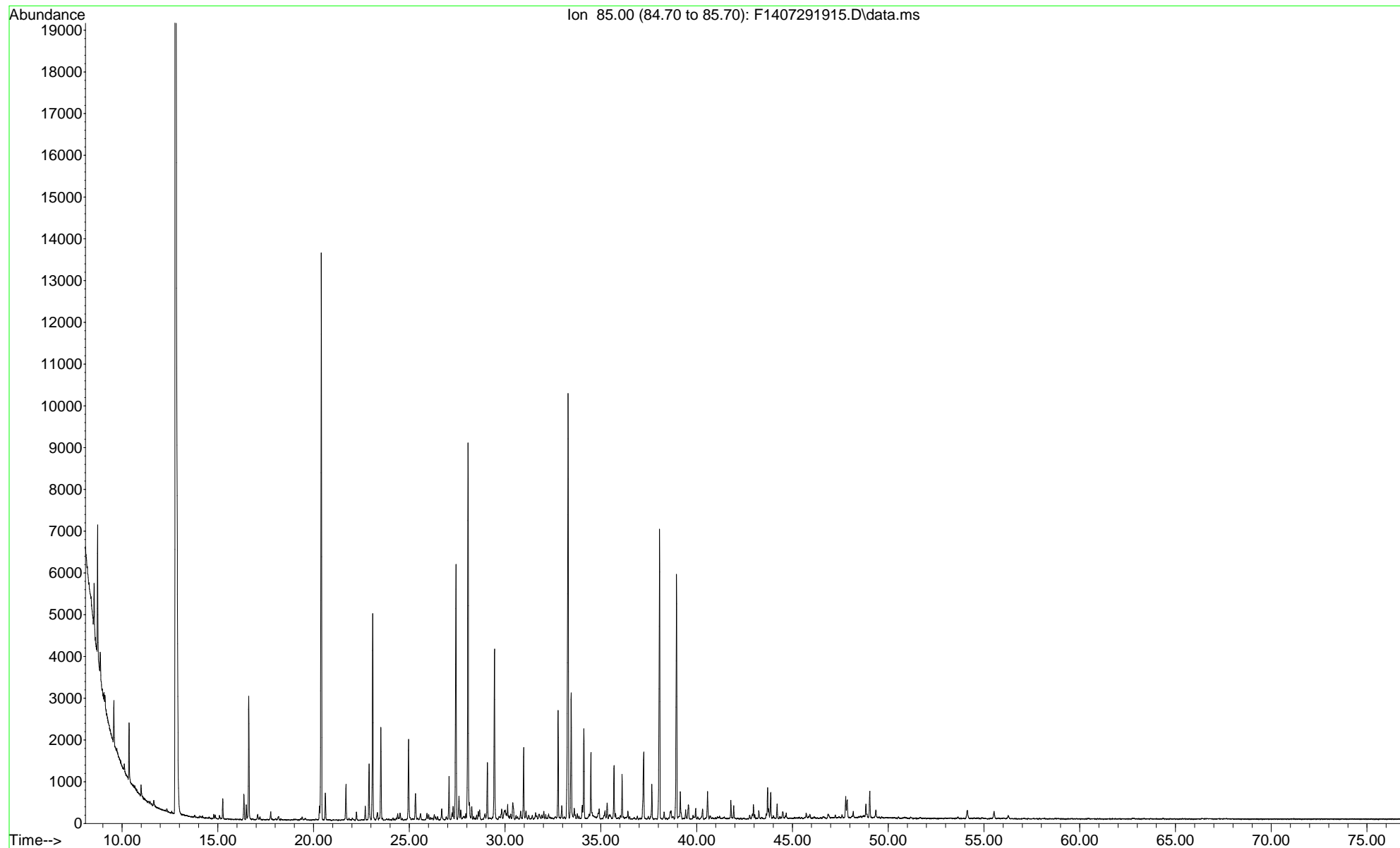
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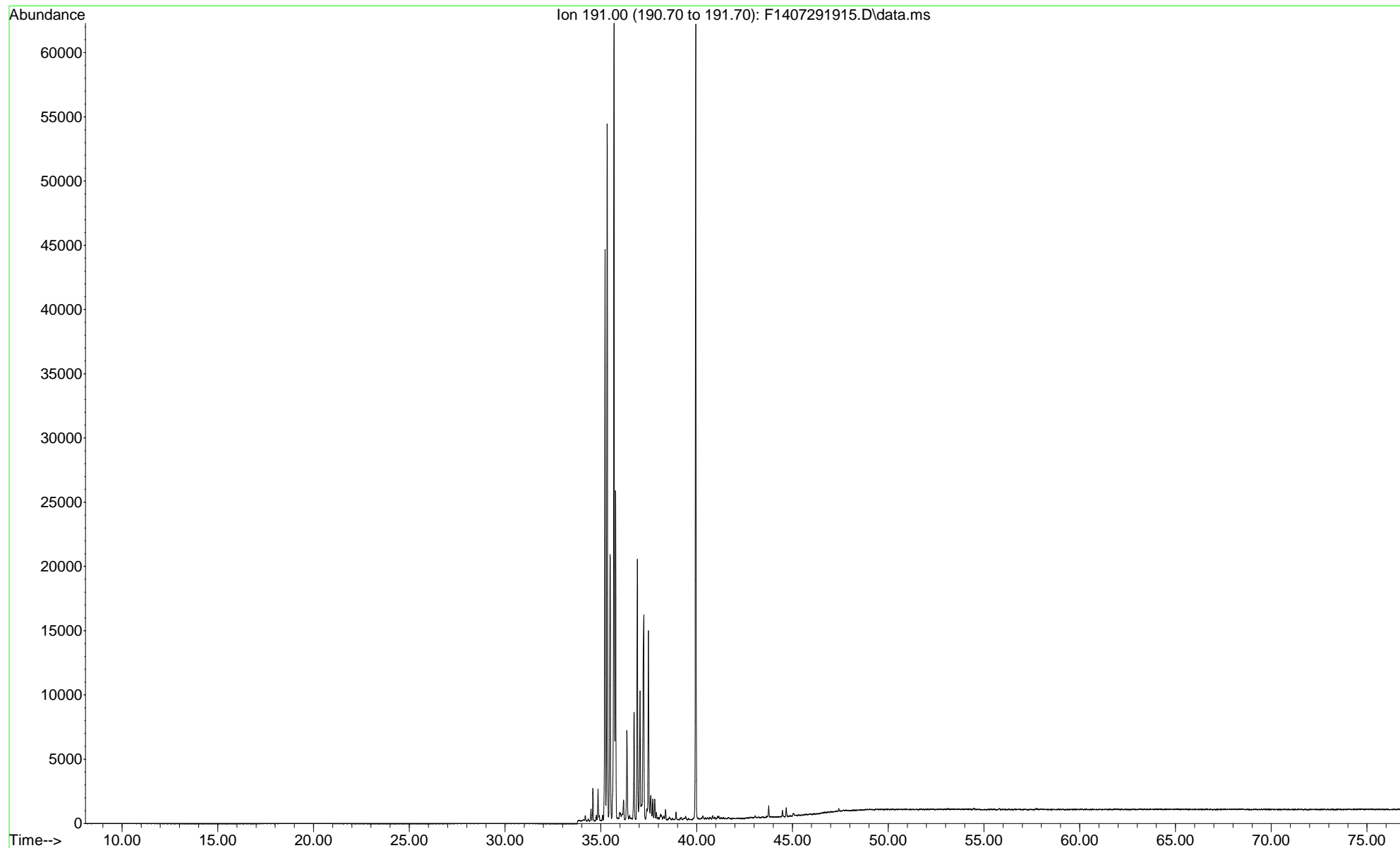
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Vial Number: 14



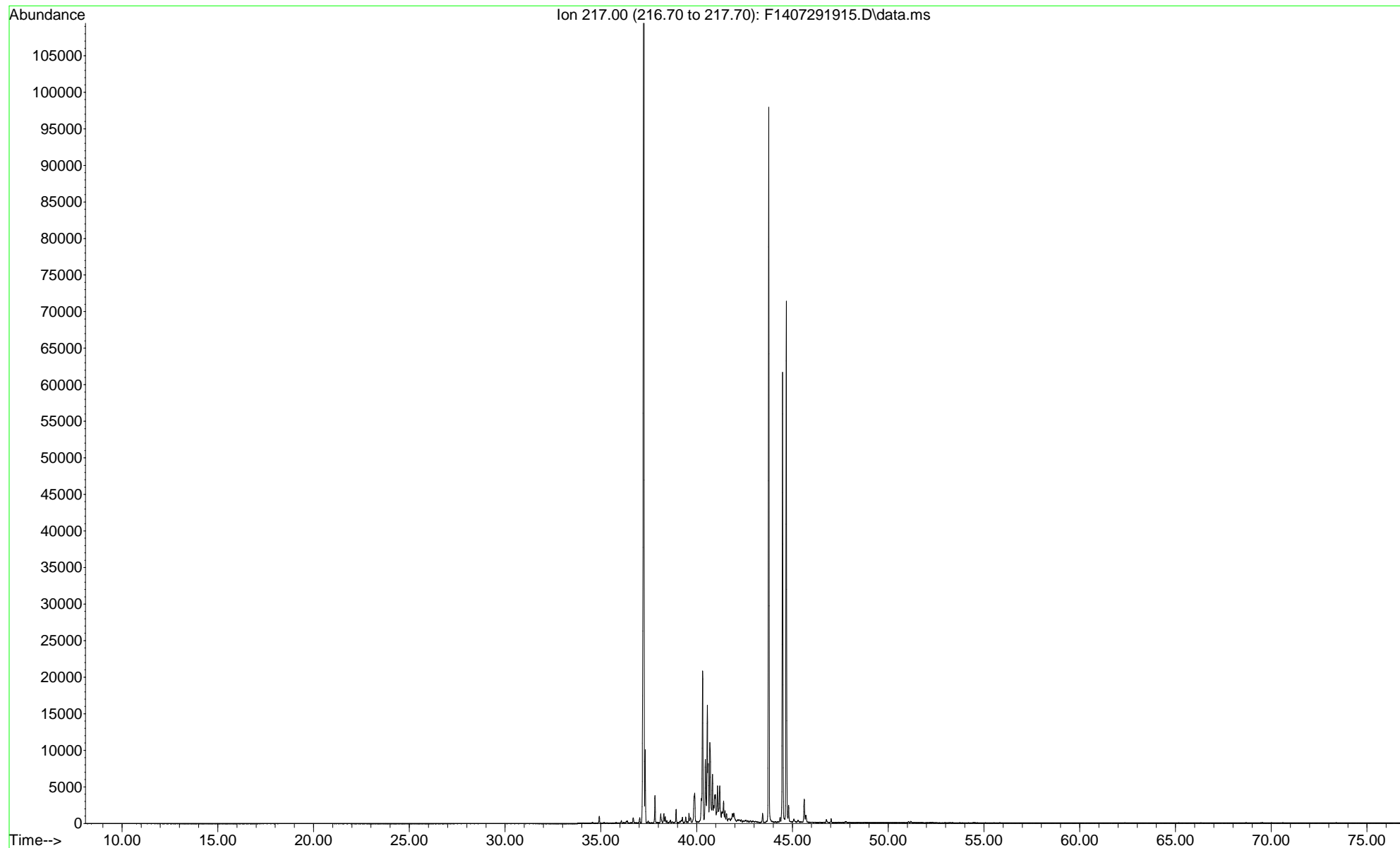
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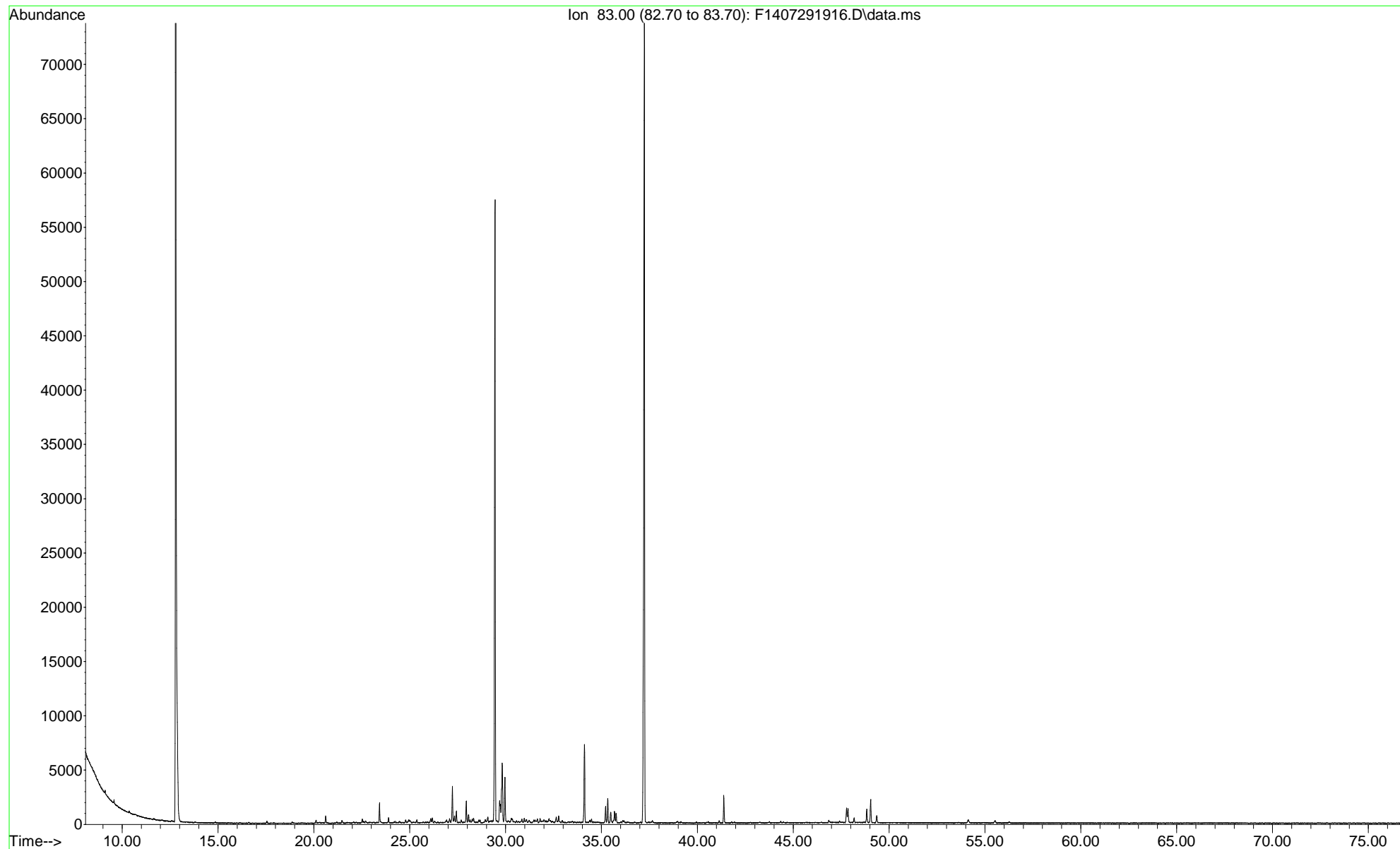
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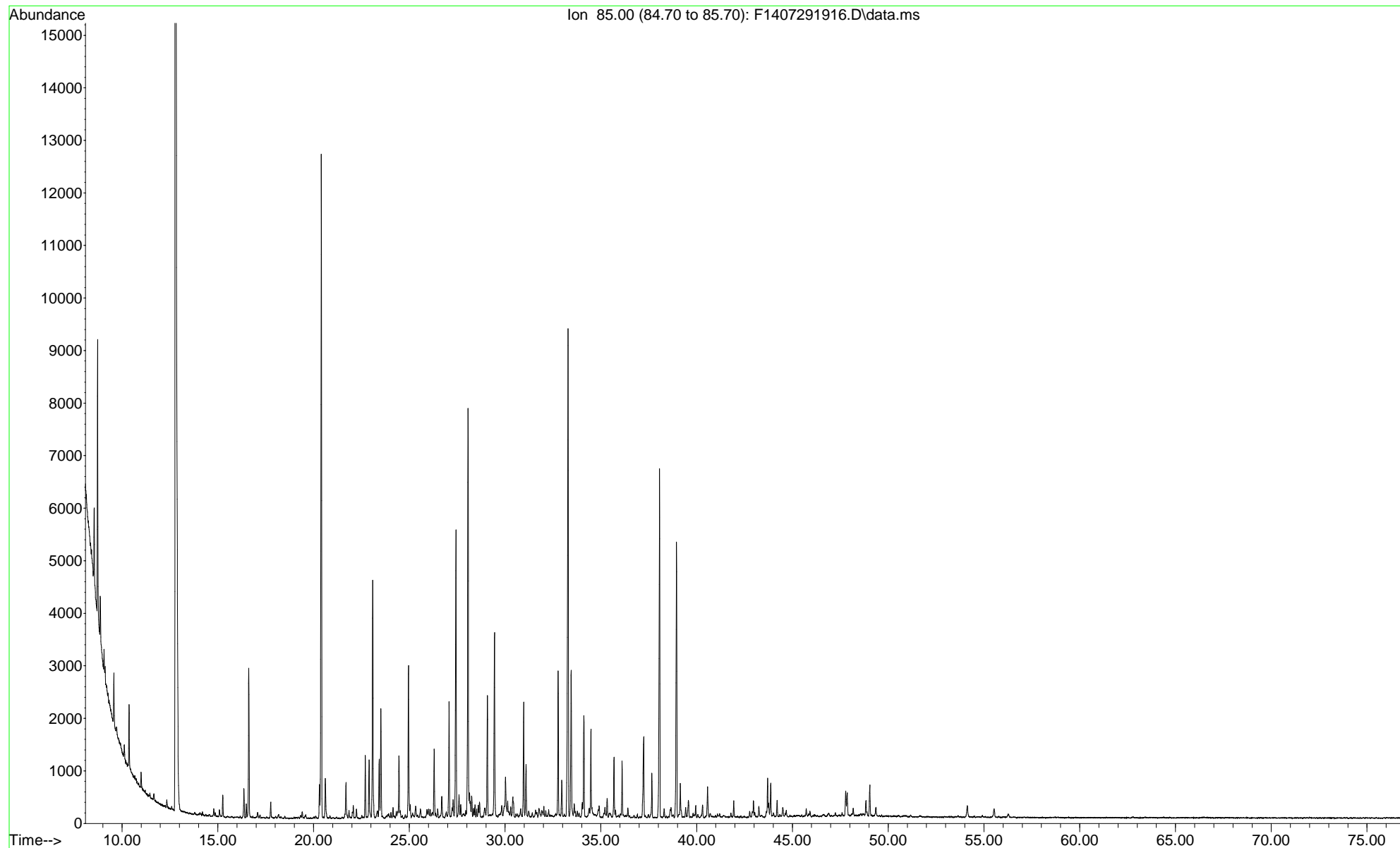
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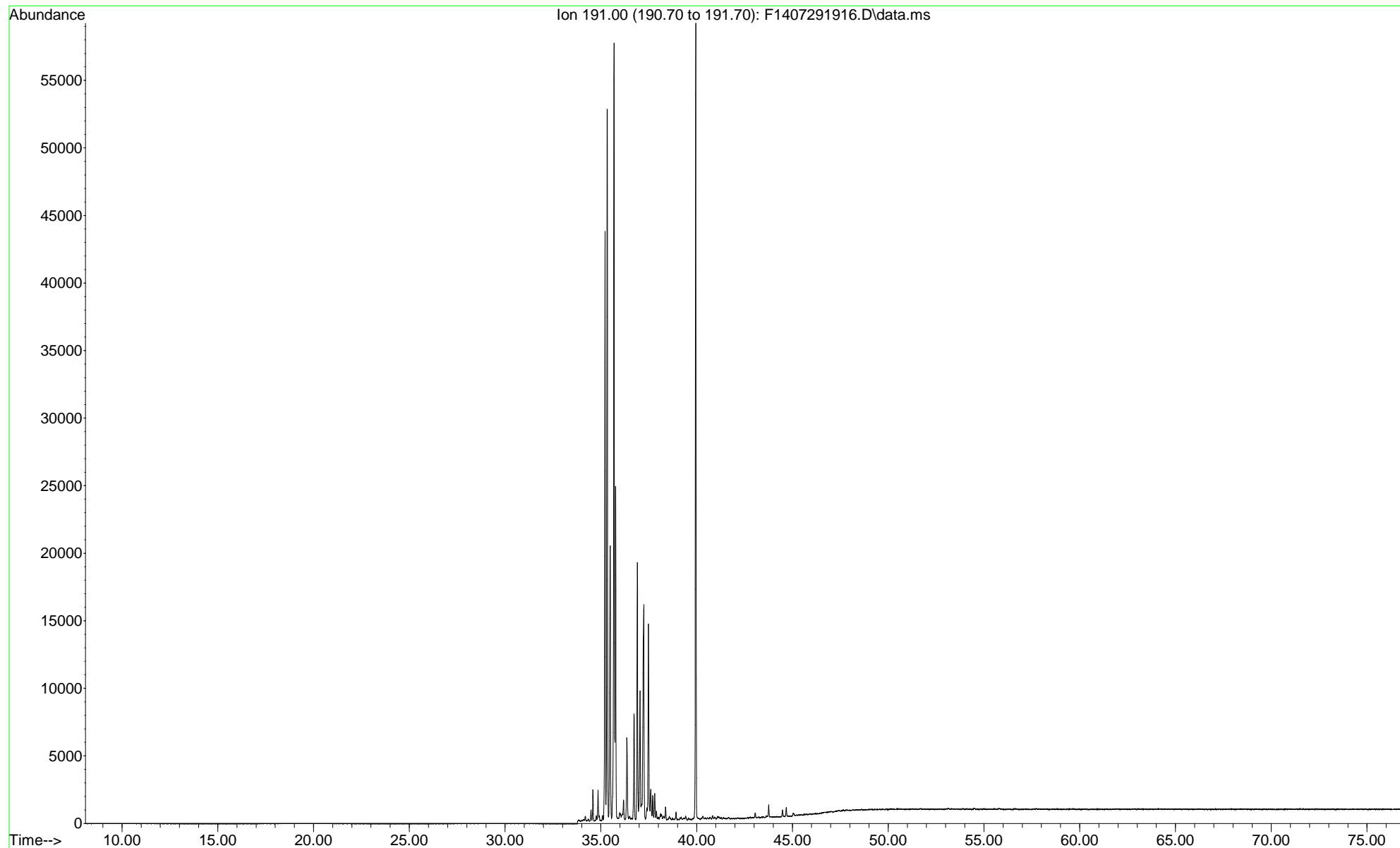
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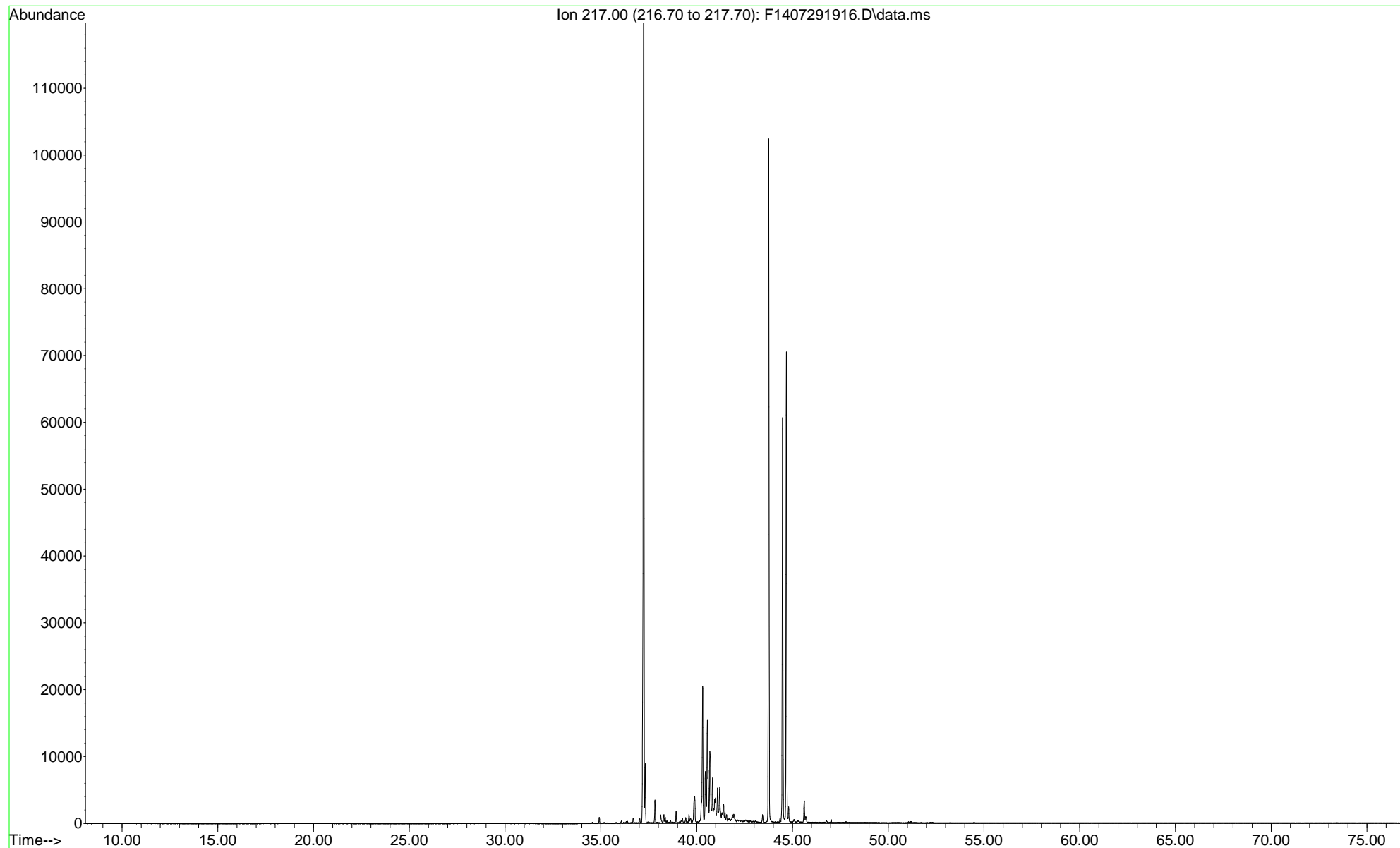
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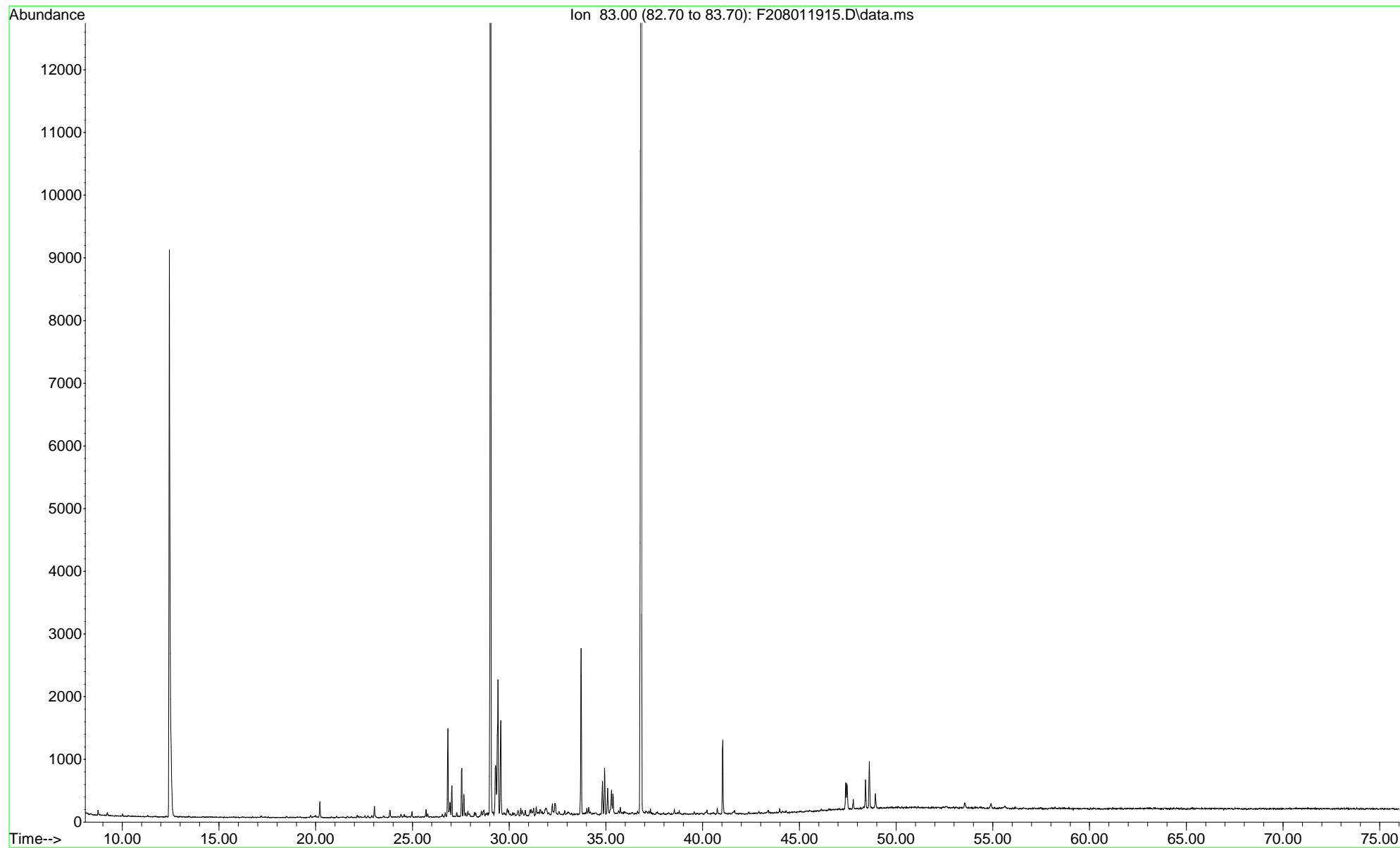
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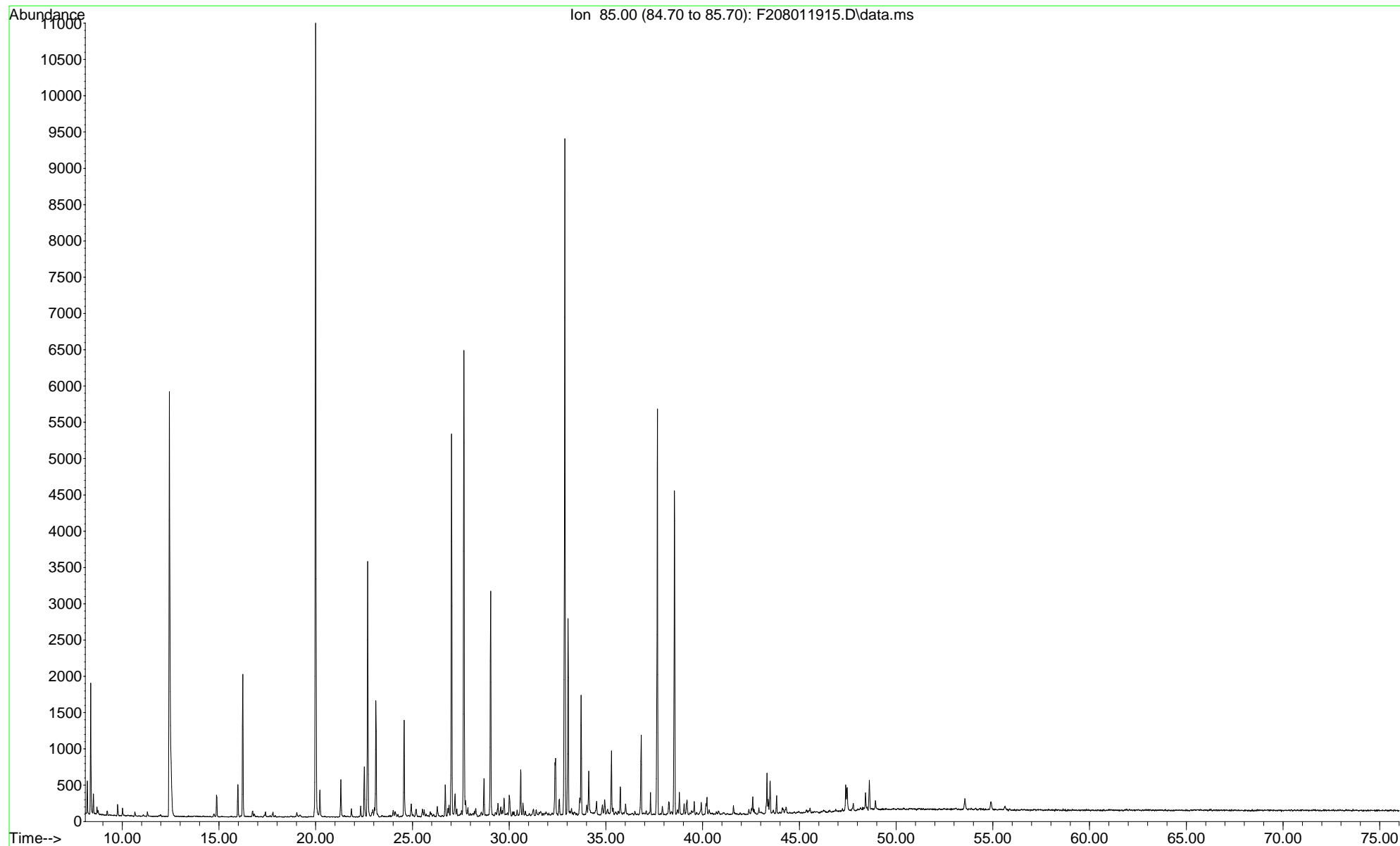
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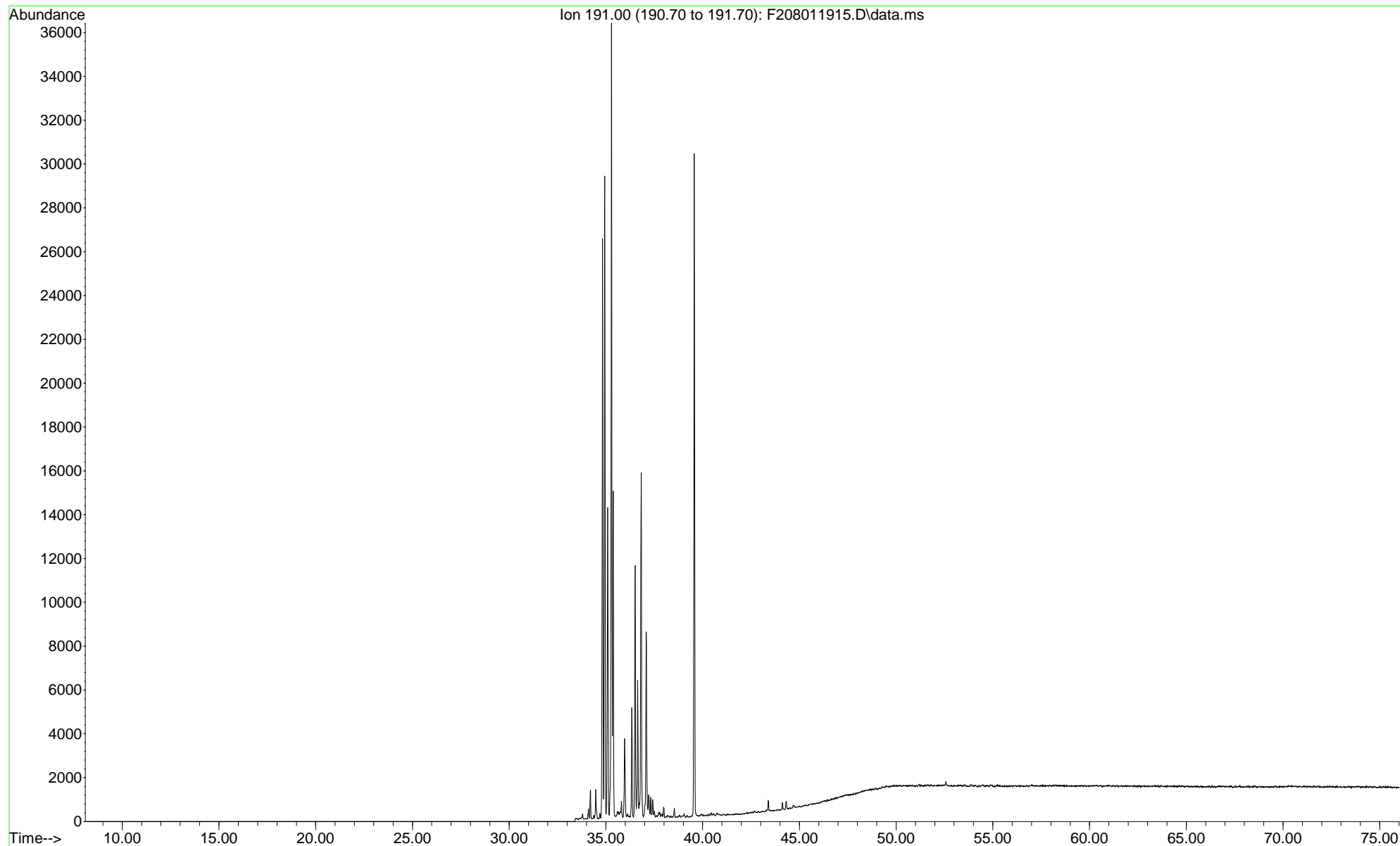
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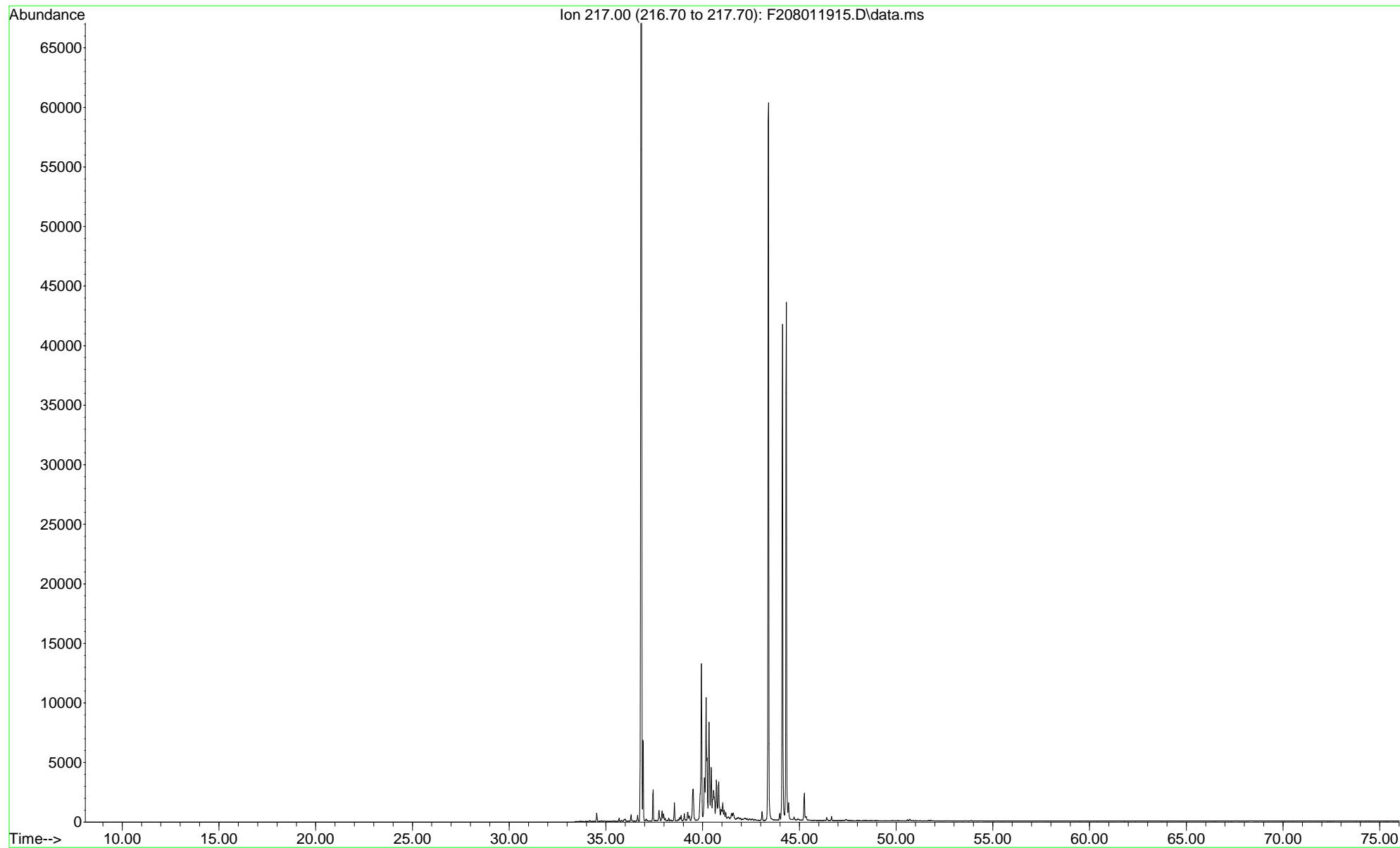
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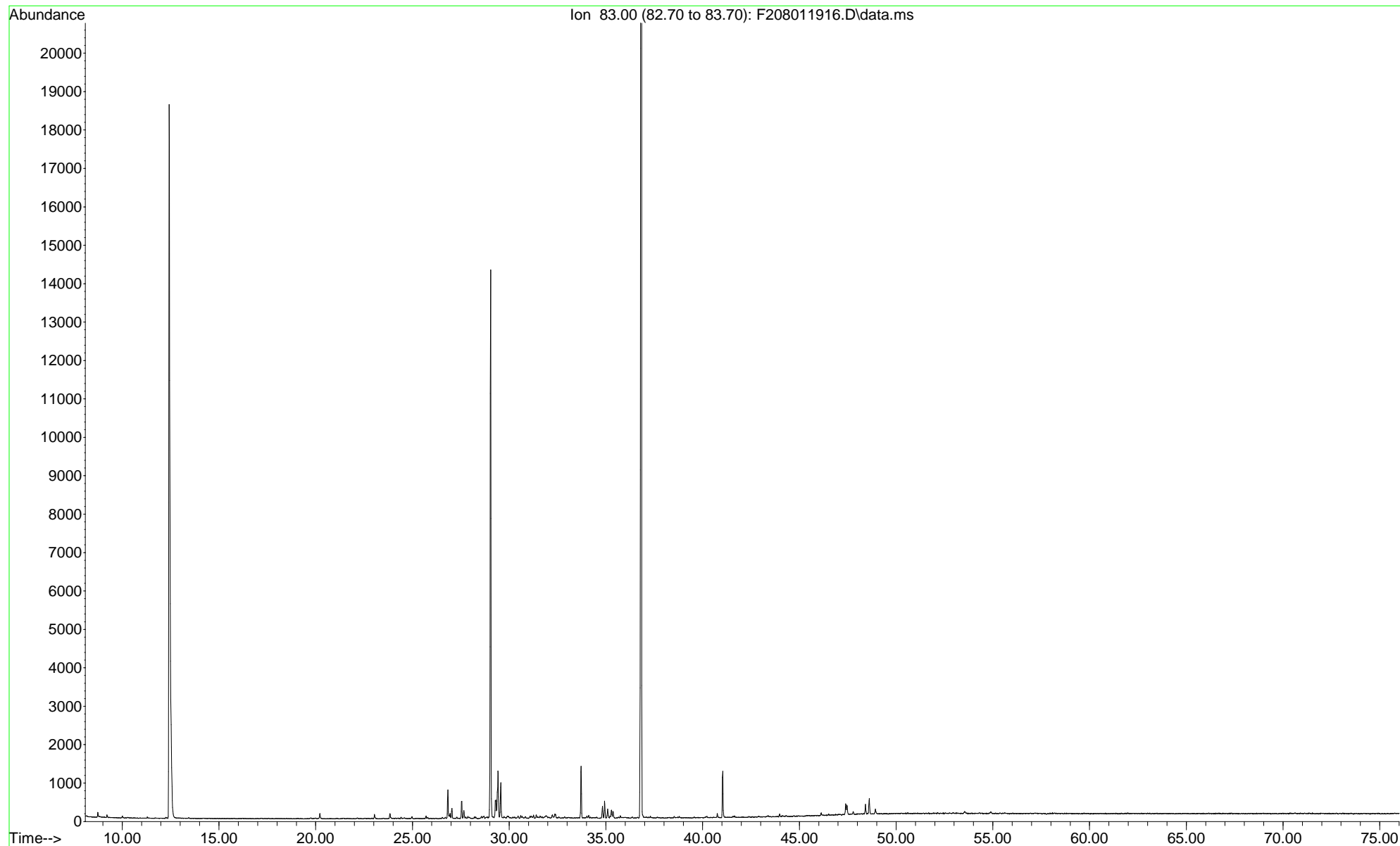
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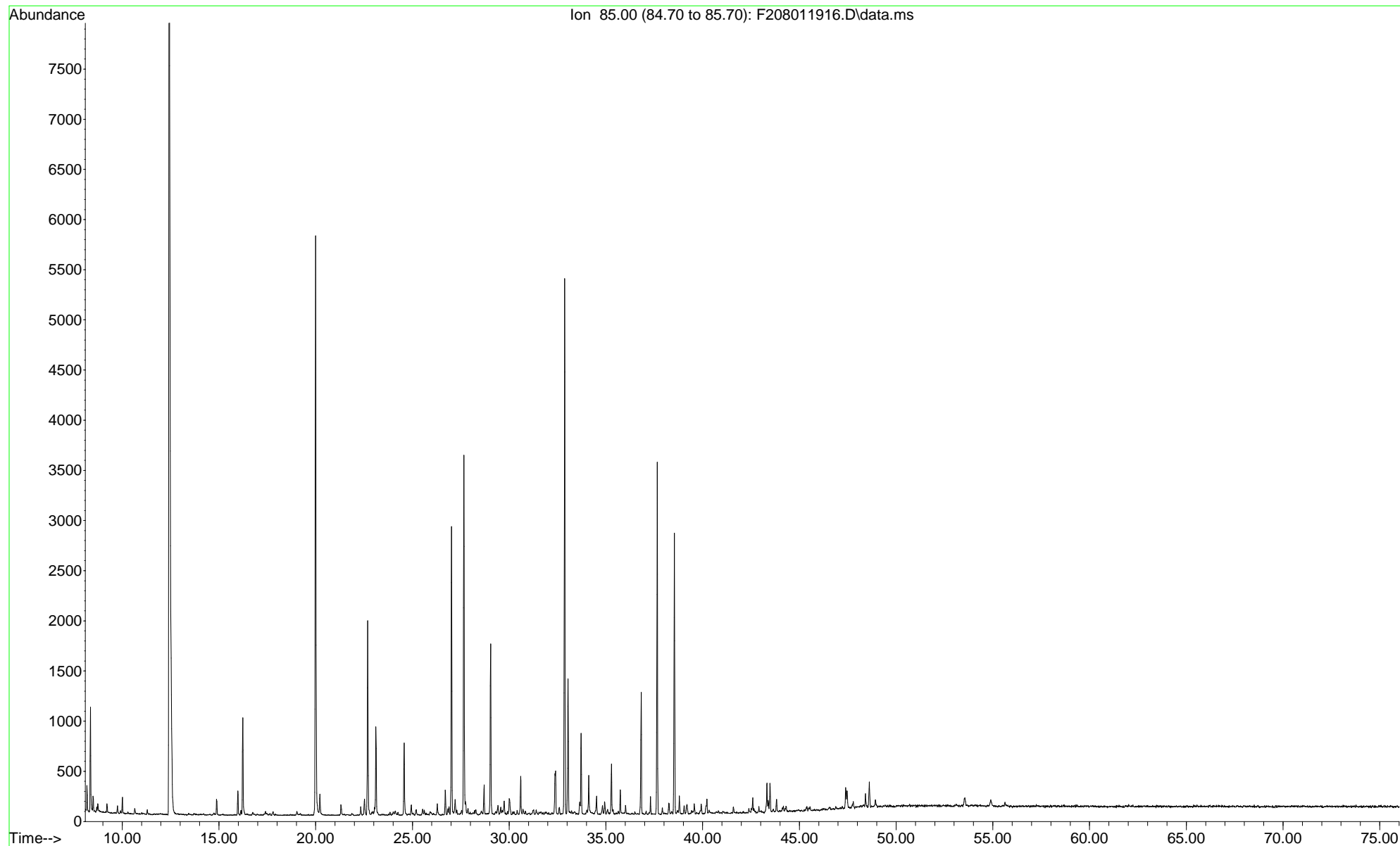
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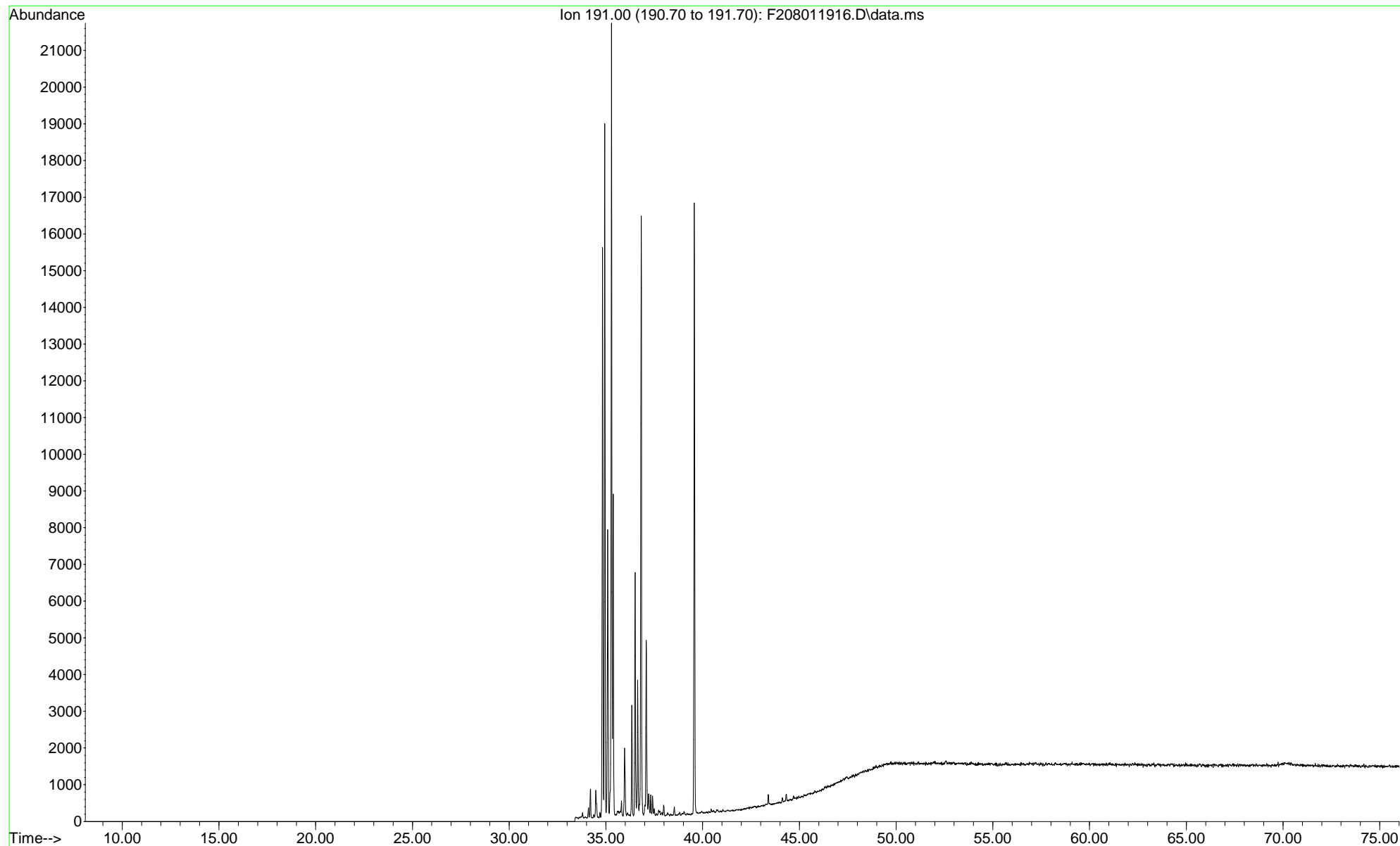
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Misc Info : WG1266157,WG1264828,ICAL15985
Vial Number: 16



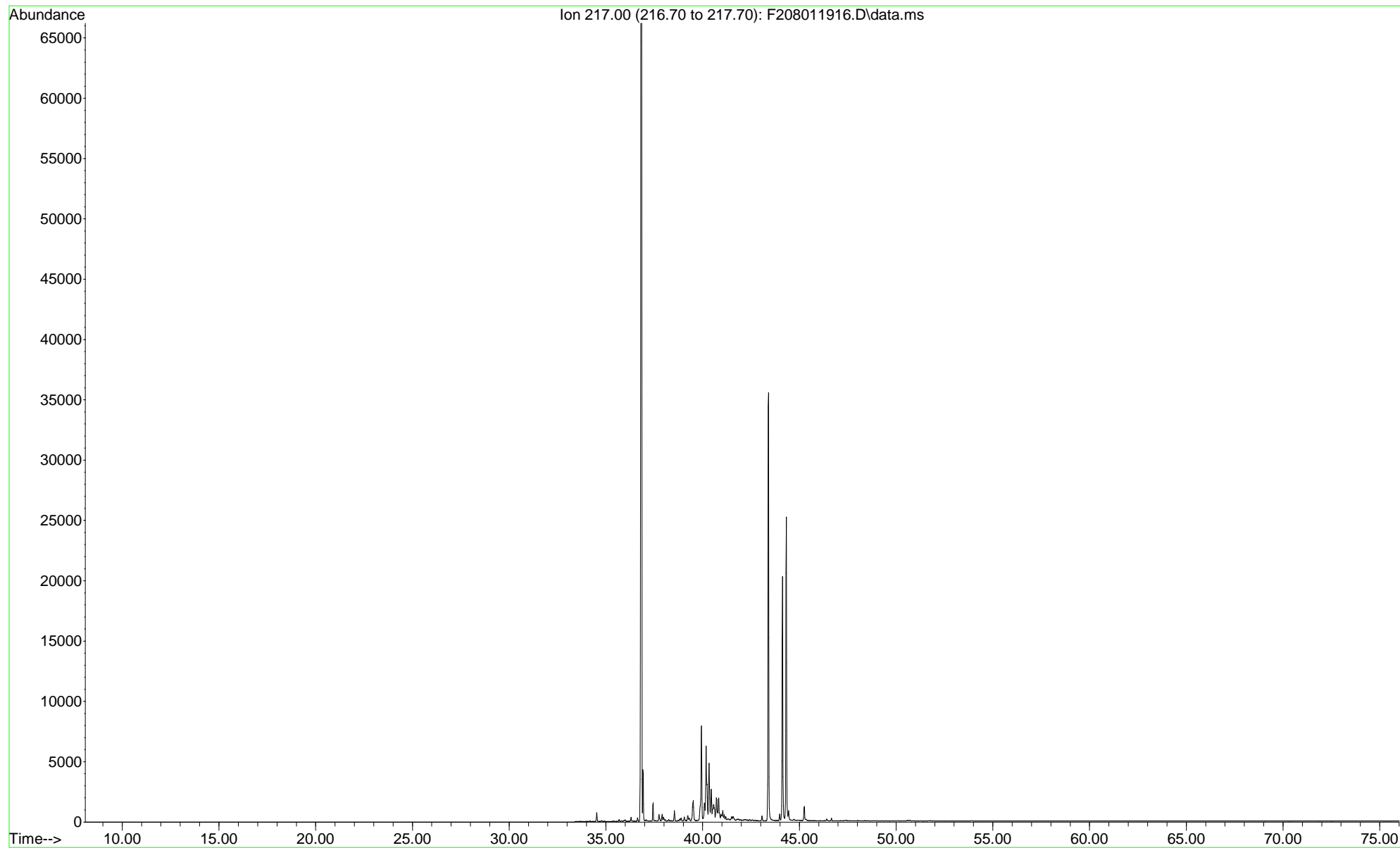
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Operator : PAH2:ML
Acquired : 2 Aug 2019 1:20 pm using AcqMethod FRNC2A.M
Instrument : PAH2
Sample Name: L1928037-09D,32,10
Misc Info : WG1266157,WG1264828,ICAL15985
Vial Number: 16



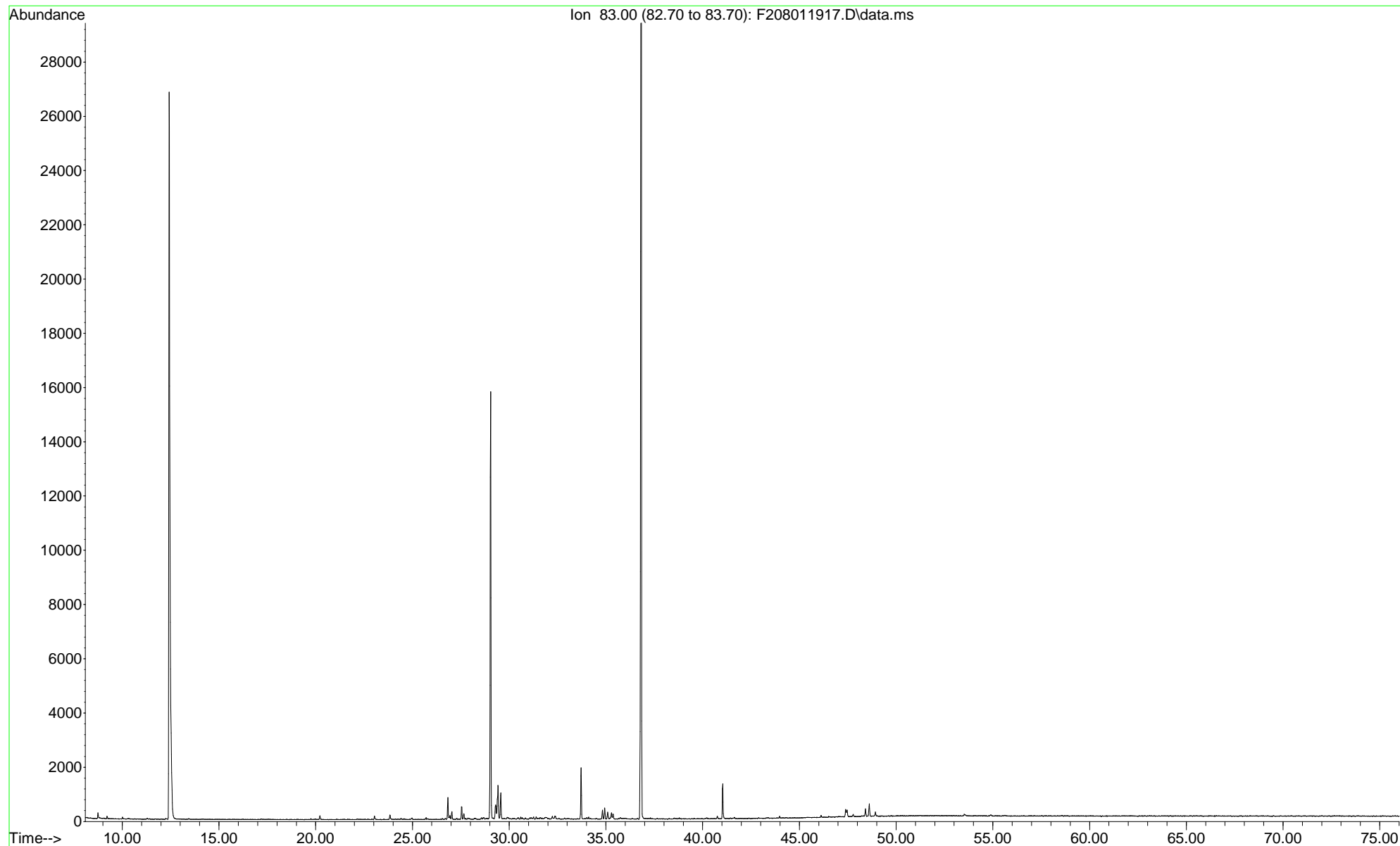
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Misc Info : WG1266157,WG1264828,ICAL15985
Vial Number: 16



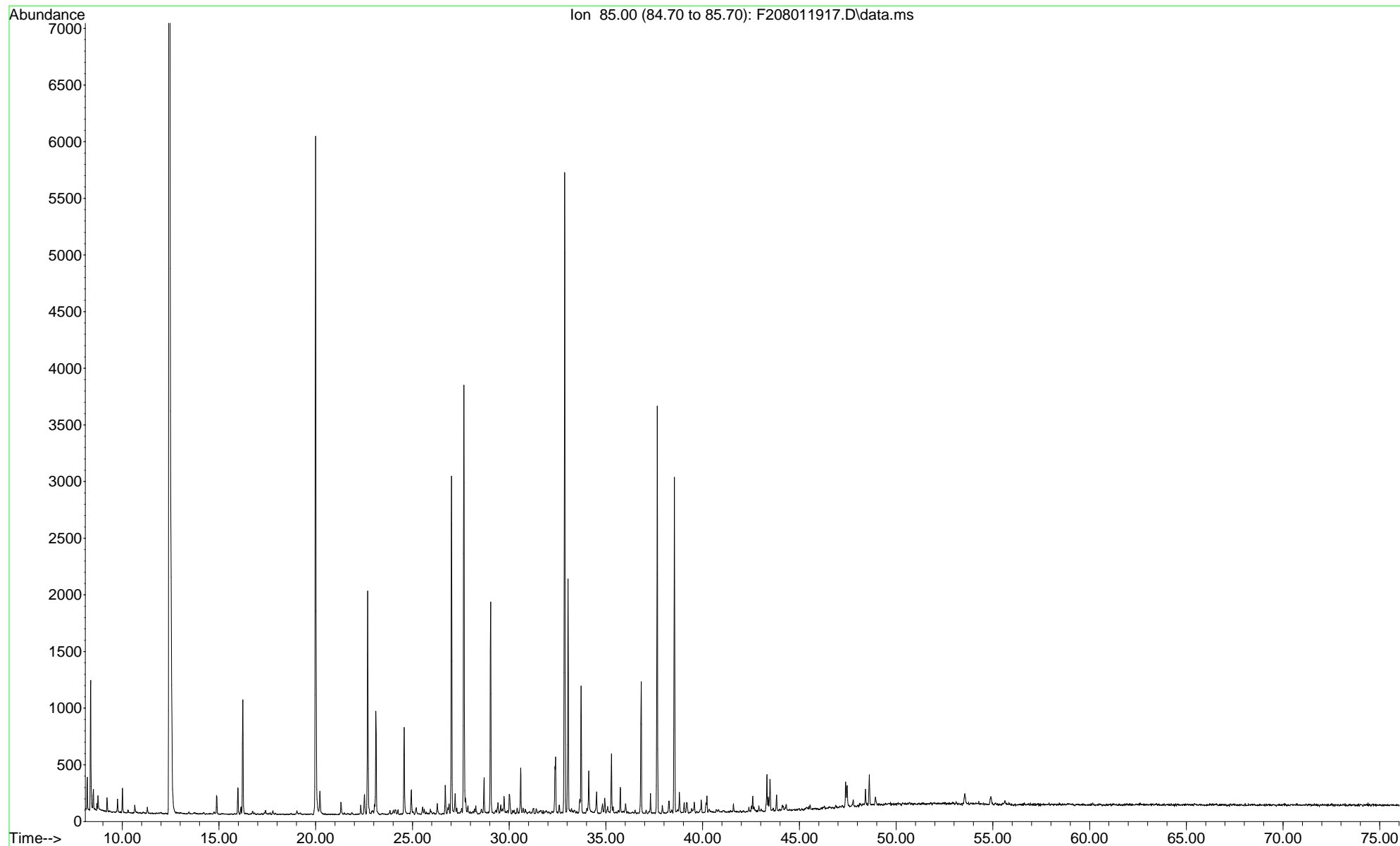
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Sample Name: L1928037-09D,32,10
Misc Info : WG1266157,WG1264828,ICAL15985
Vial Number: 16



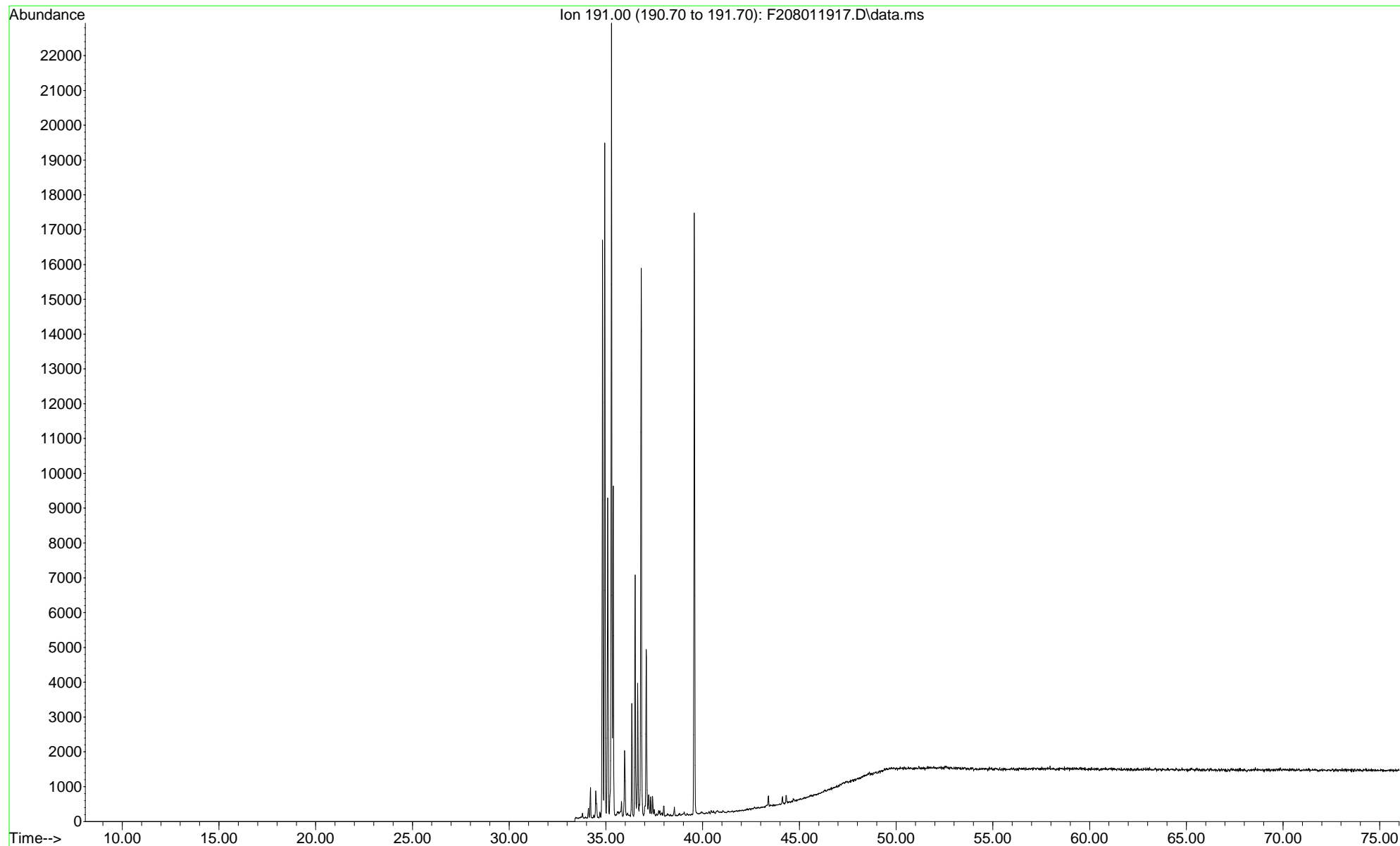
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Operator : PAH2:ML
Acquired : 2 Aug 2019 2:48 pm using AcqMethod FRNC2A.M
Instrument : PAH2
Sample Name: WG1264828-4D,32,10
Misc Info : WG1266157,WG1264828,ICAL15985
Vial Number: 17



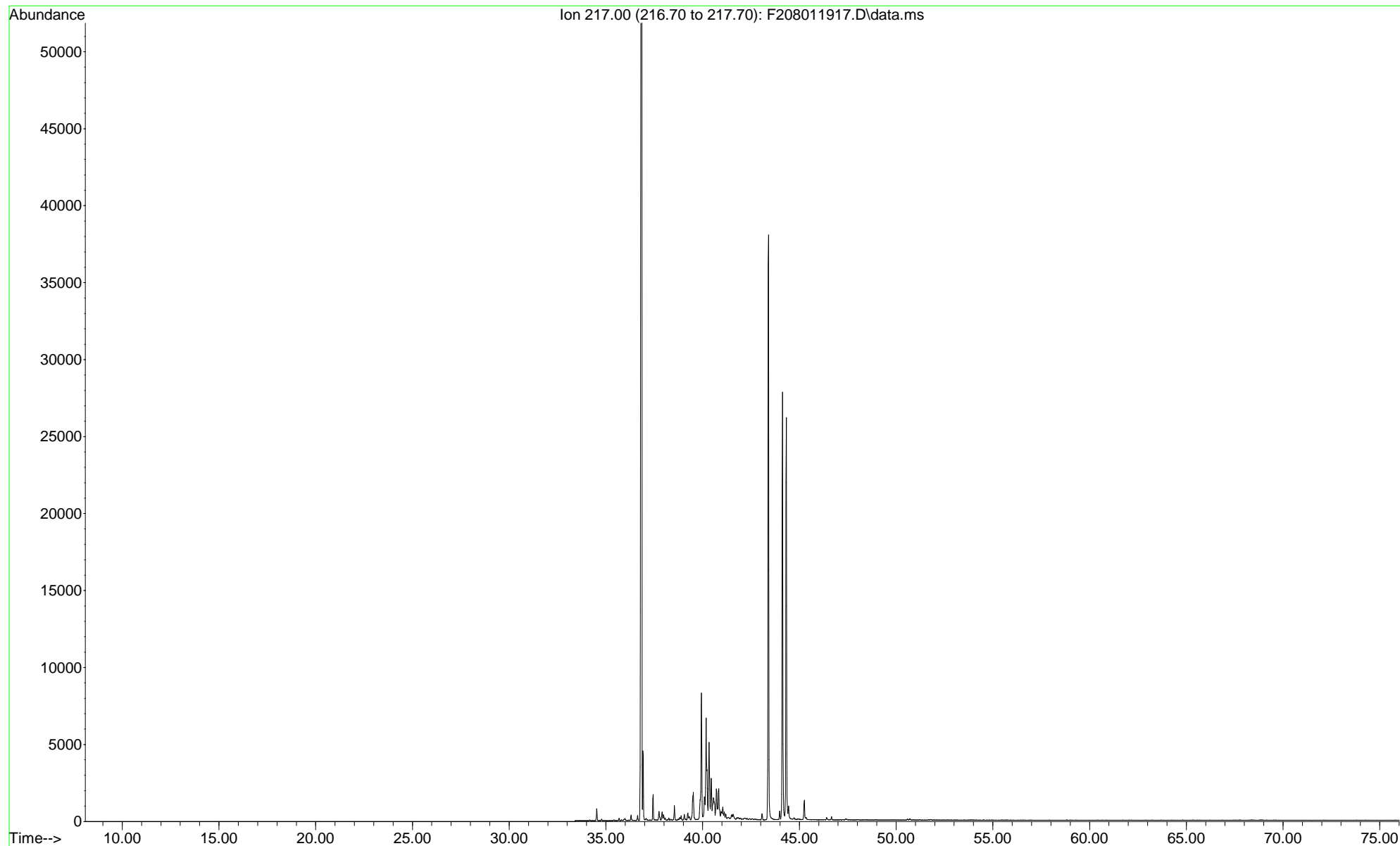
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Misc Info : WG1266157,WG1264828,ICAL15985
Vial Number: 17



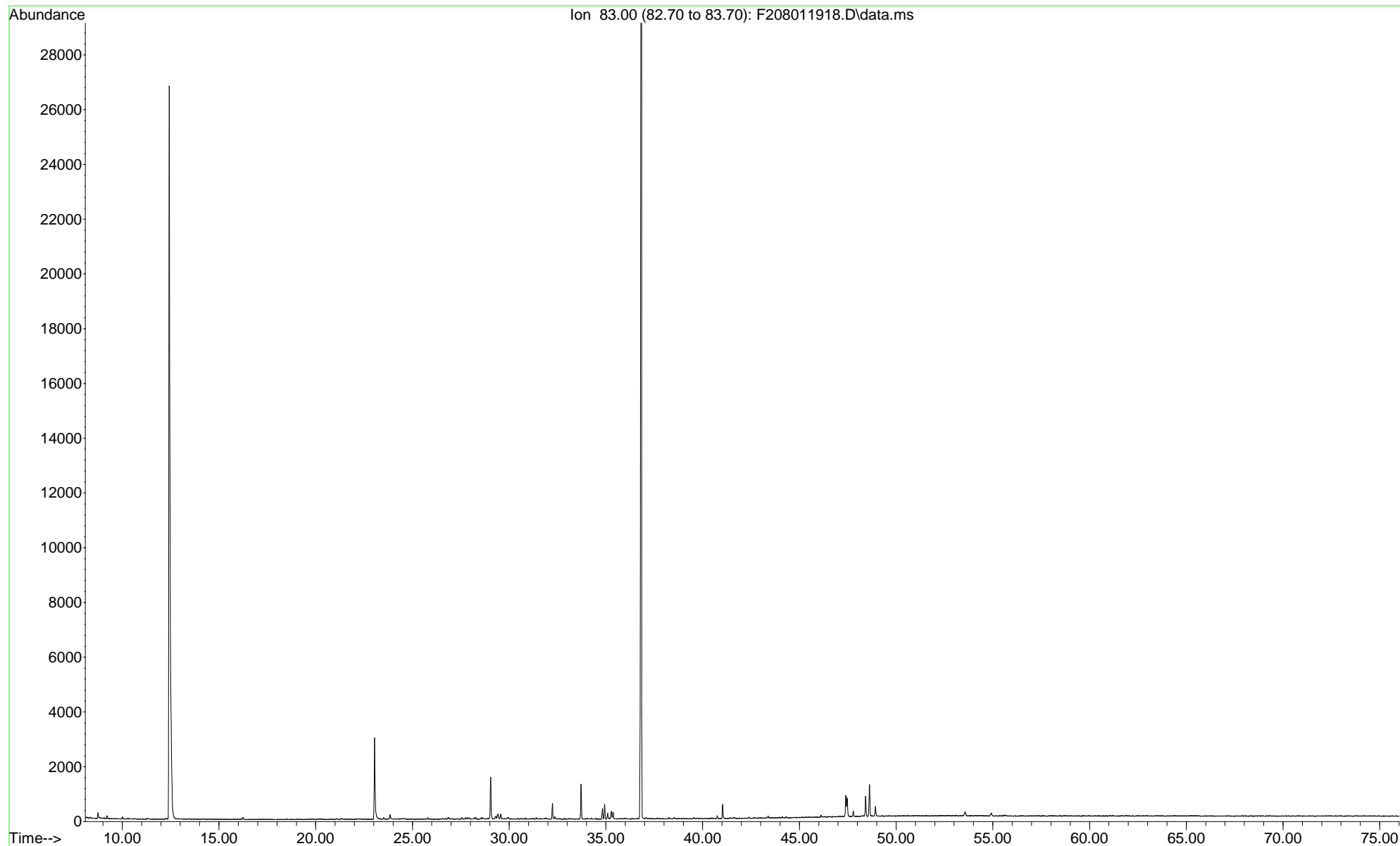
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Vial Number: 17



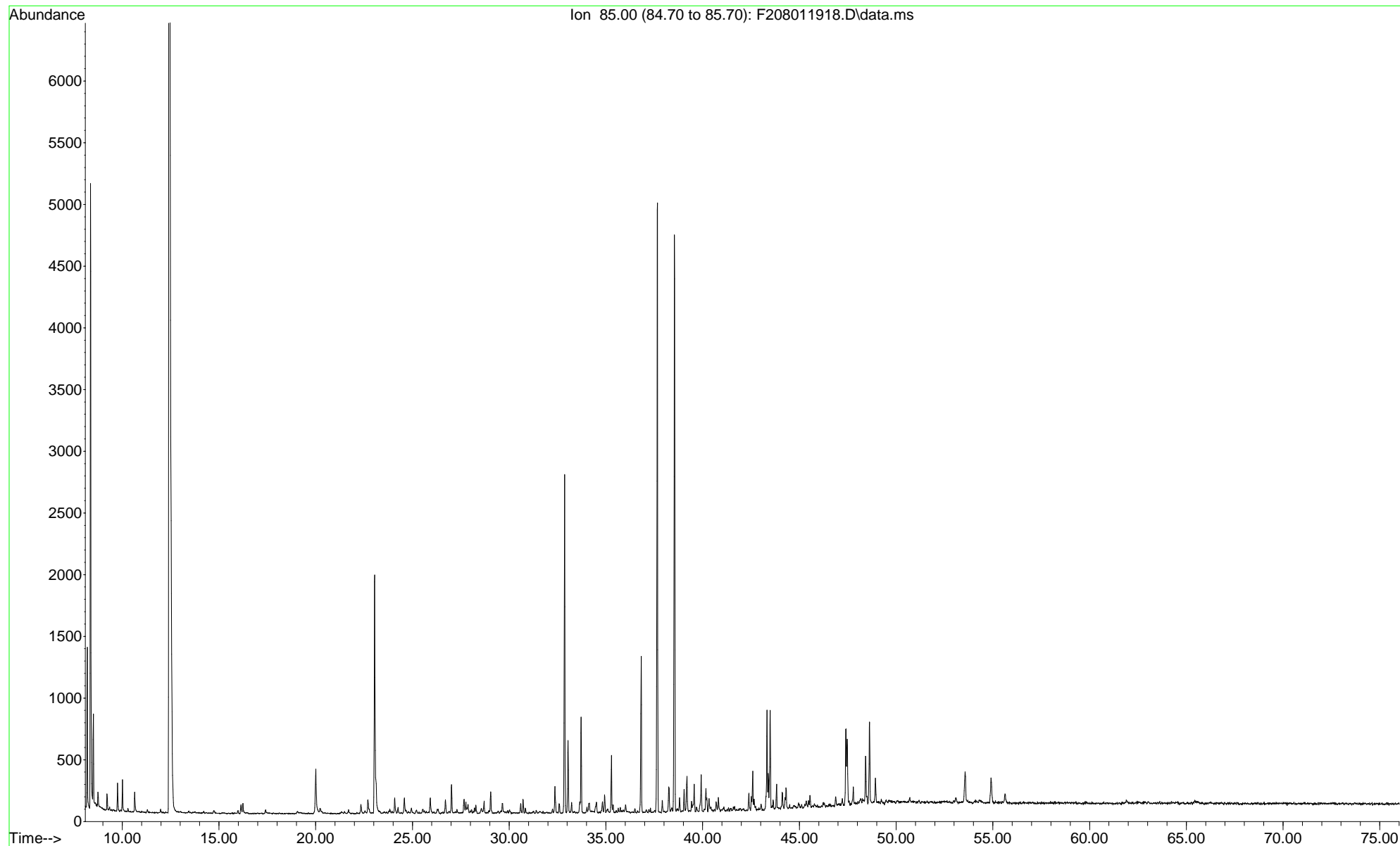
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Misc Info : WG1266157,WG1264828,ICAL15985
Vial Number: 17



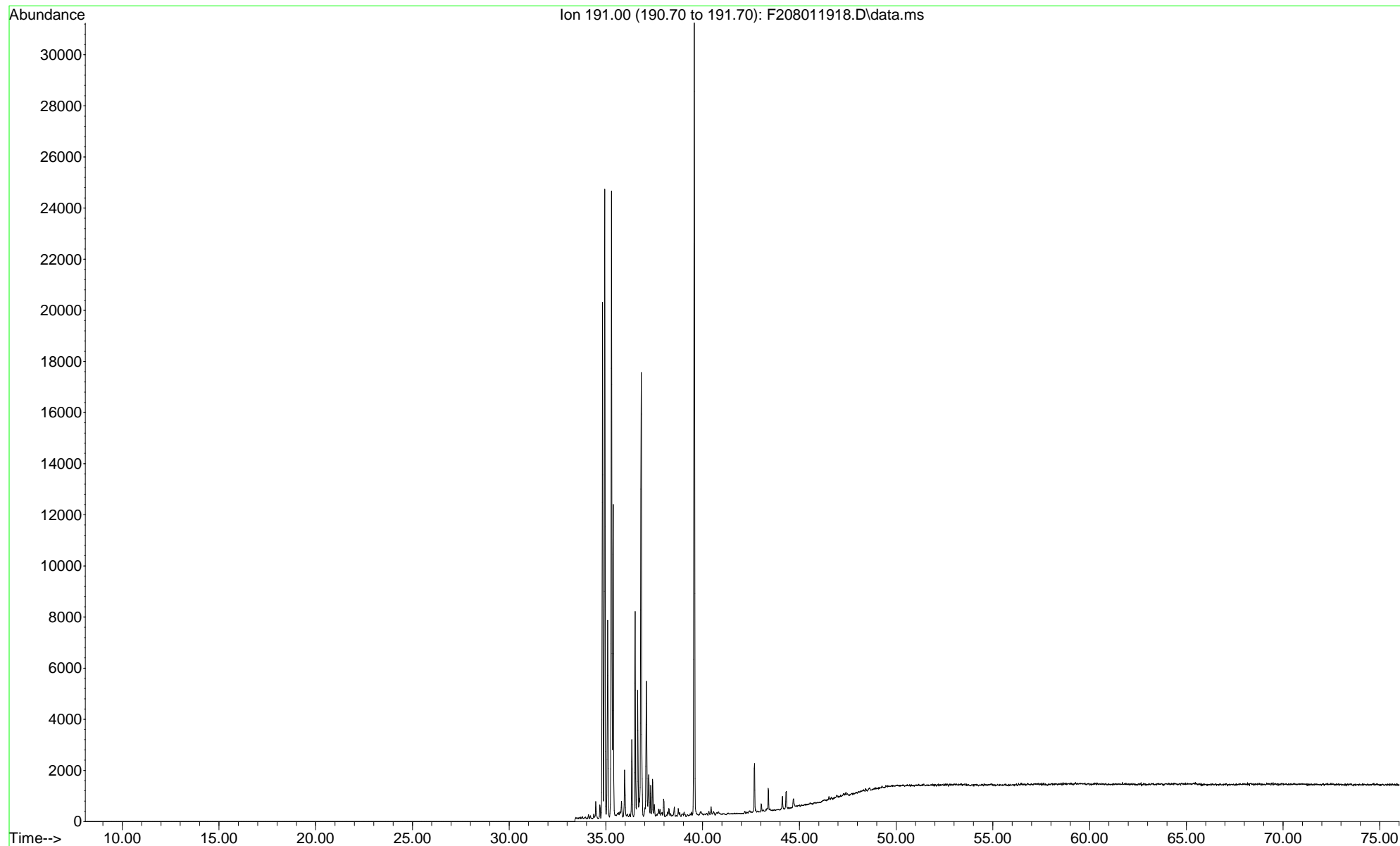
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Acquired : 2 Aug 2019 4:16 pm using AcqMethod FRNC2A.M
Instrument : PAH2
Sample Name: L1928037-11D,32,10
Misc Info : WG1266157,WG1264828,ICAL15985
Vial Number: 18



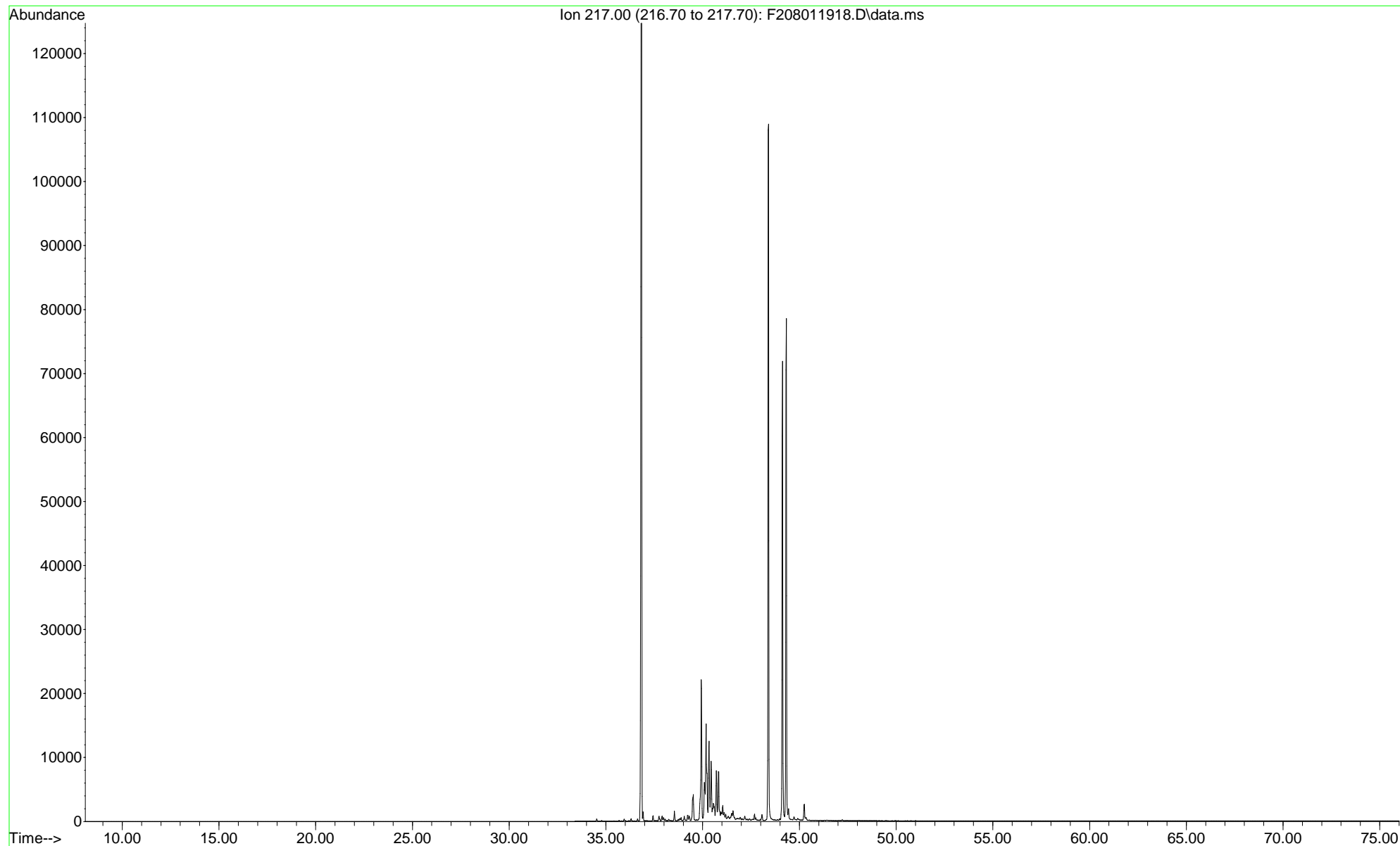
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Sample Name: L1928037-11D,32,10
Misc Info : WG1266157,WG1264828,ICAL15985
Vial Number: 18



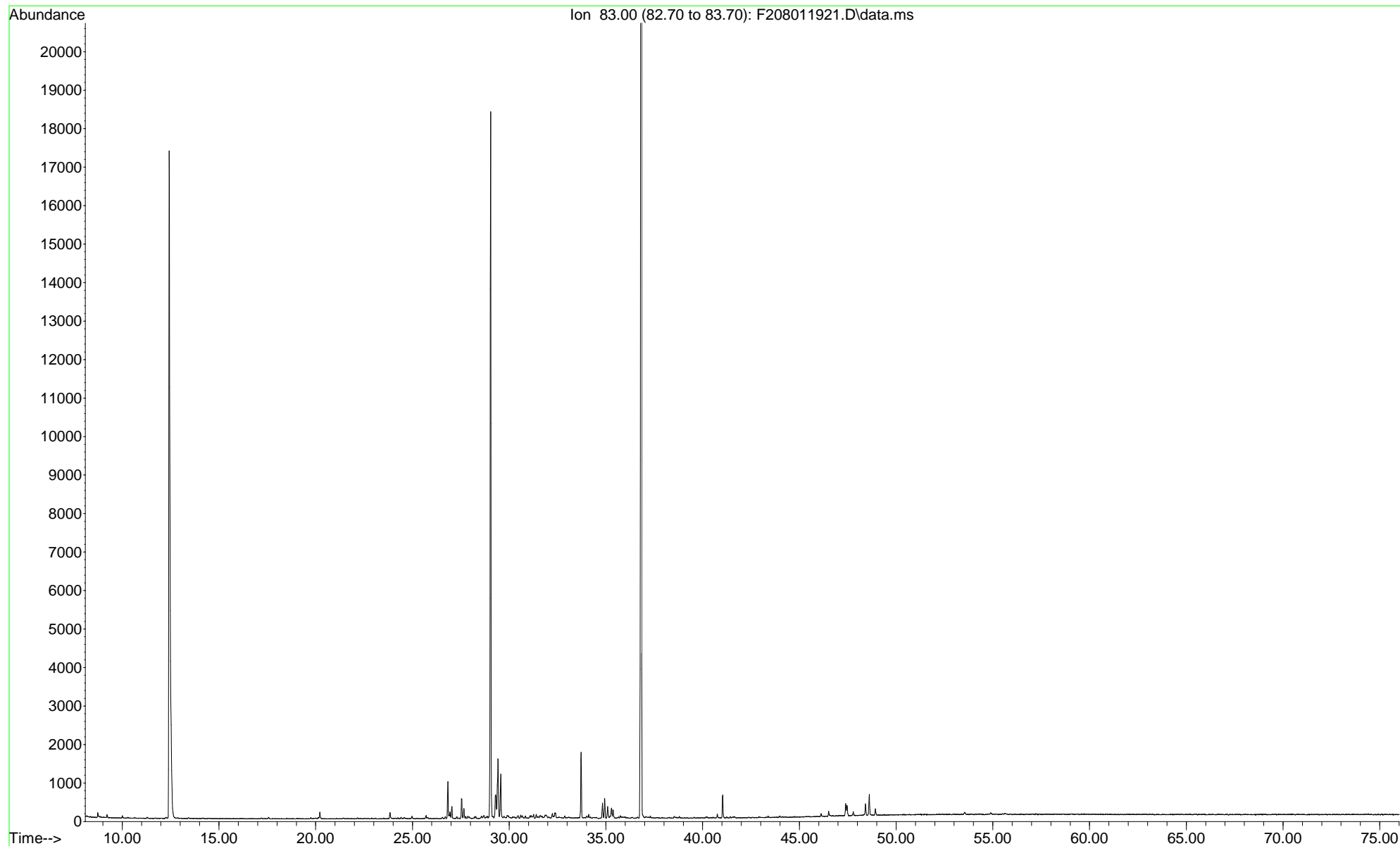
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Instrument : PAH2
Sample Name: L1928037-11D,32,10
Misc Info : WG1266157,WG1264828,ICAL15985
Vial Number: 18



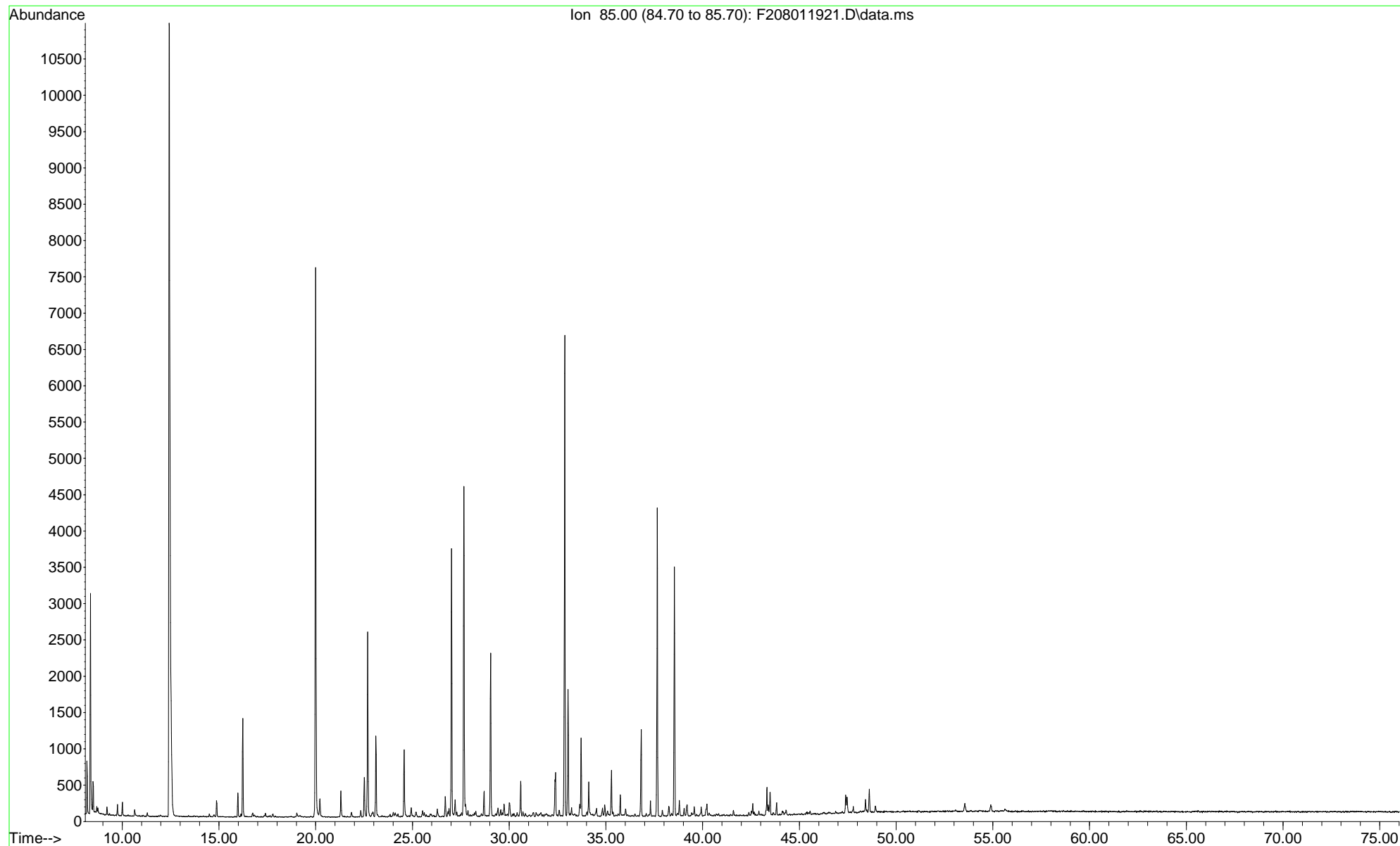
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Misc Info : WG1266157,WG1264828,ICAL15985
Vial Number: 18



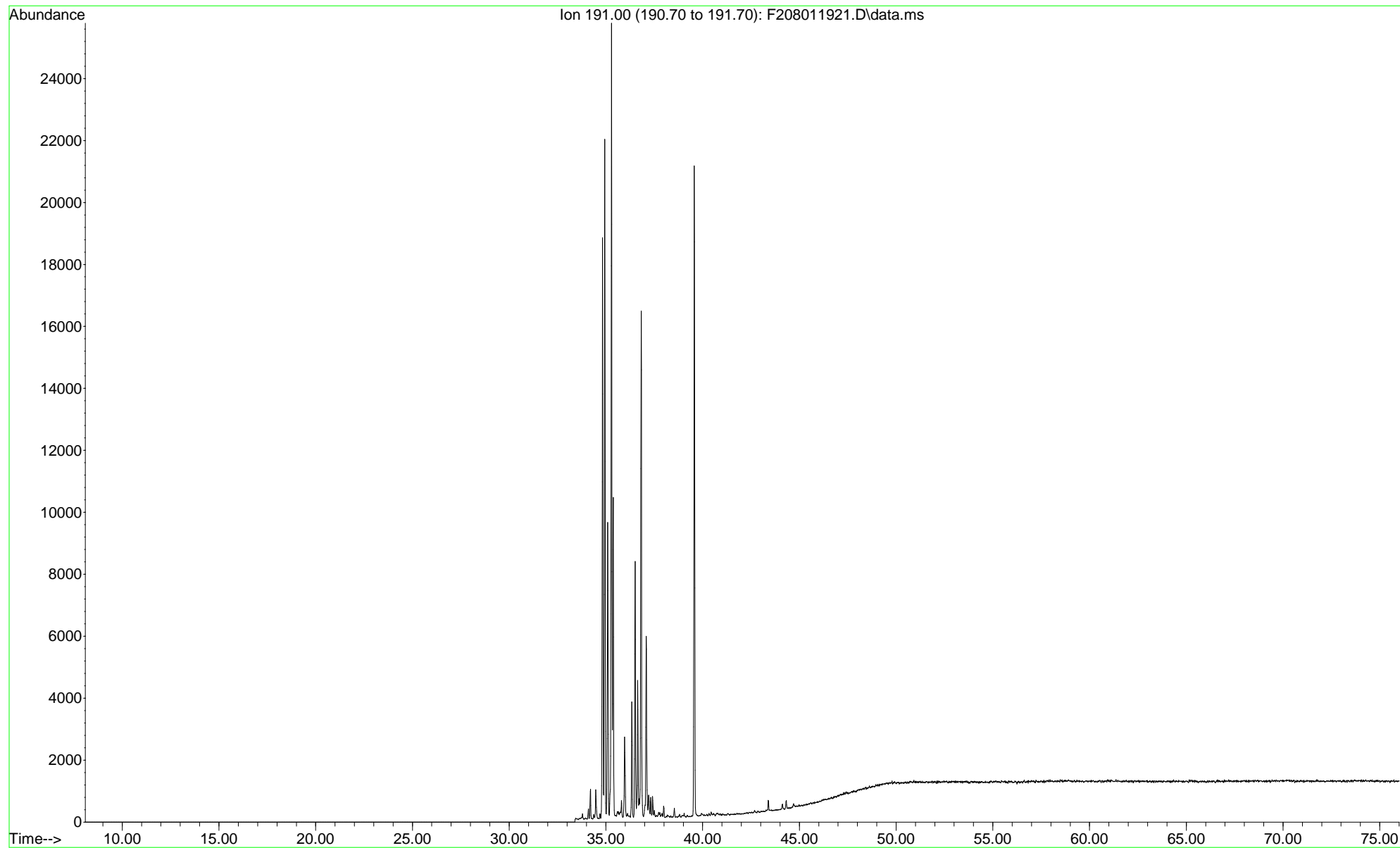
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Operator : PAH2:ML
Acquired : 2 Aug 2019 8:38 pm using AcqMethod FRNC2A.M
Instrument : PAH2
Sample Name: L1928037-12D,32,10
Misc Info : WG1266157,WG1264828,ICAL15985
Vial Number: 21



File :O:\Forensics\Data\PAH2\2019\AUG19\AUG01\F208011921.D
Operator : PAH2:ML
Acquired : 2 Aug 2019 8:38 pm using AcqMethod FRNC2A.M
Instrument : PAH2
Sample Name: L1928037-12D,32,10
Misc Info : WG1266157,WG1264828,ICAL15985
Vial Number: 21



File :O:\Forensics\Data\PAH2\2019\AUG19\AUG01\F208011921.D
Operator : PAH2:ML
Acquired : 2 Aug 2019 8:38 pm using AcqMethod FRNC2A.M
Instrument : PAH2
Sample Name: L1928037-12D,32,10
Misc Info : WG1266157,WG1264828,ICAL15985
Vial Number: 21



File :O:\Forensics\Data\PAH2\2019\AUG19\AUG01\F208011921.D
Operator : PAH2:ML
Acquired : 2 Aug 2019 8:38 pm using AcqMethod FRNC2A.M
Instrument : PAH2
Sample Name: L1928037-12D,32,10
Misc Info : WG1266157,WG1264828,ICAL15985
Vial Number: 21

