FILE COPY

ATTACHMENT 1

Sun Company, Inc. (R&M)
Marcus Hook Refinery
Comprehensive Remedial Plan

GROUNDWATER INVESTIGATION ADDENDUM
Area 3: West of Green Street
Groundwater & Environmental Services, Inc.
December 27, 1995

TABLE 1
NAPL ANALYTICAL DATA SUMMARY
SUN COMPANY INC. (R&M)
MARCUS HOOK REFINERY
AREA 3 : AREA WEST OF GREEN STREET

Collection Point	API Gravity (deg API)	Specific Gravity	Viscosity (SUS)
MW-18	21.00	0.93	146.30
MW-19	21.90	0.92	166.30
MW-20	18.30	0.94	580.80
MW-23	25.00	0.90	70.13
MW-25	31.90	0.87	36.86
MW-98	29.80	0.88	39.46
MW-99	35.40	0.85	35.48
MW-103	25.00	0.90	66.93
MW-107	23.50	0.91	22.67
MW-123	25.80	0.90	10.20
MW-124	25.60	0.90	10.90

SUS = Kinematic viscosity expressed as Saybolt Universal Seconds @ 100° F

10:43:02 **** Sample Results Report **** 08/03/95

AMPLE DATE : 25-JUL-95
AMPLE ID : 200267530
BATCH NUMBER:
SER SAMPLEID: SPCL MW# 107
AMPLE TYPE : ENSPCL ON REQUEST
AG DATE : 07/25/95 1419
MATERIAL : ENVIRONMENTAL SPECIAL SPECIAL
ONDITION: APPROVED
SSOCIATED ID:
COMMENT :

OMPONENT	RESULT	UNIT	SPEC	LOW	HIGH
KINEMATIC VISCOSITY @ 100F	22.67	cSt	N/A		
ENSITY @ 15C	.9304	kg/m3	N/A		
PI GRAVITY	23.5	deg API	N/A		

MONITORING WELL ANALYSIS

DATE	TIME	COMP	GRAB	SAMPLE LOCATION	API GRAVITY	SPECFIC GRAVITY	DENSITY	VISCOSITY
12/15/94	13:00		X	MW – 18	21	0.9278	0.927	146.3
12/15/94	13:05		X	MW – 19	21.9	0.9223	0.9215	166.3
12/15/94	13:20		X	MW – 20	18.3	0.9448	0.9439	580.8
12/15/94	13:25		X	MW – 23	25	0.9044	0.9036	70.13
12/15/94	13:30		X	MW – 25	31.9	0.8658	0.865	36.86
12/15/94	13:45		X	MW – 98	29.8	0.877	0.8762	39.46
12/15/94	14:05		X	MW – 99	35.4	0.848	0.8472	35.48
12/15/94	14:15		X	MW – 103	25	0.9041	0.9033	66.93

API Gravity:

Specific Gravity:

Density:

Viscosity: All samples were run at 100 F.

RECEIVED
MAR 21 1995
J. S. BRACKIN

From:	DeBoer, Jenny
To:	DeBoer, Jenny
Subject:	FW: Evergreen (17836)
Date:	Tuesday, January 26, 2016 9:36:50 AM
Attachments:	image001.png

From: Taryn Mancine [mailto:Taryn.Mancine@pacelabs.com]
Sent: Monday, January 25, 2016 6:07 PM
To: DeBoer, Jenny
Subject: RE: Evergreen (17836)

Hi Jenny

Below is the data interpretation from Dr. Jeffrey:
All the samples except MW-170 contain unknown degraded heavy oil(s). The GC/FID patterns are similar in some oils and different in others, as indicated below. The differences may reflect different oils or may reflect different degrees of degradation of similar oils. C8-C40 GC/MS (ASTM D5739) would help to identify the heavy oil(s), and compare those with different GC/FID patterns. All the products in the samples are degraded to some extent, and cannot be dated other than they are more likely to be historic rather than recent releases.

MW-285, MW-491, MW-492, RW-26, RW-29, RW-169, have similar GC/FID patterns. Several also contain volatile HCs, whose composition could indicate that they are part of a degraded crude oil, which could be the heavy oil in these samples. RW-29 contains n-alkanes, and is the least degraded oil.

MW-231, MW-19, P-3, MW-33, RW-31, MW-188, MW-326, RW-15, MW-324 have similar GC/FID patterns of a degraded heavy oil. RW-31 also contains volatile HCs that could again be part of a degraded crude oil in these samples.

MW-439 and MW-371 contain heavy oil GC/FID patterns that are different from those above.

MW-170 contains a degraded light distillate. MW-326 contains a small amount of light distillate in addition to the heavy oil.

RW-29 contains a substantial amount of weathered gasoline. MW-285, MW-491, RW-31, MW-371, MW-324 contain traces of gasoline. Gasoline additives may help to date these gasolines.
Thanks!

Taryn Mancine
Project Manager
Pace Analytical®
220 William Pitt Way
Pittsburgh, PA 15238
Phone: 412-826-4481
taryn.mancine@pacelabs.com

January 22, 2016

formerly ZymaX Forensics

Jenny DeBoer
Stantec
1060 Andrew Drive; Suite 140
West Chester, PA 19380

RE: Evergreen, Marcus Hook AOI 4, 5
Project Number: 213402493

Pace Analytical received 18 sample(s) received on December 24th, 2015 for analysis labeled MW-231, MW-19, P-3, MW-33, MW285, MW-491, MW-492, RW-26, RW-31, RW-29, RW-169, MW-188, MW-439, MW-371, MW-326, MW-170, RW-15, and MW-324. Per client request, the following analyses were performed:

1. C3-C36 Whole Oil (ASTM 3328)
2. Specific Gravity (ASTM D1217)
3. Sulfur (ASTM D2622) – subbed to Clark Testing

The sample was performed in house under laboratory number **17836**.

Please call the lab at 412-826-4481, or you may email any questions or concerns to taryn.mancine@pacelabs.com regarding any analytical data reports.

Respectfully submitted,

Taryn Mancine

Taryn Mancine
Project Manager/Scientist

Pace Analytical®
www.pacelabs.com
Microseeps

220 William Pitt Way
Pittsburgh, PA 15238
412-826-5245

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

17836

Page: 1 of 2

005965

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Stantec Consulting Services	Report To: jennifer.menges@stantec.com	Attention:
Address: 1060 Andrew Drive, Ste 140	Copy To: Chris.mccardell@stantec.com	Company Name:
W. Chester, PA	Jenny.Deboer@stantec.com	Address:
Email To: Jenny.Deboer@stantec.com	Purchase Order No.:	Pace Quote Reference:
Phone: 610-250-2500 Fax: 610-840-2501	Project Name: Evergreen, Marcus Hook	Pace Project Manager:
Requested Due Date/TAT: Standard	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: PA

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	TSP	BAK	Zinc Acetate & NaOH	Other	Analysis Test (Y/N)	C3-C36 (ASTM D3328)	~~Bromine~~ CO	Sulfur	Specific Gravity	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-231	P	G	12/21/15	840				2	2									X	X CO	X	X		
2	MW-19	P	G		910				2	2									X	X CO	X	X		
3	P-3	P	G		1000				2	2									X		X	X		
4	MW-33	P	G		1030				2	2									X		X	X		
5	MW-285	P	G		1100				3	3									X		X	X		
6	MW-491	P	G		1130				2	2									X		X	X		
7	MW-492	P	G		1230				2	2									X		X	X		
8	RW-26	P	G		1250				2	2									X		X	X		
9	RW-31	P	G		1325				2	2									X		X	X		
10	RW-29	P	G		1345				2	2									X		X	X		
11	RW-169	P	G		1455				2	2									X		X	X		
12	MW-188	P	G	12/22/15	0830				2	2									X		X	X		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Please report product identification (and relative proportions), degree of weathering	[signature]	12/22/15	1130	JD [signature]	12/22/15	11:30				
age information and any other interpretive information available from the requested	[signature]	12/22/15	1700	[signature] Pace	12/22/15	1920				
analyses. Questions can be directed to Jenny Deboer (610-209-2511)	[signature]	12/22/15	2330	Ben Mauntea	12-23-15	23:30	-2.5	Y	N	Y
Hold additional volume for possible analyses	[signature] Pace	12-24-15	1210	[signature] PACE	12-24-15	1215	2	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Colin Dubinski

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 12/22/15

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Pace Analytical®
www.pacelabs.com

220 William Pitt Way
Pittsburgh, PA 15238
412-826-5245

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

17836

Page: 2 of 2

005964

Microseeps

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Stantec Consulting Services	Report To: jennifer.menges@stantec.com	Attention:
Address: 1060 Andrew Drive Ste 140	Copy To: chris.mccardell@stantec.com	Company Name:
W. Chester, PA	Jenny.deboer@stantec.com	Address:
Email To: Jenny.deboer@stantec.com	Purchase Order No.:	Pace Quote Reference:
Phone: 610-250-2500 Fax: 610-840-2501	Project Name: Evergreen, Marcus Hook	Pace Project Manager:
Requested Due Date/TAT: Standard	Project Number:	Pace Profile #:

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☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: PA

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SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes — MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	TSP	BAK	Zinc Acetate & NaOH	Other	Analysis Test (Y/N): C3-C36 (ASTM D3328)	Sulfur	Specific Gravity	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-439	P	G	12/22/15	0910				2	2								X	X	X		
2	MW-371			↓	1015				2									X	X	X		
3	~~MW-324~~			↓														~~X~~	~~X~~			
4	MW-326			12/3/15	0910				1									X	X	X		
5	MW-170			12/3/15	0941				1									X	X	X		
6	RW-15			12/3/15	0815				1									X	X	X		
7	MW-324			12/3/15	0733				1									X	X	X		
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Please report product identification (and relative proportions), degree of weathering, age information and any other interpretive information available from the requested analyses. Questions can be directed to Jenny Deboer (610-209-2511)	[signature]	12/22/15	1130	[signature]	12/22/15	1130				
	[signature]	12/22/15	1700	[signature] Pace	12/22/15	1700				
	[signature]	12/22/15	2330	[signature] Mountain	12-23-15	2330	-25	Y	N	Y
Hold additional volume for possible analyses	[signature] Pace	12-24-15	1210	[signature] PPLS	12/24/15	1215	2	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Colin Dubinski

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 12/22/15

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Cooler Receipt Form

Client Name: Stantec Project: Evergreen Lab Work Order: 17836

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx UPS USPS Client Other: Pace G Air bill Present: Yes No

Tracking Number: _____

Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam Other: _____

Type of Ice: Wet Blue None Ice Intact: Yes Melted

Cooler Temperature: 2°C Radiation Screened: Yes No Chain of Custody Present: Yes No

Comments: _____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC	✓			
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC	✓			
Sample name/date and time collected	✓			
Sufficient volume provided				
PAES containers used			✓	
Are containers properly preserved for the requested testing? (as labeled)			✓	
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments: _____

Cooler contents examined/received by: LJ Date: 12 24 15

Project Manager Review: TM Date: 12-24-15

1/16/2016

ZymaX ID	17836-1
Sample ID	MW-231

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.00
Aromatics / Naphthenes	0.00

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.00
% Isoparaffinic	0.00
% Aromatic	0.00
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-1
Sample ID		MW-231
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

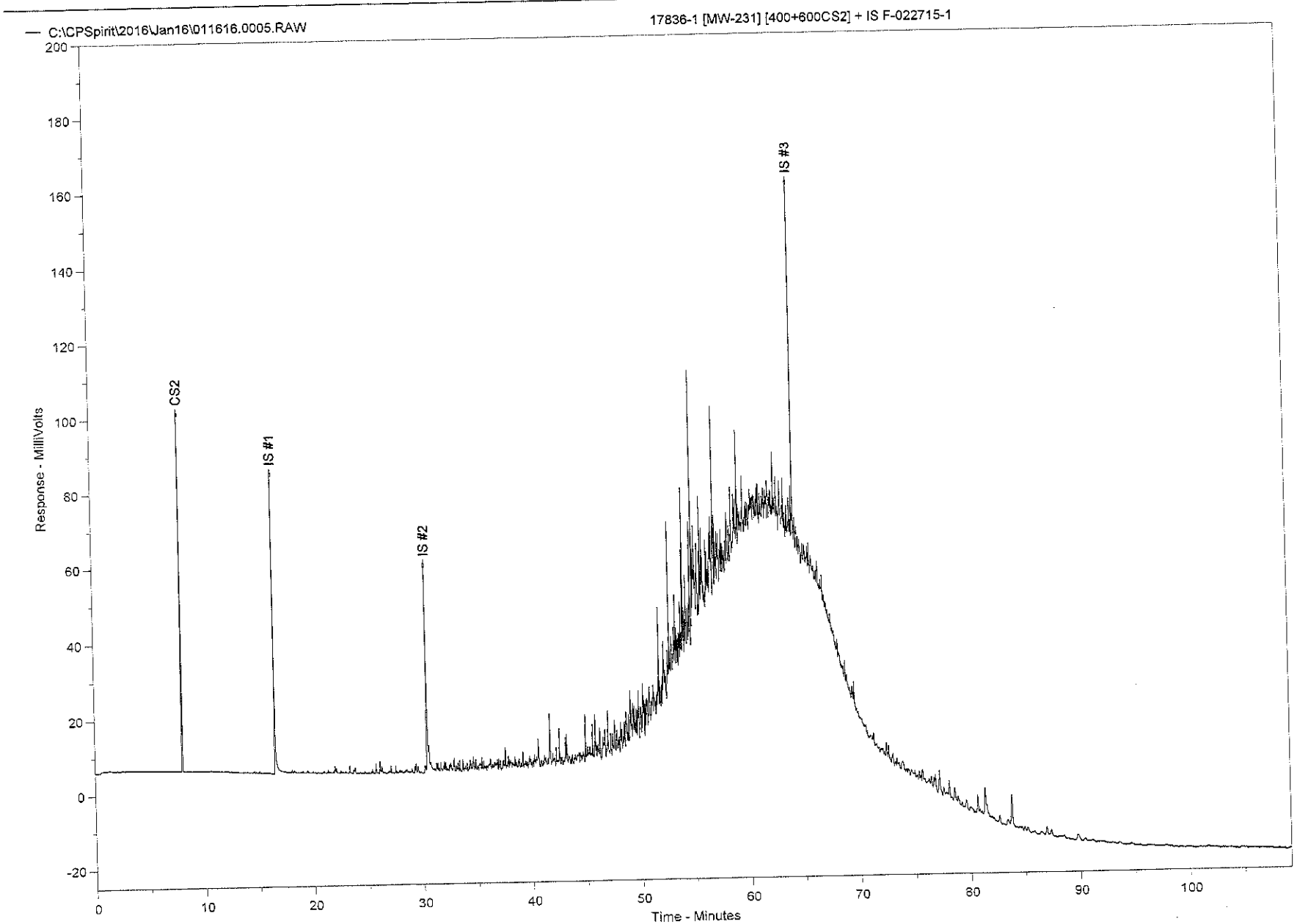
1/16/2016

ZymaX ID		17836-1
Sample ID		MW-231
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	0.00
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-1
Sample ID		MW-231
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	0.00
79	1,3-Diethylbenzene	0.00
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	0.00
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.00
88	1,2,3,5-Tetramethylbenzene	0.00
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report



Printed on 1/22/2016 4:42:12 PM

Sample Name = **17836-1 [MW-231] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0005.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 3:41:06 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.01	5.2119	323212.60
IS #1	16.50	4.5089	279618.20
	25.74	0.1548	9601.33
	26.10	0.1262	7823.23
IS #2	30.41	2.9922	185561.10
	33.67	0.1986	12318.54
	34.35	0.2060	12774.10
	34.63	0.2728	16919.20
	37.43	0.2738	16981.67
	37.58	0.3367	20881.58
	37.85	0.1636	10148.00
	39.19	0.2620	16246.29
	39.80	0.4552	28231.07
	40.25	0.2970	18415.60
	40.62	0.6737	41779.52
	41.69	1.0170	63065.76
	42.27	0.2062	12788.04
	42.55	0.5146	31915.47
	43.11	0.3550	22016.25
	43.21	0.4948	30686.02
	43.73	0.1763	10934.07
	44.34	0.4338	26902.31
	44.73	0.2450	15194.23
	44.94	0.5904	36615.93
	45.15	0.1613	10002.07
	45.59	0.4235	26264.67
	45.84	0.5355	33208.70
	46.27	0.4057	25161.10
	46.58	0.5542	34366.78
	46.74	0.5788	35894.17
	47.01	1.0506	65154.54
	47.25	0.3925	24340.54
	47.41	0.4280	26544.51
	47.60	0.8012	49683.16
	47.83	0.4722	29285.90
	48.19	0.5661	35108.08
	48.42	0.2527	15671.56
	48.54	0.5247	32540.47
	48.68	0.8830	54759.04
	48.91	0.4246	26333.12
	49.07	0.7793	48328.27
	49.15	0.5425	33645.40
	49.34	0.7344	45542.96
	49.44	0.5719	35464.70
	49.65	0.4644	28800.88
	49.75	0.6270	38884.62
	49.86	0.6534	40522.43
	50.05	0.3825	23720.03
	50.25	0.4221	26173.67
	50.44	0.2503	15520.34
	50.54	0.1830	11349.13
	50.86	0.7298	45260.61
	51.20	0.7083	43926.49
	51.28	0.6733	41752.40
	51.67	0.8220	50975.10

Peak Name	Ret. Time	Area %	Area
	51.75	1.0063	62402.47
	51.99	0.2130	13211.38
	52.07	0.3869	23994.28
	52.19	0.7536	46732.48
	52.54	0.9882	61280.89
	52.72	1.3118	81352.46
	52.93	0.7146	44316.21
	53.17	0.9187	56971.72
	53.30	0.7199	44645.75
	53.38	0.4485	27813.72
	53.53	0.3517	21809.25
	53.62	0.2455	15224.41
	53.79	0.5899	36582.78
	53.88	0.3551	22021.63
	53.96	1.1539	71557.69
	54.04	1.7251	106978.40
	54.15	0.4207	26091.47
	54.30	1.0150	62944.14
	54.44	1.1273	69910.68
	54.71	1.6048	99520.76
	54.89	2.2407	138956.40
	54.99	0.9907	61436.72
	55.12	0.4936	30607.61
	55.40	1.4898	92391.48
	55.61	0.3932	24384.93
	55.67	0.8842	54831.65
	55.78	0.3341	20718.34
	55.84	0.4153	25752.09
	56.22	0.9350	57983.43
	56.32	0.6944	43062.50
	56.48	0.2950	18292.29
	56.70	0.6825	42325.28
	56.86	0.7588	47053.87
	56.94	2.3241	144127.90
	57.05	0.6318	39183.67
	57.14	0.9130	56619.38
	57.25	0.9153	56761.02
	57.37	1.0051	62330.51
	57.54	0.6694	41514.39
	57.81	0.3179	19712.27
	58.06	0.5137	31856.02
	58.21	0.9966	61803.40
	58.39	0.5249	32548.98
	58.51	0.4174	25884.76
	58.60	0.6649	41234.07
	58.87	0.3805	23593.94
	59.17	0.8907	55238.15
	59.70	0.8823	54717.86
	59.94	0.3920	24307.46
	60.02	0.3783	23460.98
	60.14	0.5654	35061.68
	60.48	0.1774	11000.96
	60.69	0.5764	35745.22
	61.09	0.9836	60999.70
	61.31	0.4325	26823.82
	61.51	0.2128	13198.30
	61.81	0.3571	22144.48
	61.99	0.7583	47022.92
	62.26	0.7558	46868.41
	62.51	0.7470	46326.64
	62.77	0.6883	42685.14
	63.12	1.4277	88540.16
	63.43	0.4347	26955.75
	63.67	0.2281	14143.38
	63.95	0.3105	19253.62
	64.12	0.4140	25671.19
IS #3	64.28	2.8453	176448.40

Peak Name	Ret. Time	Area %	Area
	64.43	0.4723	29287.80
	64.55	0.6330	39257.77
	64.87	0.5705	35379.39
	65.11	0.3537	21931.69
	65.26	0.2380	14759.30
	65.67	0.4301	26671.77
	66.44	0.5633	34931.23
	68.80	0.2619	16241.46
	69.58	0.2875	17827.87
	72.45	0.2919	18099.91
	73.93	0.4863	30156.09
	75.67	0.5351	33182.27
	76.47	0.4223	26191.12
	76.82	0.8000	49613.14
	77.20	0.6939	43031.22
	77.58	0.2305	14293.22
	78.08	0.3680	22824.29
	78.57	0.4541	28162.97
	79.63	0.3402	21097.06
	80.63	0.4573	28357.57
	81.32	0.5828	36140.89
	83.38	0.3676	22796.08
	83.75	1.2986	80533.38
	86.92	0.3051	18918.32

Total Area = 6201447 Total Height = 1758044 Total Amount = 1

1/16/2016

ZymaX ID	17836-2
Sample ID	MW-19
Evaporation	
n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00
Waterwashing	
Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.00
Aromatics / Naphthenes	0.00
Biodegradation	
(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00
Octane rating	
2,2,4,-Trimethylpentane / Methylcyclohexane	0.00
Relative percentages - Bulk hydrocarbon composition as PIANO	
% Paraffinic	0.00
% Isoparaffinic	0.00
% Aromatic	0.00
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-2
Sample ID		MW-19
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

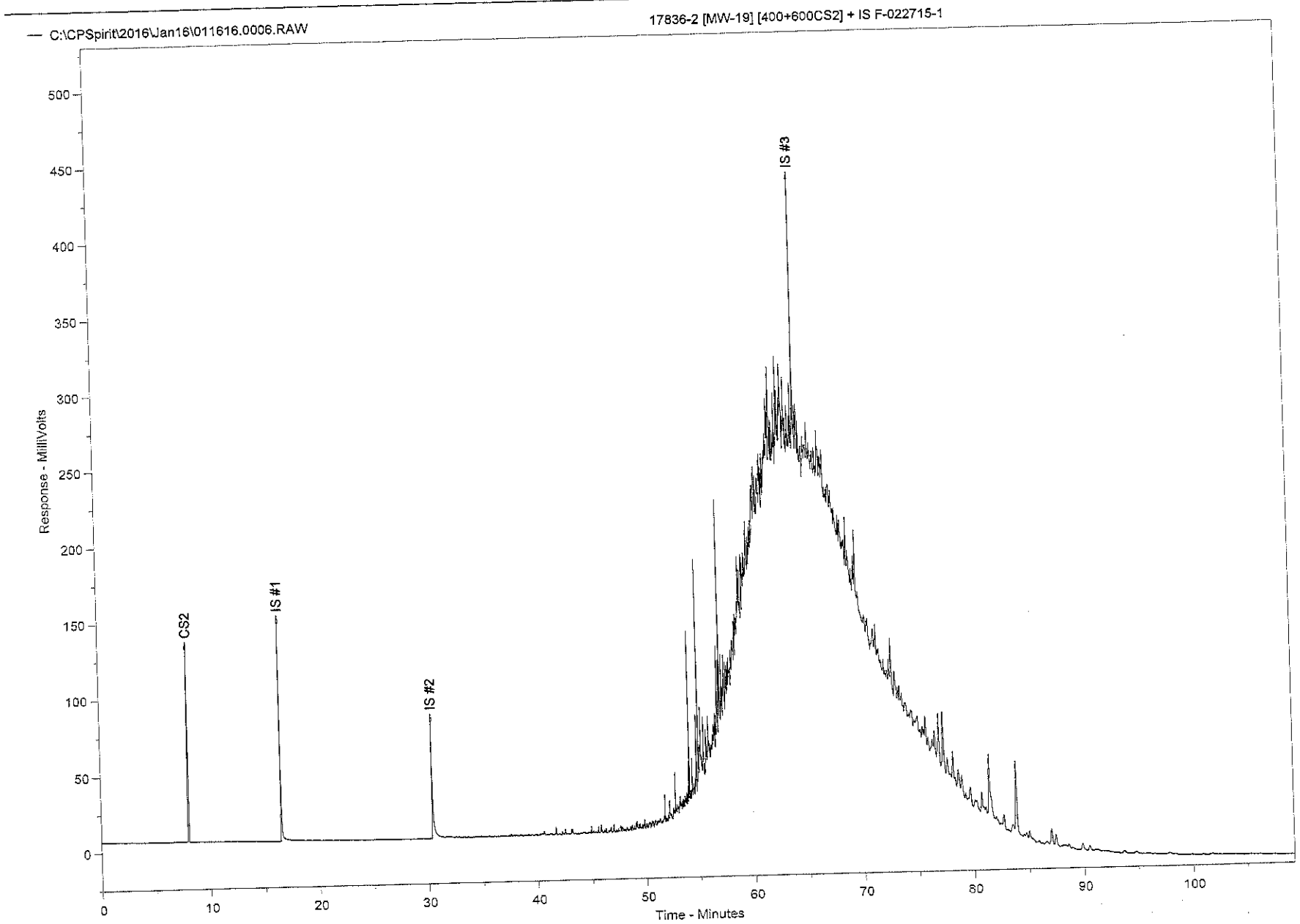
1/16/2016

ZymaX ID		17836-2
Sample ID		MW-19
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	0.00
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-2
Sample ID		MW-19
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	0.00
79	1,3-Diethylbenzene	0.00
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	0.00
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.00
88	1,2,3,5-Tetramethylbenzene	0.00
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report



Printed on 1/22/2016 4:39:08 PM

Sample Name = **17836-2 [MW-19] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0006.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 5:45:14 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.07	2.3484	624900.60
IS #1	16.50	1.7488	465336.80
IS #2	30.42	1.6733	445250.80
	41.70	0.0673	17913.15
	42.56	0.0478	12731.71
	43.12	0.0393	10454.66
	44.95	0.0489	13005.44
	45.59	0.0412	10958.90
	45.85	0.0587	15613.84
	46.27	0.0367	9760.78
	47.02	0.0740	19699.85
	47.60	0.0800	21291.24
	48.55	0.0419	11161.85
	48.70	0.0624	16616.11
	49.08	0.0376	9999.35
	50.36	0.1131	30107.76
	50.54	0.1120	29812.89
	50.86	0.0721	19192.63
	51.75	0.1347	35842.04
	52.10	0.0537	14279.01
	52.19	0.1311	34894.21
	52.55	0.0843	22422.06
	52.72	0.2523	67127.18
	53.17	0.2200	58536.57
	53.44	0.1046	27822.43
	53.53	0.0510	13572.68
	53.79	0.0610	16222.58
	53.89	0.0686	18259.75
	53.96	0.2453	65260.88
	54.05	0.8857	235692.20
	54.30	0.3101	82521.60
	54.45	0.1818	48381.78
	54.58	0.0800	21294.97
	54.71	0.5843	155479.20
	54.90	1.2645	336483.30
	55.03	0.4428	117836.60
	55.12	0.3714	98827.91
	55.40	0.4061	108068.90
	55.62	0.4716	125482.00
	55.84	0.7897	210122.80
	56.04	0.0786	20903.68
	56.14	0.1686	44867.41
	56.25	0.2545	67726.55
	56.41	0.1679	44686.19
	56.48	0.2059	54786.85
	56.57	0.2892	76943.60
	56.71	0.9177	244203.00
	56.87	0.6260	166569.60
	56.95	1.6084	427999.90
	57.15	0.6639	176657.90
	57.30	0.3097	82404.02
	57.38	0.5746	152887.20
	57.52	0.4911	130686.20
	57.64	0.2358	62736.45
	57.75	0.3291	87564.52

Peak Name	Ret. Time	Area %	Area
	57.82	0.3760	100056.20
	58.07	0.3726	99159.55
	58.25	0.7768	206700.50
	58.40	0.5538	147376.30
	58.51	0.3807	101299.30
	58.61	0.5166	137473.50
	58.77	0.4037	107412.00
	58.88	1.1191	297778.70
	59.00	0.9044	240645.40
	59.19	0.9224	245437.50
	59.26	1.1513	306346.30
	59.43	0.8832	235014.60
	59.51	0.6853	182364.00
	59.71	1.3643	363025.90
	59.89	0.8298	220797.40
	60.04	1.5788	420101.20
	60.15	0.9269	246643.50
	60.38	2.6170	696383.80
	60.50	1.1191	297785.60
	60.56	1.4485	385446.60
	60.68	1.5688	417443.30
	60.86	0.7733	205763.10
	60.92	1.0810	287649.00
	61.04	1.0294	273906.80
	61.10	0.7928	210961.50
	61.17	0.8197	218113.10
	61.26	0.6628	176371.90
	61.33	0.8134	216452.90
	61.42	0.8484	225744.50
	61.56	1.9702	524259.20
	61.66	1.2841	341696.90
	61.83	1.2692	337722.70
	61.92	1.5117	402250.10
	62.00	0.8670	230703.30
	62.06	1.5981	425250.20
	62.16	0.8184	217764.70
	62.24	0.8716	231933.50
	62.35	1.1656	310152.40
	62.47	0.6402	170365.00
	62.53	0.7863	209222.80
	62.62	0.8111	215820.60
	62.77	1.8061	480591.70
	62.85	0.8422	224113.50
	63.05	1.0041	267174.20
	63.15	0.7789	207252.00
	63.21	0.7753	206309.20
	63.32	0.5802	154390.80
	63.45	0.5945	158205.90
	63.55	0.2840	75573.11
	63.70	0.1654	44017.39
	63.76	0.2304	61319.67
	63.97	0.3042	80950.33
	64.07	0.4697	124997.10
	64.16	0.1467	39046.74
	64.22	0.4491	119513.60
	64.30	1.6649	443030.70
IS #3	64.46	0.6185	164593.20
	64.57	0.7983	212412.50
	64.73	0.4019	106952.00
	64.94	0.3729	99223.21
	65.09	0.2308	61420.21
	65.28	0.4624	123031.40
	65.50	0.2419	64367.64
	65.70	0.2082	55408.08
	65.91	0.0855	22763.26
	66.16	0.2674	71163.11
	66.31	0.0545	14494.19

Peak Name	Ret. Time	Area %	Area
	66.43	0.7033	187142.30
	66.60	0.0734	19527.04
	66.74	0.0653	17381.36
	66.87	0.2158	57419.30
	67.02	0.0819	21799.82
	67.19	0.1568	41716.32
	67.38	0.6112	162641.10
	67.56	0.6055	161132.30
	67.83	0.4877	129763.60
	68.17	0.2509	66751.22
	68.32	0.3733	99333.84
	68.51	0.1698	45172.84
	68.59	0.1786	47536.07
	68.69	0.2732	72700.48
	68.84	0.5154	137155.00
	68.97	0.5668	150814.90
	69.25	0.1886	50195.07
	69.42	0.2479	65957.78
	69.49	0.3535	94062.48
	69.63	0.8192	217981.60
	69.85	0.4553	121165.00
	70.37	0.3241	86245.87
	70.58	0.1990	52951.37
	70.66	0.3698	98391.67
	71.14	0.3199	85127.17
	71.37	0.4122	109695.60
	71.55	0.0375	9974.12
	72.05	0.1386	36891.25
	72.34	0.1319	35099.93
	72.51	0.3115	82878.65
	72.70	0.7292	194024.90
	73.02	0.5432	144542.60
	73.29	0.1845	49095.98
	73.44	0.2890	76913.67
	73.65	0.2851	75872.59
	73.91	0.3464	92170.96
	74.43	0.0573	15242.06
	74.72	0.0779	20741.86
	75.46	0.2078	55284.75
	75.60	0.1604	42685.03
	75.73	0.4674	124376.50
	75.96	0.1857	49409.89
	76.35	0.3440	91525.84
	76.55	0.5342	142142.20
	76.91	1.0492	279188.80
	77.29	1.2326	327999.80
	77.66	0.4193	111581.30
	78.18	0.6163	163983.90
	78.66	0.5894	156844.80
	78.95	0.4408	117297.90
	79.30	0.1665	44316.05
	79.71	0.4509	119988.20
	80.15	0.3113	82828.97
	80.74	0.3091	82263.32
	81.43	0.8930	237630.50
	82.72	0.2862	76157.95
	83.55	0.3162	84136.79
	83.86	1.9449	517521.20
	84.75	0.0736	19571.74
	85.01	0.2523	67133.80
	87.02	0.4053	107849.90
	87.42	0.2900	77179.38
	89.85	0.2000	53226.55
	90.49	0.1326	35294.21

Total Area = 2.660961E+07 Total Height = 5795070 Total Amount = 0

1/16/2016

ZymaX ID	17836-3
Sample ID	P-3

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.00
Aromatics / Naphthenes	0.00

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.00
% Isoparaffinic	0.00
% Aromatic	100.00
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-3
Sample ID		P-3
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

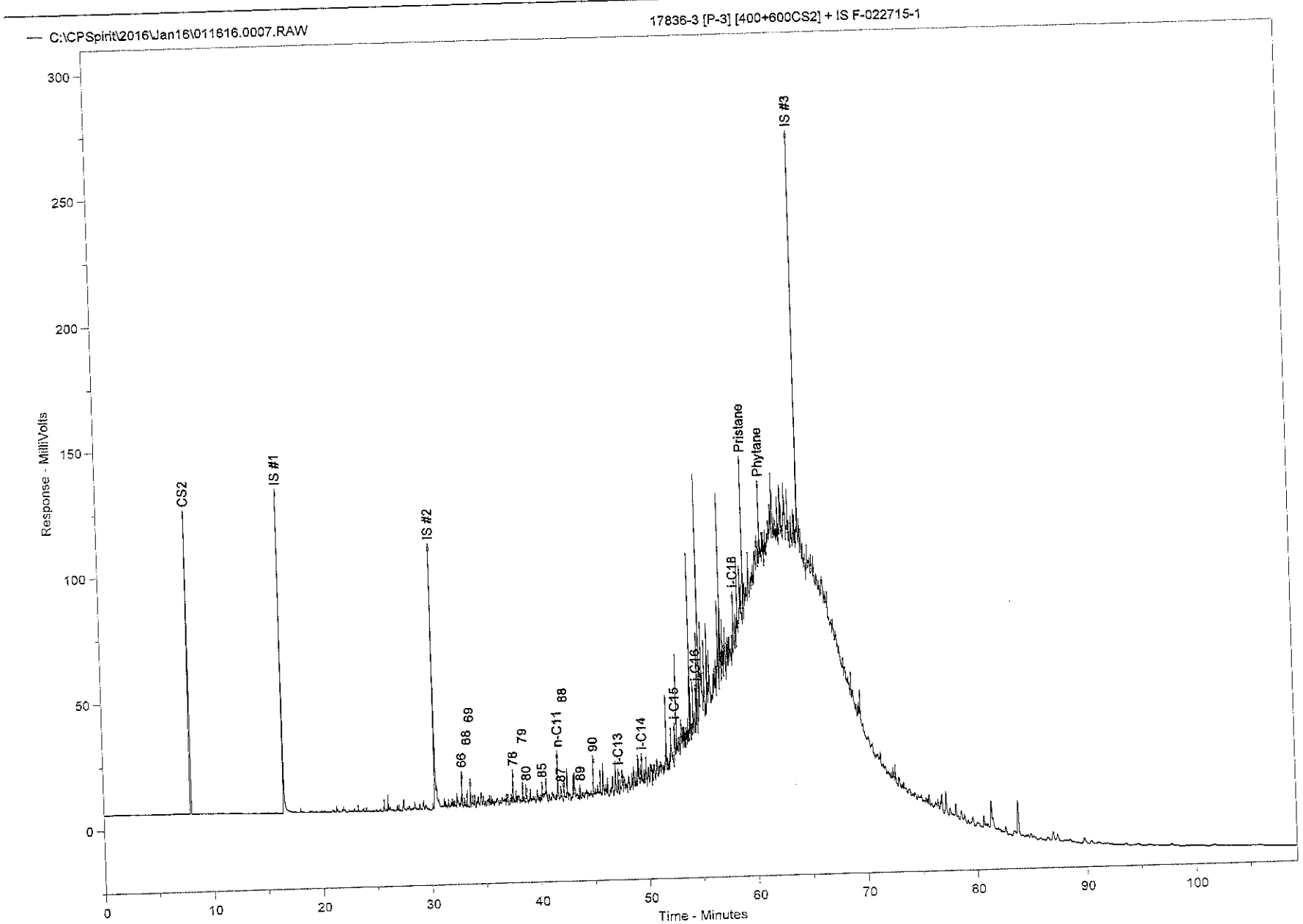
1/16/2016

ZymaX ID		17836-3
Sample ID		P-3
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	17.16
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	4.53
69	1,3,5-Trimethylbenzene	11.51
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-3
Sample ID		P-3
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	15.06
79	1,3-Diethylbenzene	5.83
80	1,4-Diethylbenzene	9.22
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	7.51
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	2.74
88	1,2,3,5-Tetramethylbenzene	5.64
89	1,2,3,4-Tetramethylbenzene	5.01
90	Naphthalene	15.79
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report



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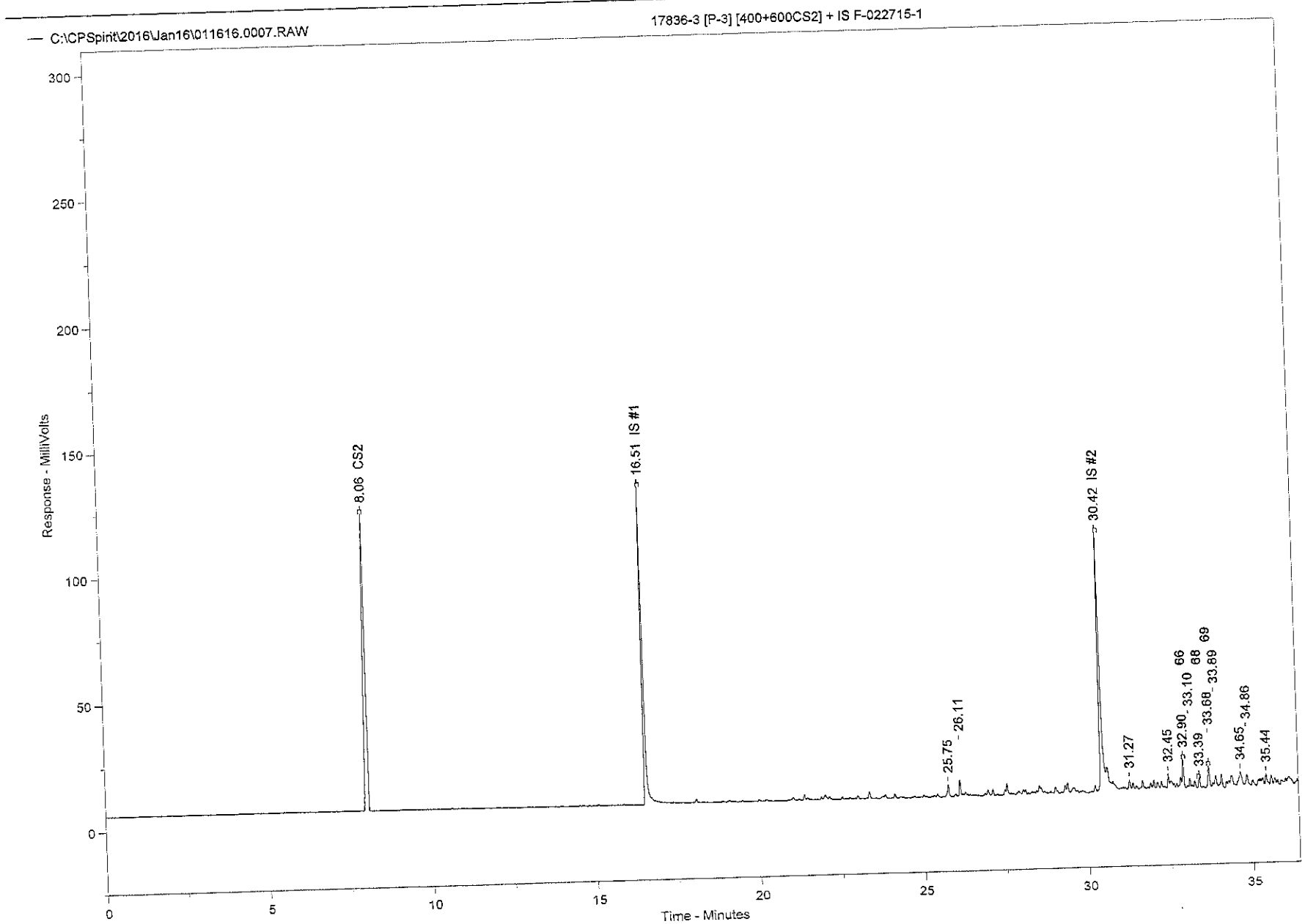

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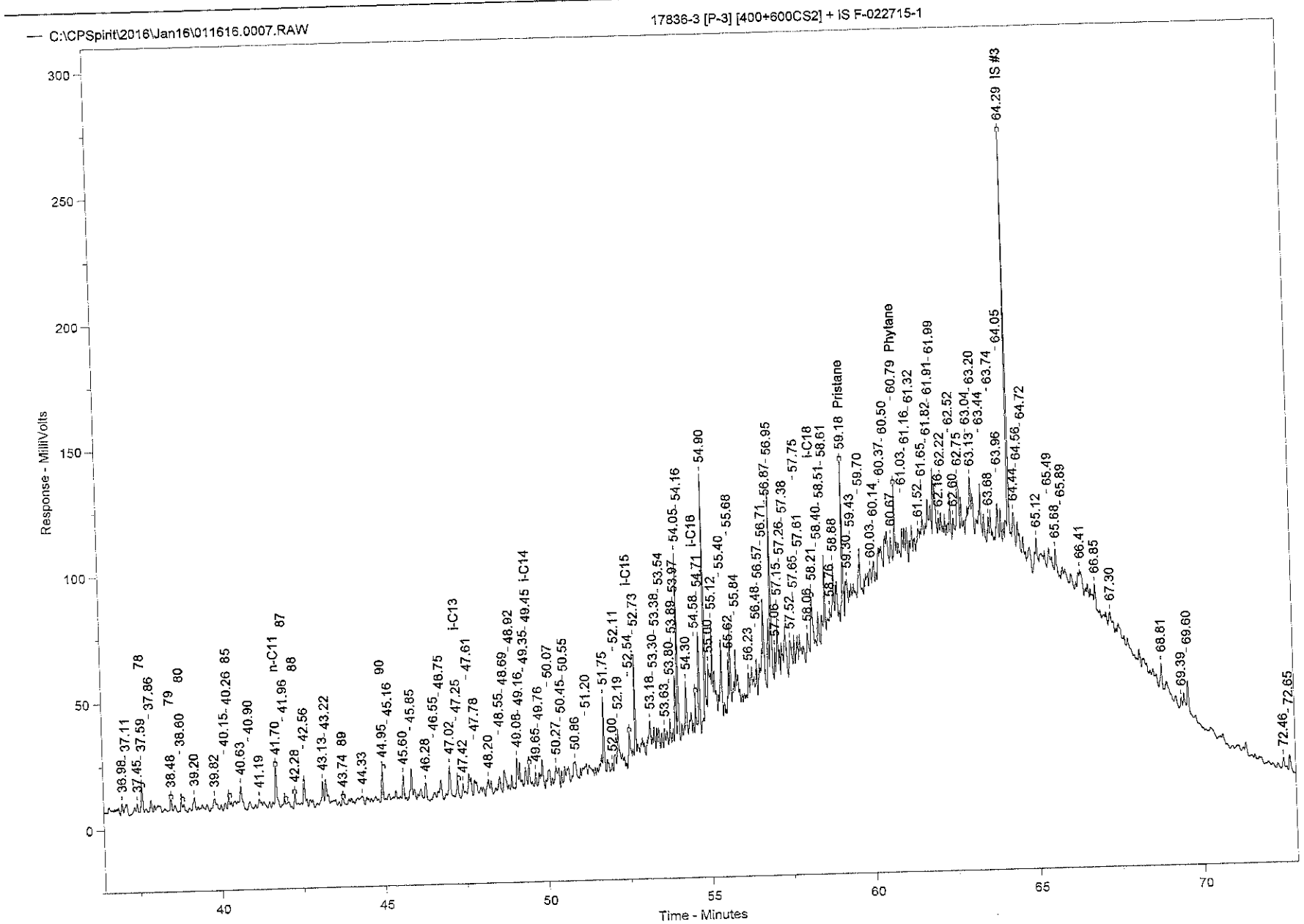

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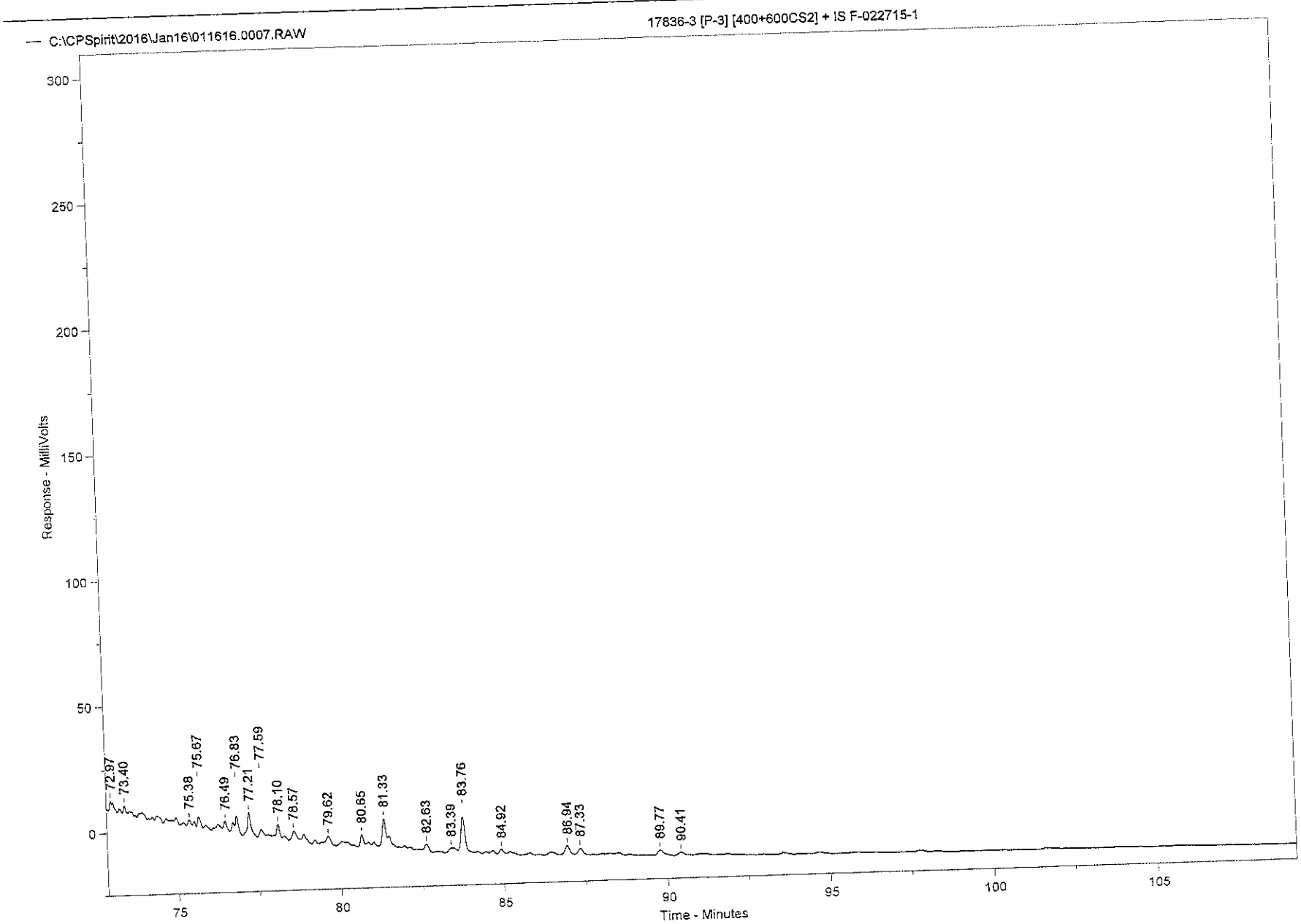

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Sample Name = **17836-3 [P-3] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0007.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 7:49:01 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.06	5.8074	525823.30
IS #1	16.51	4.5059	407976.00
	25.75	0.1983	17955.26
	26.11	0.1857	16815.47
IS #2	30.42	3.6135	327174.70
	31.27	0.1086	9834.89
	32.45	0.1192	10789.68
	32.90	0.4917	44522.32
66	33.10	0.1151	10424.19
	33.39	0.1297	11745.29
68	33.68	0.3296	29843.65
69	33.89	0.1098	9940.71
	34.65	0.3580	32410.25
	34.86	0.2154	19504.23
	35.44	0.1646	14904.54
	36.98	0.1668	15106.75
	37.11	0.2933	26555.71
	37.45	0.3239	29325.57
	37.59	0.4313	39054.11
78	37.86	0.1870	16931.51
	38.48	0.1670	15119.67
79	38.80	0.2640	23898.83
80	39.20	0.2267	20524.26
	39.82	0.1223	11069.88
	40.15	0.1192	10795.06
	40.26	0.2152	19486.07
85	40.63	0.3334	30182.84
	40.90	0.1594	14429.30
	41.19	0.1627	14732.53
	41.70	0.6189	56035.68
n-C11	41.96	0.0786	7117.00
87	42.28	0.1617	14645.08
88	42.56	0.3194	28915.71
	43.13	0.2857	25870.78
	43.22	0.2332	21115.59
	43.74	0.1435	12991.89
89	44.33	0.4066	36818.20
	44.95	0.4523	40953.79
90	45.16	0.1209	10946.84
	45.60	0.3244	29373.41
	45.85	0.4253	38504.70
	46.28	0.2462	22288.58
	46.55	0.1562	14144.80
	46.75	0.3607	32656.44
	47.02	0.4956	44868.70
	47.25	0.2915	26394.68
i-C13	47.42	0.1981	17939.78
	47.61	0.5950	53876.37
	47.78	0.3672	33244.62
	48.20	0.3611	32692.53
	48.55	0.4645	42054.14
	48.69	0.5148	46611.09
	48.92	0.2205	19967.36
	49.08	0.4535	41060.06
	49.16	0.4586	41519.07

Peak Name	Ret. Time	Area %	Area
	49.35	0.3760	34043.38
i-C14	49.45	0.3474	31450.92
	49.65	0.1706	15445.65
	49.76	0.1058	9580.27
	50.07	0.2768	25059.01
	50.27	0.1268	11484.60
	50.45	0.1399	12662.94
	50.55	0.1064	9633.53
	50.86	0.4513	40863.58
	51.20	0.3404	30819.97
	51.75	0.6648	60191.07
	52.00	0.0980	8871.46
	52.11	0.2502	22657.44
	52.19	0.5173	46838.43
i-C15	52.54	0.6446	58367.75
	52.73	1.1291	102232.60
	53.18	0.7294	66041.27
	53.30	0.2188	19806.81
	53.38	0.1572	14234.66
	53.54	0.1898	17180.87
	53.63	0.1842	16681.62
	53.80	0.2765	25031.54
	53.89	0.1663	15057.69
	53.97	0.7108	64353.48
	54.05	1.7797	161139.70
	54.16	0.1616	14632.87
	54.30	0.6270	56773.16
	54.58	0.4258	38557.48
i-C16	54.71	1.2614	114208.50
	54.90	2.3484	212628.70
	55.00	0.8724	78994.13
	55.12	0.5543	50187.73
	55.40	1.1637	105366.20
	55.62	0.5141	46547.57
	55.68	0.7392	66928.19
	55.84	0.2657	24061.64
	56.23	0.2637	23874.75
	56.48	0.2670	24172.28
	56.57	0.5887	53302.41
	56.71	1.4568	131901.20
	56.87	0.9466	85707.38
	56.95	2.2862	206998.10
	57.06	0.3181	28804.85
	57.15	1.1628	105281.60
	57.26	0.6100	55231.59
	57.38	1.0225	92583.48
	57.52	0.7574	68577.05
	57.65	0.3297	29854.37
	57.75	0.3286	29751.01
	57.81	0.3012	27269.16
	58.06	0.4986	45144.59
i-C18	58.21	1.2655	114581.00
	58.40	0.5273	47744.02
	58.51	0.3157	28587.32
	58.61	0.8192	74174.52
	58.76	0.1506	13633.00
	58.88	0.5899	53408.84
Pristane	59.18	1.6578	150104.60
	59.30	0.6870	62205.59
	59.43	0.1153	10437.06
	59.70	0.8001	72442.24
	60.03	0.2699	24440.33
	60.14	0.3081	27896.32
	60.37	0.9520	86197.68
	60.50	0.2061	18660.94
	60.67	0.4292	38860.38
Phytane	60.79	0.9311	84308.69

Peak Name	Ret. Time	Area %	Area
	61.03	0.4656	42155.05
	61.16	0.3961	35864.36
	61.32	0.6107	55293.20
	61.52	0.6216	56280.16
	61.65	0.4669	42271.27
	61.82	0.8276	74929.08
	61.91	0.4405	39881.38
	61.99	0.4123	37329.53
	62.16	0.1611	14587.39
	62.22	0.1697	15368.35
	62.52	0.3763	34068.41
	62.60	0.2832	25641.28
	62.75	0.9930	89907.91
	63.04	0.7411	67101.97
	63.13	0.7008	63451.78
	63.20	0.6576	59539.06
	63.44	1.4084	127522.60
	63.68	0.3697	33470.68
	63.74	0.6599	59752.23
	63.96	0.7744	70113.41
	64.05	0.6292	56966.31
IS #3	64.29	4.7630	431259.70
	64.44	0.9302	84221.09
	64.56	0.8401	76062.40
	64.72	0.4145	37533.77
	65.12	0.5867	53120.57
	65.49	0.3789	34306.71
	65.68	0.3781	34238.67
	65.89	0.1185	10729.05
	66.41	0.7264	65773.84
	66.85	0.2297	20799.88
	67.30	0.1925	17433.02
	68.81	0.3436	31112.40
	69.39	0.0992	8979.61
	69.60	0.3418	30943.74
	72.46	0.2016	18257.59
	72.65	0.3715	33634.48
	72.97	0.3579	32401.72
	73.40	0.1230	11137.41
	75.38	0.1554	14074.83
	75.67	0.2861	25904.80
	76.49	0.2078	18819.19
	76.83	0.6808	61638.72
	77.21	0.8588	77757.66
	77.59	0.4693	42493.04
	78.10	0.3544	32088.83
	78.57	0.3403	30814.63
	79.62	0.3042	27540.97
	80.65	0.2809	25434.16
	81.33	0.6151	55693.89
	82.63	0.2283	20667.58
	83.39	0.3088	27962.33
	83.76	1.3874	125615.80
	84.92	0.1524	13801.44
	86.94	0.3840	34766.90
	87.33	0.2927	26498.02
	89.77	0.3213	29092.86
	90.41	0.1761	15948.68

Total Area = 9054293 Total Height = 2600871 Total Amount = 0

1/16/2016

ZymaX ID	17836-4
Sample ID	MW-33

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	50.02
Aromatics / Naphthenes	0.00

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	1.96
% Isoparaffinic	0.00
% Aromatic	98.04
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-4
Sample ID		MW-33
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

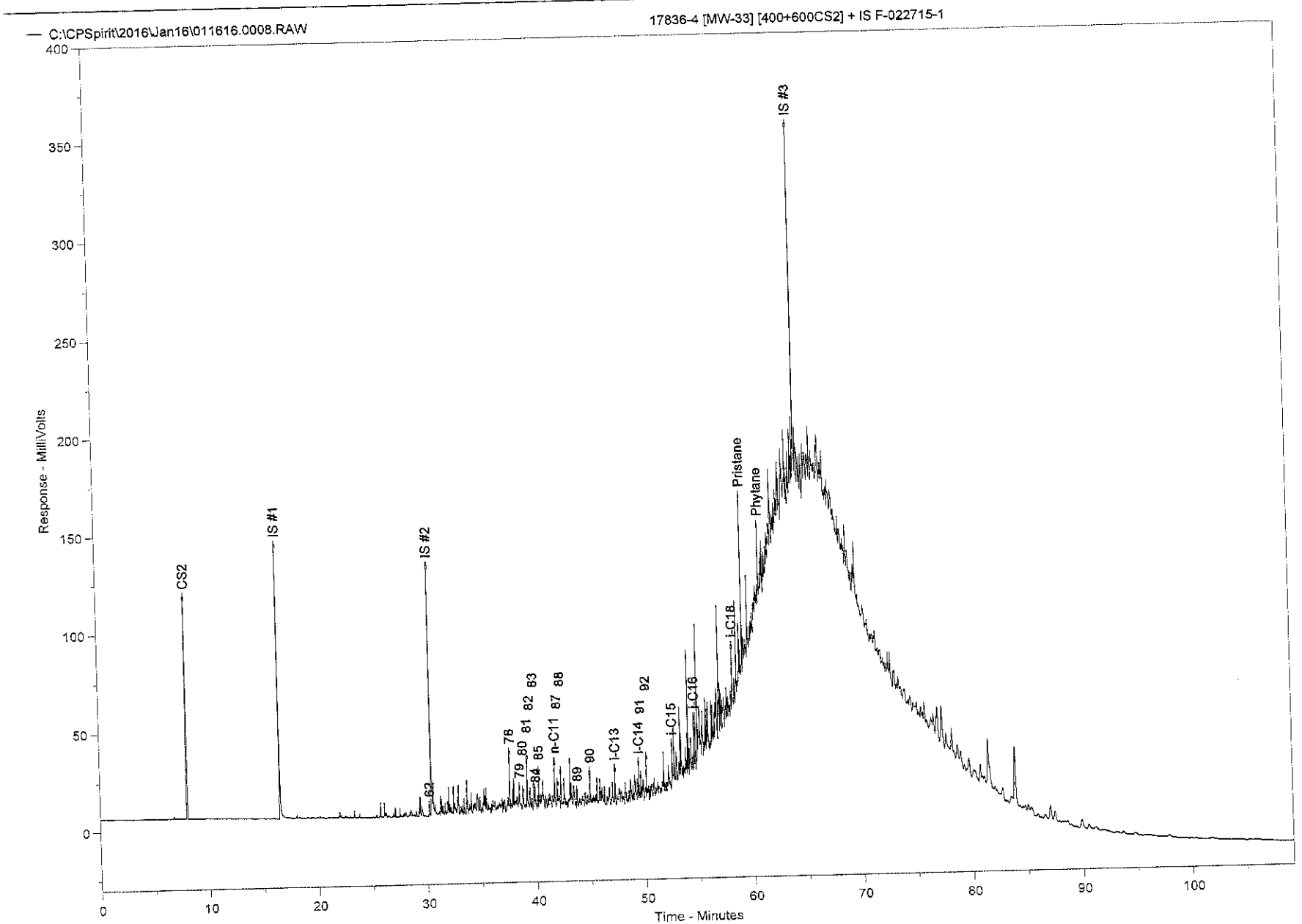
1/16/2016

ZymaX ID		17836-4
Sample ID		MW-33
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	1.96
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	0.00
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-4
Sample ID		MW-33
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	12.22
79	1,3-Diethylbenzene	3.17
80	1,4-Diethylbenzene	2.16
81	n-Butylbenzene	13.98
82	1,3-Dimethyl-5-ethylbenzene	4.98
83	1,4-Dimethyl-2-ethylbenzene	7.85
84	1,3-Dimethyl-4-ethylbenzene	7.20
85	1,2-Dimethyl-4-ethylbenzene	10.73
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	3.17
88	1,2,3,5-Tetramethylbenzene	6.69
89	1,2,3,4-Tetramethylbenzene	4.90
90	Naphthalene	8.07
91	2-Methyl-naphthalene	4.62
92	1-Methyl-naphthalene	8.29

Chrom Perfect Chromatogram Report



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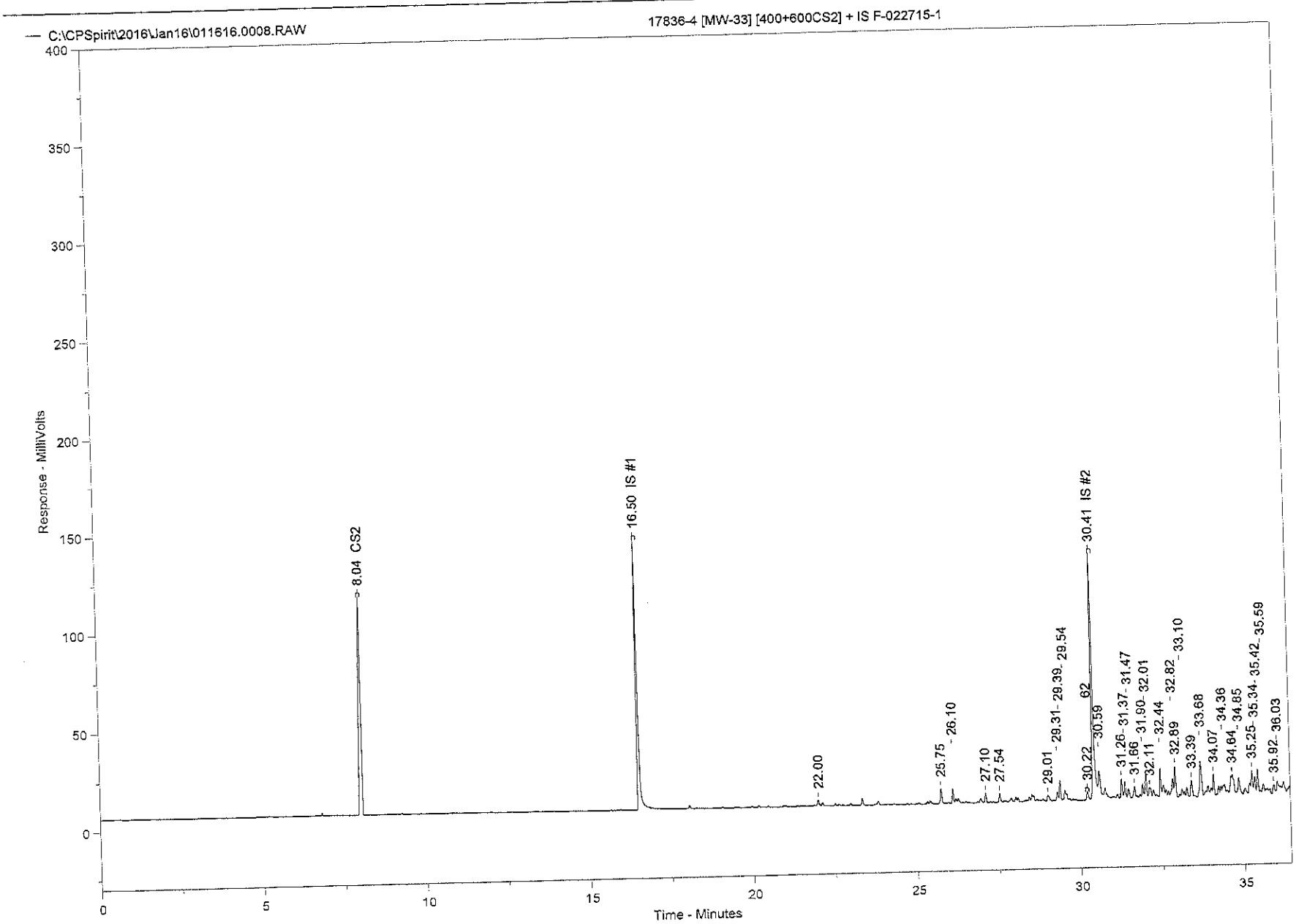

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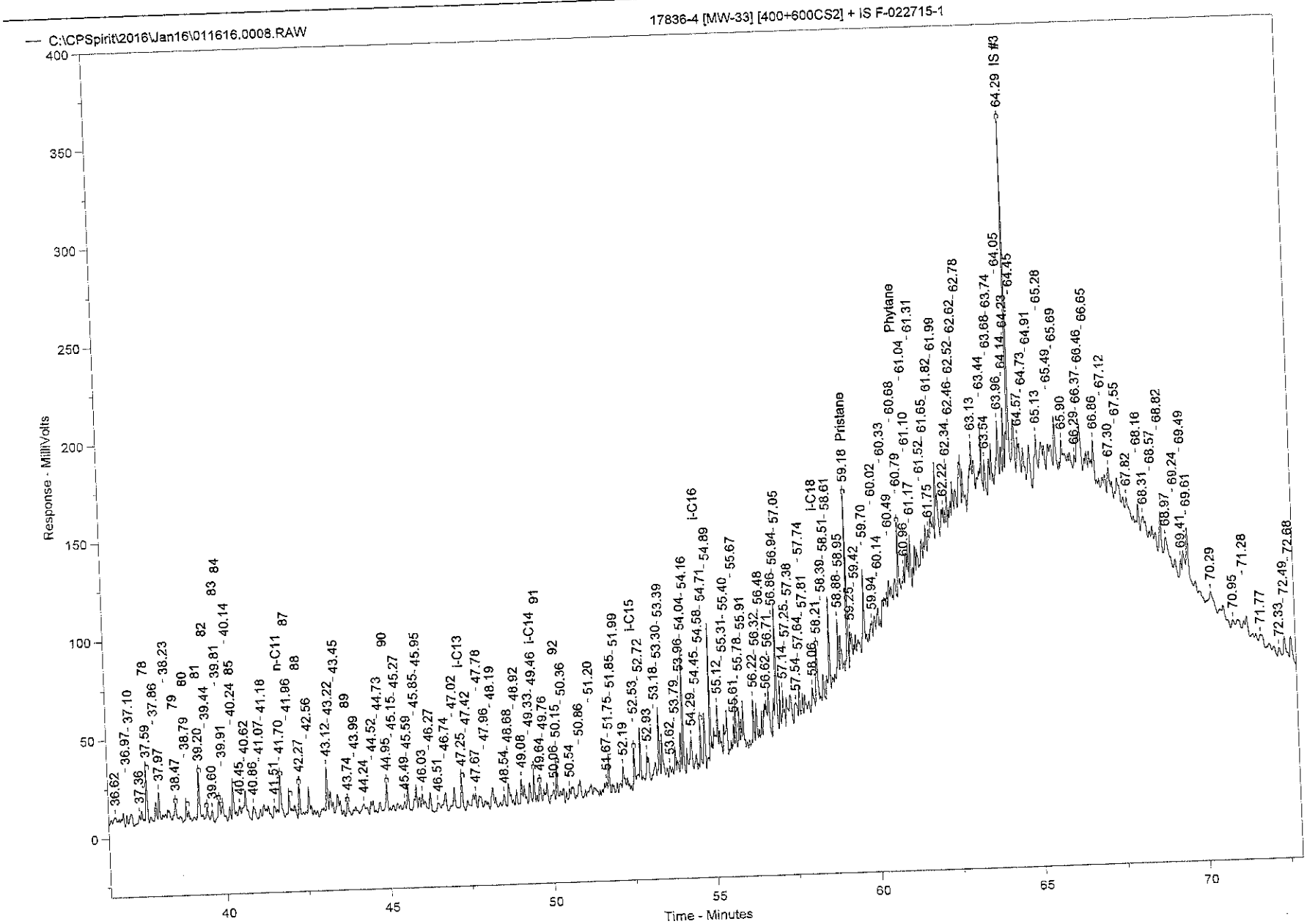
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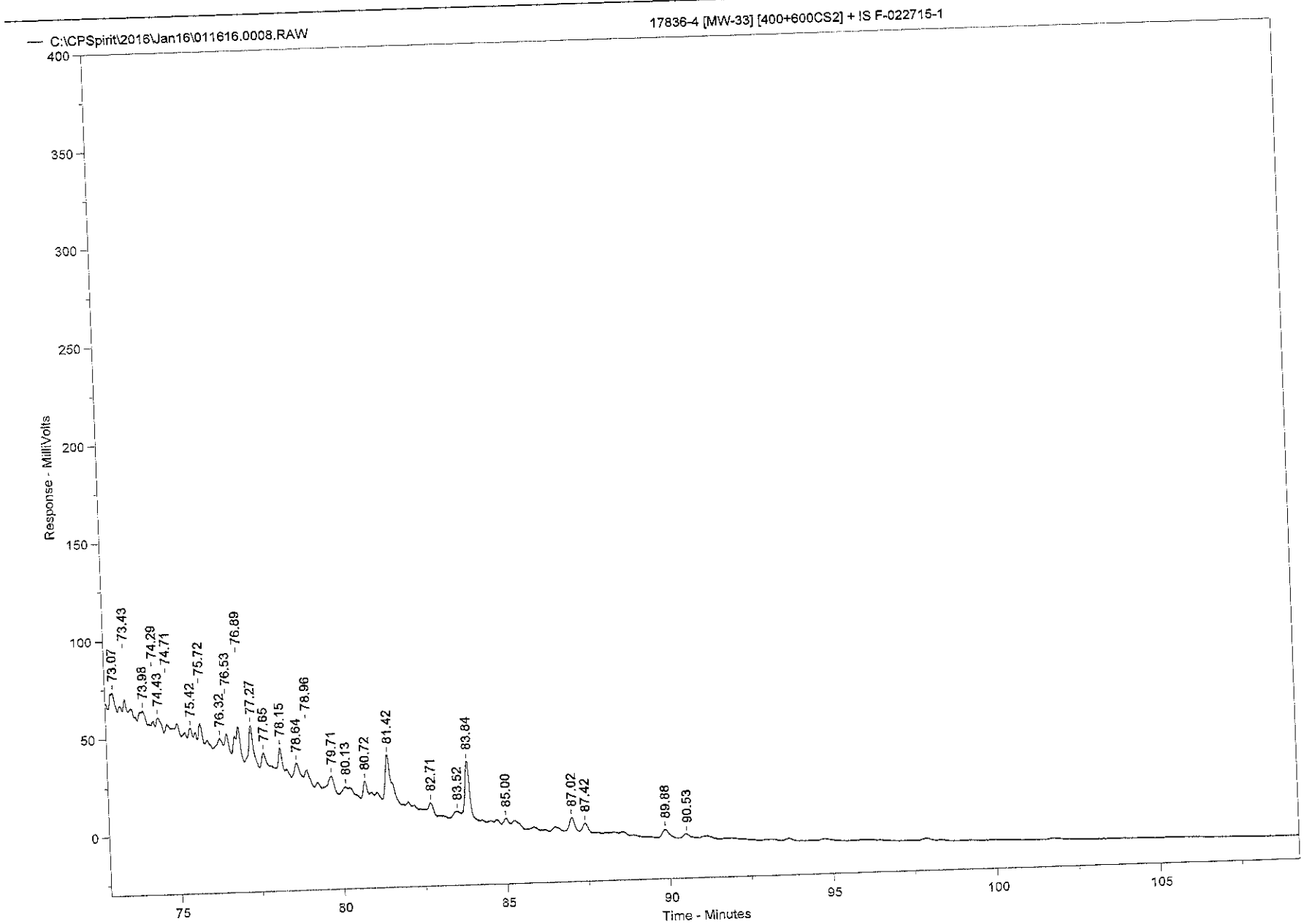
17836-4 [MW-33] [400+600CS2] + IS F-022715-1
Response - MilliVolts
Time - Minutes
IS #3
Pristane
Phytane
i-C16
i-C18
i-C15
i-C14
i-C13
n-C11



Printed on 1/22/2016 4:29:51 PM

Sample Name = **17836-4 [MW-33] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0008.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 9:52:10 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.04	2.5235	465278.80
IS #1	16.50	2.4527	452225.80
	22.00	0.0521	9609.72
	25.75	0.1426	26294.64
	26.10	0.1024	18889.10
	27.10	0.0715	13180.70
	27.54	0.0759	13985.81
	29.01	0.0705	13000.47
	29.31	0.0712	13119.32
	29.39	0.1497	27600.61
	29.54	0.1164	21462.78
	30.22	0.0764	14086.54
62	30.41	2.2555	415871.70
IS #2	30.59	0.3010	55492.38
	31.26	0.1662	30636.19
	31.37	0.1364	25155.98
	31.47	0.0881	16246.75
	31.66	0.1210	22317.48
	31.90	0.0940	17325.72
	32.01	0.2005	36960.84
	32.11	0.1071	19745.81
	32.44	0.1728	31852.98
	32.82	0.1703	31399.47
	32.89	0.2495	46008.12
	33.10	0.0666	12271.70
	33.39	0.1489	27456.91
	33.68	0.4025	74205.09
	34.07	0.1289	23760.83
	34.36	0.1874	34558.05
	34.64	0.3949	72809.20
	34.85	0.2001	36899.32
	35.25	0.2713	50031.05
	35.34	0.1343	24759.51
	35.42	0.1931	35599.66
	35.59	0.0914	16845.04
	35.92	0.0813	14997.99
	36.03	0.1061	19560.69
	36.62	0.0846	15593.61
	36.97	0.0981	18083.85
	37.10	0.2093	38591.63
	37.36	0.0800	14744.14
78	37.59	0.4765	87859.42
	37.86	0.1581	29158.98
	37.97	0.1990	36695.84
	38.23	0.1304	24035.57
79	38.47	0.1236	22793.62
80	38.79	0.0842	15533.58
81	39.20	0.5451	100497.50
82	39.44	0.1942	35807.46
	39.60	0.1349	24873.24
83	39.81	0.3058	56385.81
84	39.91	0.2805	51723.82
	40.14	0.1419	26161.05
85	40.24	0.4183	77127.80
	40.45	0.2025	37328.76

Peak Name	Ret. Time	Area %	Area
	40.62	0.4778	88087.95
	40.86	0.1892	34887.75
	41.07	0.0630	11612.10
	41.18	0.0721	13293.08
	41.51	0.1441	26560.06
n-C11	41.70	0.4726	87142.06
87	41.96	0.1237	22812.61
88	42.27	0.2607	48065.00
	42.56	0.1878	34633.15
	43.12	0.4604	84887.79
	43.22	0.1259	23214.72
	43.45	0.1236	22781.04
89	43.74	0.1910	35225.36
	43.99	0.2026	37347.56
	44.24	0.2172	40049.10
	44.52	0.2300	42410.13
	44.73	0.1694	31239.71
90	44.95	0.3147	58014.79
	45.15	0.0905	16677.96
	45.27	0.1020	18814.60
	45.49	0.1125	20751.65
	45.59	0.2432	44844.88
	45.85	0.2759	50871.96
	45.95	0.1005	18524.88
	46.03	0.0850	15669.61
	46.27	0.1525	28125.00
	46.51	0.1331	24535.89
	46.74	0.2400	44255.16
	47.02	0.3746	69073.14
i-C13	47.25	0.3296	60764.26
	47.42	0.1677	30911.98
	47.67	0.3370	62143.58
	47.78	0.2673	49279.49
	47.96	0.1846	34037.16
	48.19	0.2795	51541.94
	48.54	0.2060	37990.50
	48.68	0.3060	56428.06
	48.92	0.1092	20127.09
	49.08	0.1559	28739.69
	49.33	0.1967	36263.83
i-C14	49.46	0.2281	42063.59
91	49.64	0.1799	33165.15
	49.76	0.0632	11651.54
	50.06	0.2555	47112.75
92	50.15	0.3233	59618.16
	50.36	0.1542	28425.47
	50.54	0.0403	7429.43
	50.86	0.2180	40187.47
	51.20	0.1637	30177.10
	51.67	0.1580	29126.37
	51.75	0.2646	48795.50
	51.85	0.0899	16584.49
	51.99	0.0661	12193.73
	52.19	0.1977	36451.52
i-C15	52.53	0.3078	56758.89
	52.72	0.3142	57938.02
	52.93	0.0715	13192.11
	53.18	0.1427	26307.75
	53.30	0.4305	79374.68
	53.39	0.3515	64806.15
	53.62	0.0963	17748.43
	53.79	0.2327	42911.04
	53.96	0.3056	56342.72
	54.04	0.7510	138461.00
	54.16	0.1948	35909.98
	54.29	0.4174	76961.09
	54.45	0.2454	45246.09

Peak Name	Ret. Time	Area %	Area
i-C16	54.58	0.3315	61115.98
	54.71	0.4672	86150.80
	54.89	0.7948	146551.70
	55.12	0.2120	39094.39
	55.31	0.1880	34671.27
	55.40	0.4174	76967.12
	55.61	0.1209	22282.83
	55.67	0.2879	53089.08
	55.78	0.4250	78360.84
	55.91	0.3302	60883.26
	56.22	0.2841	52373.23
	56.32	0.3004	55388.00
	56.48	0.1745	32169.34
	56.62	0.7316	134883.40
	56.71	0.4331	79855.38
	56.86	0.3268	60249.85
	56.94	1.0241	188814.20
	57.05	0.2773	51119.45
	57.14	0.4493	82844.91
	57.25	0.3261	60129.46
	57.38	0.4249	78346.05
	57.54	0.3071	56630.98
	57.64	0.2047	37737.27
	57.74	0.1389	25605.60
	57.81	0.1350	24892.15
	58.06	0.2504	46172.18
i-C18	58.21	0.7258	133819.30
	58.39	0.2340	43142.93
	58.51	0.1638	30196.98
	58.61	0.5687	104850.80
	58.88	0.3947	72768.78
	58.95	0.3532	65131.21
Pristane	59.18	1.0572	194931.50
	59.25	0.4411	81320.38
	59.42	0.4260	78536.65
	59.70	0.7672	141457.20
	59.94	0.1959	36120.59
	60.02	0.1688	31131.20
	60.14	0.1975	36419.39
	60.33	0.3121	57550.17
	60.49	0.1381	25453.55
	60.68	0.1966	36240.22
Phytane	60.79	0.5240	96611.77
	60.96	0.2175	40104.13
	61.04	0.3743	69018.04
	61.10	0.2778	51226.70
	61.17	0.3490	64352.51
	61.31	0.4171	76898.30
	61.52	0.6399	117978.20
	61.65	0.5392	99423.88
	61.75	0.4903	90395.72
	61.82	0.6874	126737.60
	61.99	1.6112	297068.50
	62.22	0.9868	181942.20
	62.34	0.4155	76614.74
	62.46	0.5633	103854.10
	62.52	0.8066	148720.80
	62.62	0.8541	157482.10
	62.78	2.3568	434543.60
	63.13	2.0314	374547.80
	63.44	2.4159	445440.20
	63.54	0.8454	155876.10
	63.68	0.7567	139512.00
	63.74	1.0004	184459.30
	63.96	1.6239	299419.30
	64.05	0.7882	145334.00
	64.14	0.8096	149272.30

Peak Name	Ret. Time	Area %	Area
IS #3	64.23	0.9382	172990.30
	64.29	2.6648	491328.10
	64.45	1.5442	284714.80
	64.57	1.2442	229402.70
	64.73	0.7117	131219.10
	64.91	0.7082	130573.50
	65.13	0.5511	101610.00
	65.28	0.2525	46556.15
	65.49	0.1252	23077.41
	65.69	0.4667	86050.75
	65.90	0.1441	26578.12
	66.29	0.1141	21030.27
	66.37	0.3218	59326.56
	66.46	0.6849	126272.20
	66.65	0.4174	76961.82
	66.86	0.3506	64641.59
	67.12	0.0571	10520.58
	67.30	0.2335	43061.61
	67.55	0.2691	49623.09
	67.82	0.2081	38369.95
	68.16	0.1770	32634.50
	68.31	0.1291	23803.23
	68.57	0.0854	15754.71
	68.82	0.4351	80229.75
	68.97	0.5898	108745.20
	69.24	0.1769	32609.71
	69.41	0.1826	33660.66
	69.49	0.4129	76124.41
	69.61	0.6364	117331.50
	70.29	0.2652	48900.95
	70.95	0.0802	14794.48
	71.28	0.0479	8834.05
	71.77	0.1792	33045.07
	72.33	0.1377	25390.88
	72.49	0.4464	82315.62
	72.68	0.4807	88638.21
	73.07	0.4428	81647.57
	73.43	0.1521	28052.66
	73.98	0.4300	79287.29
	74.29	0.1033	19037.69
	74.43	0.3428	63210.12
	74.71	0.1763	32506.50
	75.42	0.2032	37471.94
	75.72	0.3282	60516.78
	76.32	0.4193	77309.49
	76.53	0.4713	86901.66
	76.89	0.9825	181160.60
	77.27	0.9934	183158.20
	77.65	0.6620	122054.30
	78.15	0.6303	116206.20
	78.64	0.6063	111782.40
	78.96	0.3950	72834.81
	79.71	0.4105	75693.58
	80.13	0.4054	74754.18
	80.72	0.5924	109217.80
	81.42	1.9799	365050.80
	82.71	0.3550	65457.31
	83.52	0.3105	57248.20
	83.84	1.7418	321158.20
	85.00	0.1324	24416.42
	87.02	0.4112	75809.87
	87.42	0.2813	51869.92
	89.88	0.3355	61855.38
	90.53	0.1687	31108.29

Total Area = 1.843786E+07 Total Height = 4334394 Total Amount = 0

1/16/2016

ZymaX ID	17836-5
Sample ID	MW-285

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.38

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.02
Aromatics / Total Paraffins (n+iso+cyc)	0.25
Aromatics / Naphthenes	0.48

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	31.78
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	18.43

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.03

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	4.04
% Isoparaffinic	33.03
% Aromatic	19.68
% Naphthenic	41.35
% Olefinic	1.90

1/16/2016

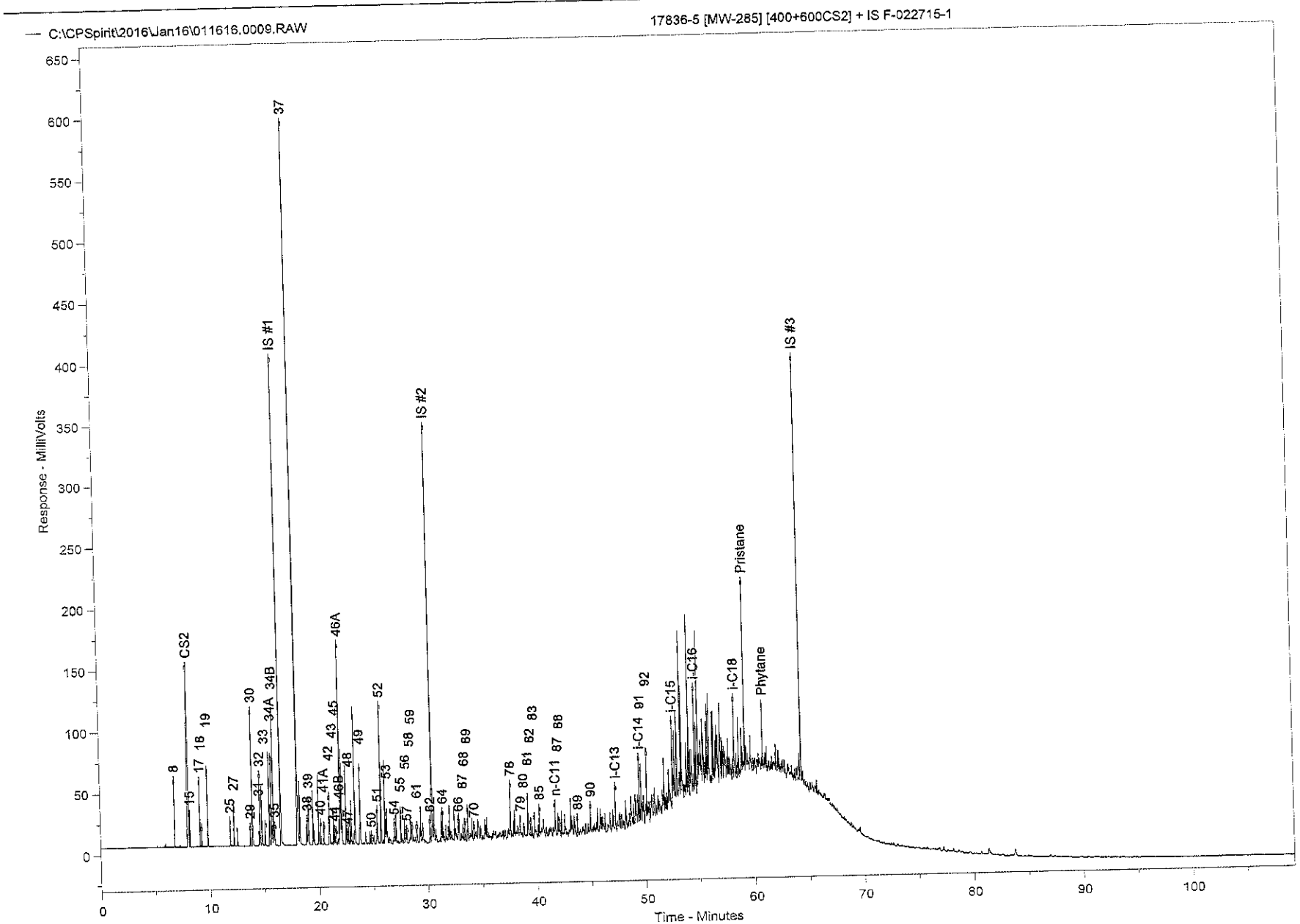
ZymaX ID		17836-5
Sample ID		MW-285
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	1.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.54
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	1.36
18	2-Methylpentane	0.36
19	3-Methylpentane	1.72
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.61
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.98
28	Benzene	0.00
29	5-Methyl-1-hexene	0.53
30	Cyclohexane	4.23
31	2-Methylhexane/TAME	0.25
32	2,3-Dimethylpentane	2.20
33	3-Methylhexane	0.62
34A	1-trans-3-Dimethylcyclopentane	2.69
34B	1-cis-3-Dimethylcyclopentane	4.22
35	2,2,4-Trimethylpentane	0.69
I.S. #1	à,à,à-Trifluorotoluene	0.00

1/16/2016

ZymaX ID		17836-5
Sample ID		MW-285
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	24.68
38	2,5-Dimethylhexane	0.75
39	2,4-Dimethylhexane	1.68
40	2,3,4-Trimethylpentane	0.70
41	Toluene/2,3,3-Trimethylpentane	0.60
42	2,3-Dimethylhexane	2.86
43	2-Methylheptane	0.96
44	4-Methylheptane	0.41
45	3,4-Dimethylhexane	0.59
46A	3-Ethyl-3-methylpentane	8.36
46B	1,4-Dimethylcyclohexane	0.57
47	3-Methylheptane	0.33
48	2,2,5-Trimethylhexane	0.60
49	n-Octane	3.21
50	2,2-Dimethylheptane	0.19
51	2,4-Dimethylheptane	1.23
52	Ethylcyclohexane	4.96
53	2,6-Dimethylheptane	1.13
54	Ethylbenzene	0.77
55	m+p Xylenes	1.06
56	4-Methyloctane	0.25
57	2-Methyloctane	0.25
58	3-Ethylheptane	0.91
59	3-Methyloctane	0.83
60	o-Xylene	0.00
61	1-Nonene	0.76
62	n-Nonane	0.82
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.97
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.77
67	1-Methyl-3-ethylbenzene	0.30
68	1-Methyl-4-ethylbenzene	0.72
69	1,3,5-Trimethylbenzene	1.54
70	3,3,4-Trimethylheptane	0.31

1/16/2016

ZymaX ID		17836-5
Sample ID		MW-285
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	1.74
79	1,3-Diethylbenzene	0.39
80	1,4-Diethylbenzene	0.14
81	n-Butylbenzene	1.81
82	1,3-Dimethyl-5-ethylbenzene	0.65
83	1,4-Dimethyl-2-ethylbenzene	1.01
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	1.03
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.66
88	1,2,3,5-Tetramethylbenzene	0.53
89	1,2,3,4-Tetramethylbenzene	0.70
90	Naphthalene	1.09
91	2-Methyl-naphthalene	2.07
92	1-Methyl-naphthalene	2.11



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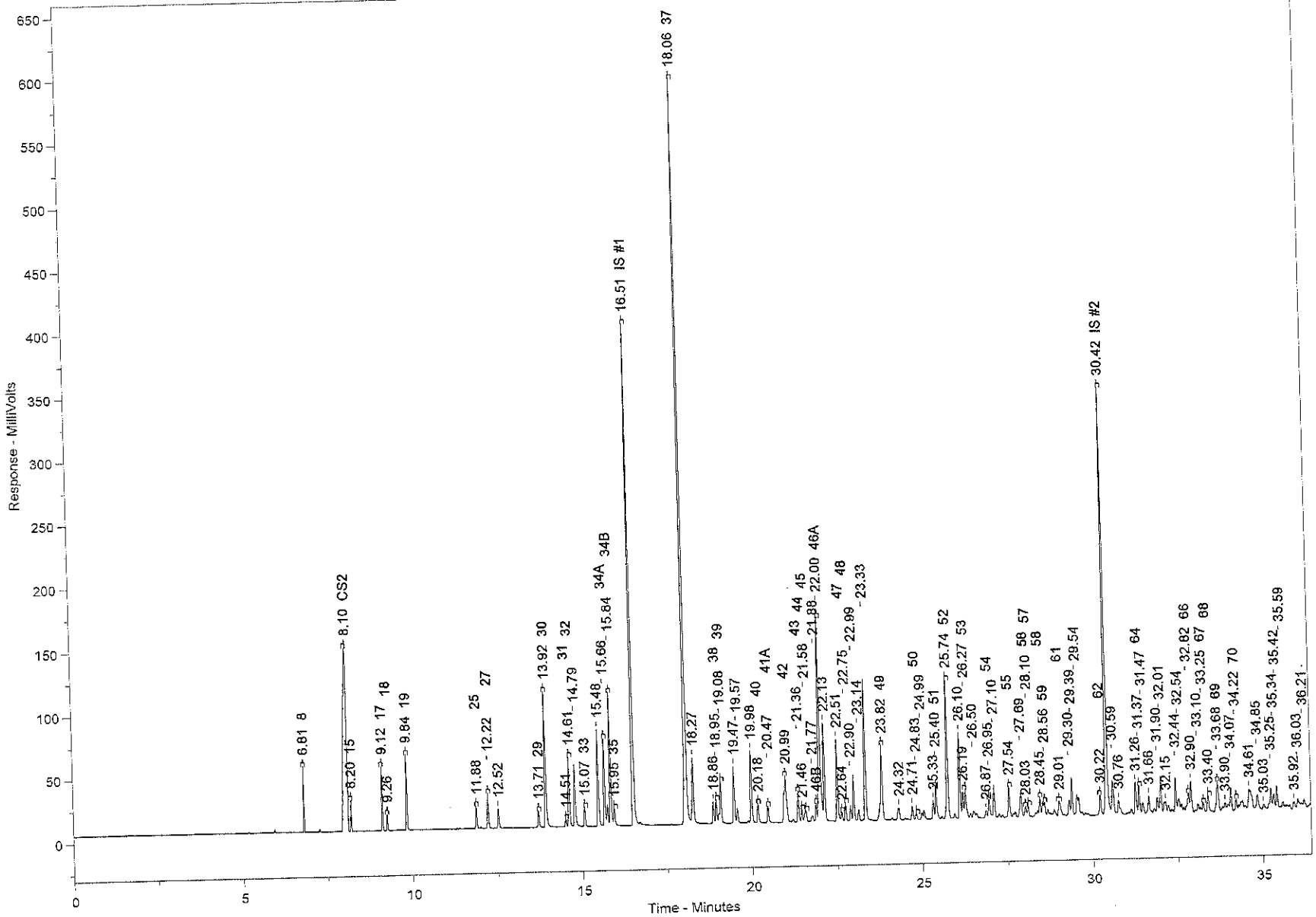
17836-5 [MW-285] [400+600CS2] + IS F-022715-1



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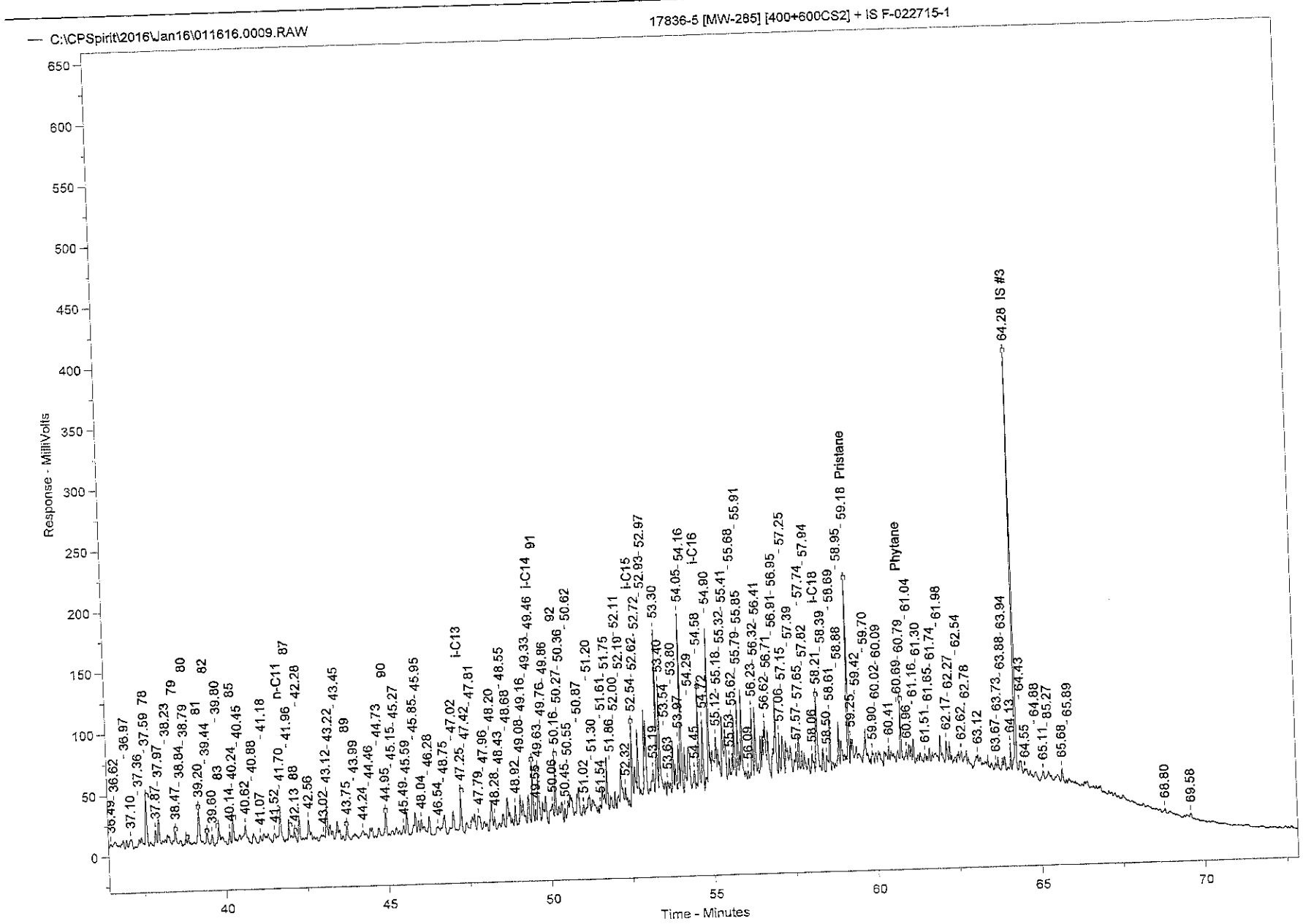
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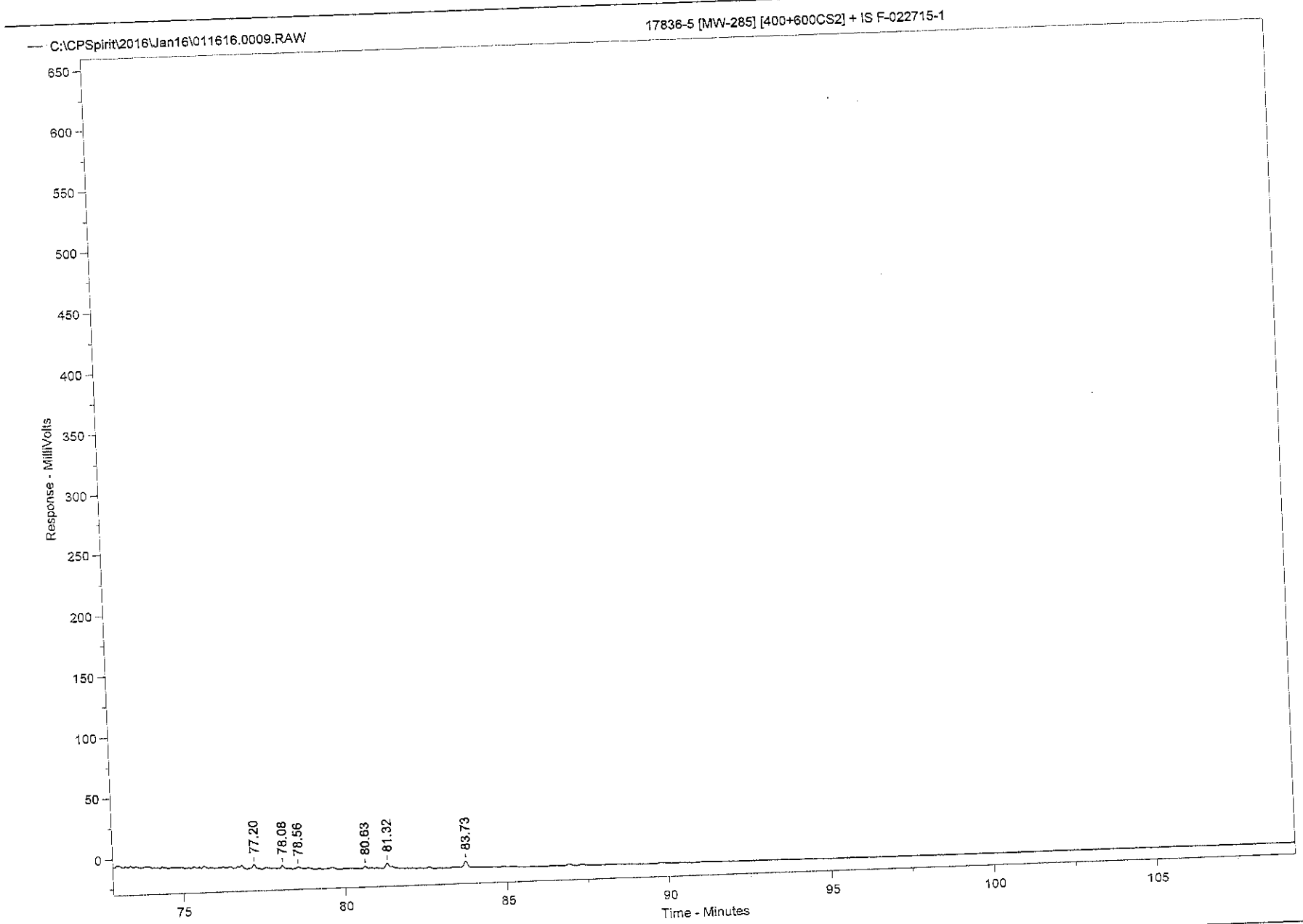
17836-5 [MW-285] [400+600CS2] + IS F-022715-1
Response - MilliVolts
Time - Minutes
i-C13
n-C11
i-C14
i-C15
i-C16
Pristane
Phytane
i-C18
IS #3



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Sample Name = **17836-5 [MW-285] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0009.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 11:55:23 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
8	6.81	0.2343	67864.23
CS2	8.10	3.0988	897689.70
15	8.20	0.1280	37073.41
17	9.12	0.3193	92508.08
18	9.26	0.0855	24775.00
19	9.84	0.4053	117424.70
25	11.88	0.1432	41489.83
27	12.22	0.2311	66938.07
	12.52	0.1386	40153.87
29	13.71	0.1254	36318.34
30	13.92	0.9951	288262.20
31	14.51	0.0586	16983.80
32	14.61	0.5190	150342.70
	14.79	0.4918	142462.30
33	15.07	0.1466	42458.46
	15.48	0.7069	204787.40
34A	15.66	0.6340	183670.80
34B	15.84	0.9943	288052.50
35	15.95	0.1616	46822.34
IS #1	16.51	3.5280	1022029.00
37	18.06	5.8120	1683661.00
	18.27	0.6505	188457.40
	18.86	0.1610	46631.95
38	18.95	0.1776	51438.42
39	19.08	0.3950	114414.70
	19.47	0.4233	122614.70
	19.57	0.1277	36993.84
	19.98	0.5491	159060.30
40	20.18	0.1653	47882.46
41A	20.47	0.1404	40665.51
42	20.99	0.6733	195039.00
43	21.36	0.2264	65575.62
44	21.46	0.0965	27966.42
45	21.58	0.1395	40403.91
	21.77	0.0698	20207.05
46B	21.88	0.1345	38951.32
46A	22.00	1.9686	570277.10
	22.13	0.7537	218334.80
	22.51	0.6330	183364.60
47	22.64	0.0779	22571.88
48	22.75	0.1418	41070.43
	22.90	0.1160	33593.82
	22.99	0.3553	102928.40
	23.14	0.0944	27348.39
	23.33	1.0990	318370.30
49	23.82	0.7568	219246.20
	24.32	0.1354	39221.79
	24.71	0.1055	30559.33
50	24.83	0.0454	13164.76
	24.99	0.0308	8922.96
	25.33	0.1336	38715.35
51	25.40	0.2891	83754.52
52	25.74	1.1676	338227.70
	26.10	0.6509	188566.00
	26.19	0.2051	59411.36

Peak Name	Ret. Time	Area %	Area
53	26.27	0.2660	77051.60
	26.50	0.0460	13337.63
	26.87	0.0606	17543.95
	26.95	0.1816	52613.61
54	27.10	0.2493	72215.80
	27.54	0.2494	72255.68
55	27.89	0.2382	68992.10
	28.03	0.0582	16873.84
56	28.10	0.0584	16924.00
57	28.45	0.2145	62130.46
58	28.58	0.1949	56472.65
59	29.01	0.1783	51641.18
61	29.30	0.1287	37284.32
	29.39	0.2799	81090.05
	29.54	0.2378	68893.96
	30.22	0.1934	56021.97
62	30.42	3.4206	990914.20
IS #2	30.59	0.3951	114458.50
	30.76	0.1635	47356.87
	31.26	0.2686	77822.80
	31.37	0.2287	66250.23
64	31.47	0.1084	31393.21
	31.66	0.1623	47026.34
	31.90	0.1055	30549.36
	32.01	0.2692	77977.82
	32.15	0.1169	33853.52
	32.44	0.2350	68073.21
	32.54	0.0953	27615.17
	32.82	0.1815	52592.41
66	32.90	0.2492	72204.11
	33.10	0.0502	14553.21
	33.25	0.0700	20292.34
67	33.40	0.1704	49354.00
68	33.68	0.3616	104745.60
69	33.90	0.1316	38117.55
	34.07	0.1825	52880.92
	34.22	0.0721	20899.87
70	34.61	0.3424	99201.28
	34.85	0.1653	47877.57
	35.03	0.0564	16350.07
	35.25	0.2100	60822.67
	35.34	0.1186	34355.27
	35.42	0.1832	53066.61
	35.59	0.0447	12953.13
	35.92	0.0797	23079.57
	36.03	0.1145	33179.44
	36.21	0.0977	28292.97
	36.49	0.0430	12443.55
	36.62	0.1103	31938.28
	36.97	0.0794	22997.30
	37.10	0.1598	46297.87
	37.36	0.0356	10299.02
	37.59	0.4095	118626.60
78	37.87	0.1429	41404.08
	37.97	0.1991	57688.29
	38.23	0.1196	34660.06
	38.47	0.0929	26899.33
79	38.64	0.0475	13754.67
	38.79	0.0332	9606.14
80	39.20	0.4262	123473.10
81	39.44	0.1525	44176.26
82	39.60	0.1170	33905.84
	39.80	0.2372	68720.29
83	40.14	0.1230	35625.30
	40.24	0.2418	70054.21
85	40.45	0.1365	39540.23
	40.62	0.3569	103392.30

Peak Name	Ret. Time	Area %	Area
	40.86	0.1410	40855.79
	41.07	0.0506	14669.97
	41.18	0.0464	13434.27
	41.52	0.1150	33321.15
n-C11	41.70	0.3679	106569.50
87	41.96	0.1546	44775.48
88	42.13	0.1257	36410.71
	42.28	0.2021	58540.49
	42.56	0.2332	67556.52
	43.02	0.0903	26151.99
	43.12	0.2747	79584.98
	43.22	0.0810	23471.70
	43.45	0.1169	33876.22
89	43.75	0.1640	47512.51
	43.99	0.1182	34234.78
	44.24	0.0799	23144.49
	44.46	0.0504	14602.31
	44.73	0.1314	38060.23
90	44.95	0.2570	74458.58
	45.15	0.0746	21614.08
	45.27	0.0986	28575.84
	45.49	0.1057	30624.99
	45.59	0.2206	63918.69
	45.85	0.2501	72448.66
	45.95	0.1113	32242.83
	46.04	0.0806	23338.98
	46.28	0.1560	45183.18
	46.54	0.1462	42362.50
	46.75	0.2539	73555.02
	47.02	0.3775	109366.40
i-C13	47.25	0.3950	114438.10
	47.42	0.1285	37230.56
	47.61	0.1958	56734.89
	47.79	0.2528	73238.90
	47.96	0.0646	18719.47
	48.20	0.3447	99866.83
	48.28	0.1043	30201.41
	48.43	0.0667	19316.34
	48.55	0.1641	47538.51
	48.68	0.1979	57337.27
	48.92	0.1556	45079.81
	49.08	0.2843	82370.15
	49.16	0.2868	83094.92
	49.33	0.3042	88110.88
i-C14	49.46	0.4574	132491.50
	49.55	0.1118	32374.22
91	49.63	0.4867	140983.30
	49.76	0.2597	75244.97
	49.86	0.2490	72130.51
	50.06	0.3731	108087.10
92	50.16	0.4980	144269.70
	50.27	0.1841	53323.51
	50.36	0.2166	62734.74
	50.45	0.0991	28717.03
	50.55	0.2015	58366.56
	50.62	0.4345	125874.70
	50.87	0.4885	141506.50
	51.02	0.1405	40711.11
	51.20	0.4291	124304.80
	51.30	0.3855	111672.10
	51.54	0.0871	25224.37
	51.61	0.2326	67382.49
	51.75	0.4397	127383.90
	51.86	0.2514	72824.86
	52.00	0.1677	48588.67
	52.11	0.2032	58854.95
	52.19	0.5845	169314.50

Peak Name	Ret. Time	Area %	Area
	52.32	0.2820	81705.18
i-C15	52.54	0.6377	184745.20
	52.62	0.5224	151340.40
	52.72	0.7836	226988.40
	52.93	0.7583	219660.20
	52.97	0.6106	176883.50
	53.19	0.5433	157386.90
	53.30	1.2713	368290.60
	53.40	1.0964	317628.80
	53.54	0.2198	63673.15
	53.63	0.2218	64259.51
	53.80	0.5223	151306.20
	53.97	0.4649	134690.60
	54.05	1.2309	356577.20
	54.16	0.4652	134751.70
	54.29	0.7549	218673.50
	54.45	0.3566	103294.40
i-C16	54.58	0.7716	223529.20
	54.72	0.6847	198358.60
	54.90	2.0272	587260.70
	55.12	0.5811	168328.40
	55.18	0.5946	172262.60
	55.32	0.7703	223161.20
	55.41	0.5188	150303.40
	55.53	0.4154	120346.70
	55.62	0.2264	65594.76
	55.68	0.5293	153340.50
	55.79	0.6468	187374.60
	55.85	0.2603	75393.38
	55.91	0.7471	216419.00
	56.09	0.1460	42293.72
	56.23	0.5691	164848.50
	56.32	0.6114	177102.80
	56.41	0.1806	52320.04
	56.62	1.4531	420954.60
	56.71	0.5051	146317.50
	56.91	0.5702	165183.80
	56.95	0.6077	176049.90
	57.06	0.2921	84606.59
	57.15	0.5687	164749.20
	57.25	0.2745	79526.23
	57.39	0.4476	129664.80
	57.57	0.4105	118912.20
	57.65	0.3576	103579.10
	57.74	0.1710	49536.18
	57.82	0.2490	72141.87
	57.94	0.1575	45627.51
	58.06	0.2503	72497.30
i-C18	58.21	0.8378	242712.80
	58.39	0.1855	53733.04
	58.50	0.1690	48946.41
	58.61	0.3268	94677.34
	58.69	0.1138	32976.04
	58.88	0.3218	93215.33
	58.95	0.4028	116694.60
Pristane	59.18	1.0805	313005.00
	59.25	0.3011	87217.98
	59.42	0.1053	30489.89
	59.70	0.2596	75205.98
	59.90	0.1516	43913.49
	60.02	0.1258	36430.03
	60.09	0.2341	67812.20
	60.41	0.0664	19235.31
	60.69	0.1311	37977.25
Phytane	60.79	0.4144	120043.50
	60.96	0.1376	39854.59
	61.04	0.1588	45999.65

Peak Name	Ret. Time	Area %	Area
	61.16	0.1634	47327.51
	61.30	0.0459	13308.98
	61.51	0.1048	30358.48
	61.65	0.0840	24347.01
	61.74	0.0377	10913.94
	61.98	0.2486	72008.05
	62.17	0.1845	53441.13
	62.27	0.1719	49806.99
	62.54	0.1127	32651.34
	62.62	0.1307	37876.73
	62.78	0.1567	45386.77
	63.12	0.1440	41725.55
	63.67	0.0668	19348.40
	63.73	0.0925	26791.20
	63.88	0.0954	27627.75
	63.94	0.1097	31767.14
	64.13	0.1452	42075.73
IS #3	64.28	2.4378	706199.20
	64.43	0.1893	54846.43
	64.55	0.1189	34446.36
	64.88	0.1166	33765.68
	65.11	0.1490	43173.43
	65.27	0.2340	67785.20
	65.68	0.1349	39082.80
	65.89	0.0461	13359.41
	68.80	0.0438	12688.01
	69.58	0.0366	10606.10
	77.20	0.0988	28614.41
	78.08	0.0431	12490.55
	78.56	0.0510	14762.24
	80.63	0.0405	11735.41
	81.32	0.1599	46321.39
	83.73	0.1448	41943.20

Total Area = 2.896895E+07 Total Height = 8999535 Total Amount = 0.9999999

1/16/2016

ZymaX ID	17836-6
Sample ID	MW-491

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.52
Aromatics / Total Paraffins (n+iso+cyc)	5.62
Aromatics / Naphthenes	17.01

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	17.94

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.50

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.79
% Isoparaffinic	9.24
% Aromatic	84.26
% Naphthenic	4.95
% Olefinic	0.75

1/16/2016

ZymaX ID		17836-6
Sample ID		MW-491
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.73
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.92
I.S. #1	à,à,à-Trifluorotoluene	0.00

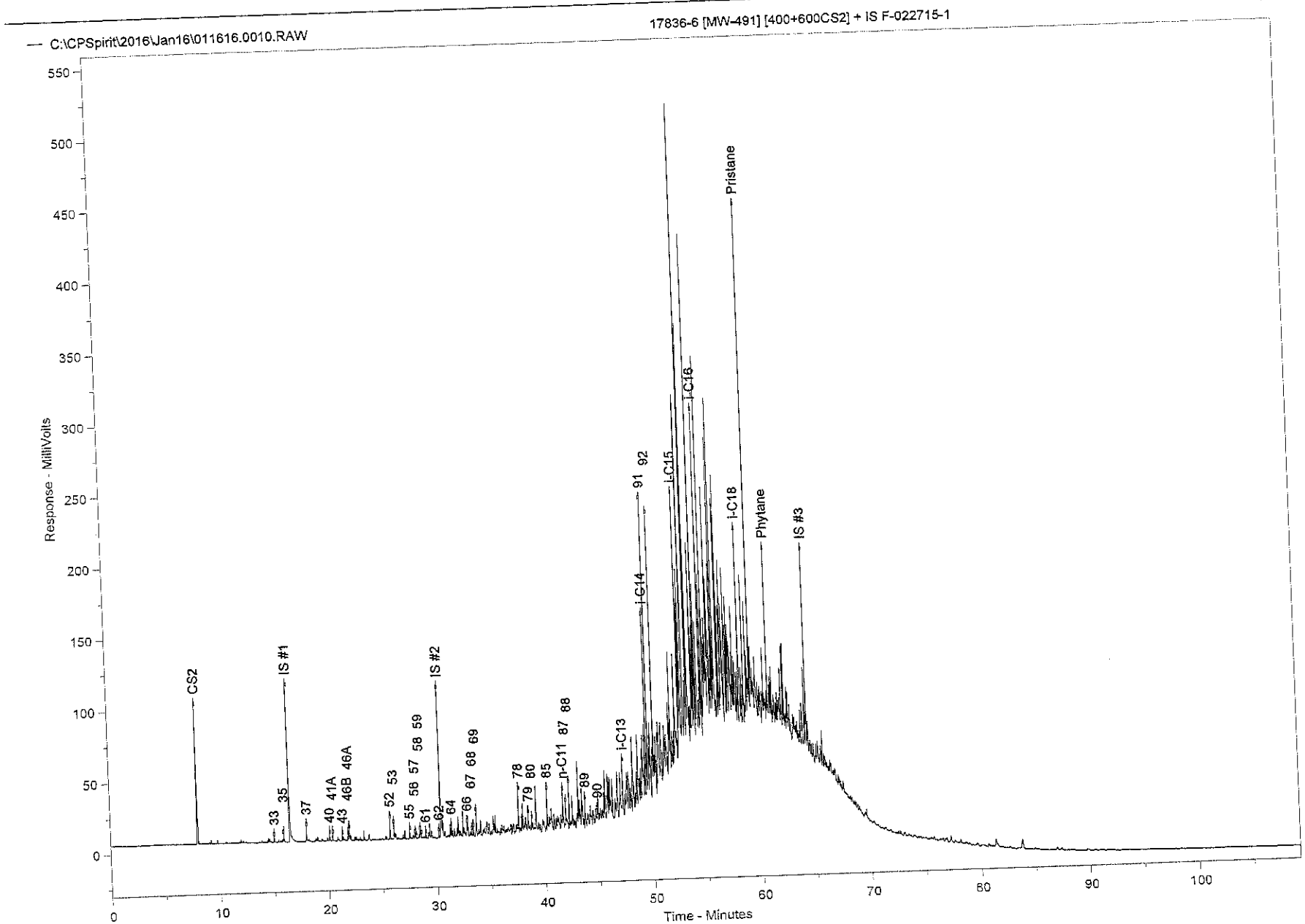
1/16/2016

ZymaX ID		17836-6
Sample ID		MW-491
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	1.82
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.93
41	Toluene/2,3,3-Trimethylpentane	0.94
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.57
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	1.51
46B	1,4-Dimethylcyclohexane	0.57
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	2.57
53	2,6-Dimethylheptane	1.39
54	Ethylbenzene	0.00
55	m+p Xylenes	0.96
56	4-Methyloctane	0.55
57	2-Methyloctane	0.29
58	3-Ethylheptane	0.74
59	3-Methyloctane	0.33
60	o-Xylene	0.00
61	1-Nonene	0.75
62	n-Nonane	0.79
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	1.28
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	1.76
67	1-Methyl-3-ethylbenzene	0.49
68	1-Methyl-4-ethylbenzene	1.13
69	1,3,5-Trimethylbenzene	3.75
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-6
Sample ID		MW-491
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	4.32
79	1,3-Diethylbenzene	2.80
80	1,4-Diethylbenzene	0.83
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	4.03
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	1.96
88	1,2,3,5-Tetramethylbenzene	4.42
89	1,2,3,4-Tetramethylbenzene	3.86
90	Naphthalene	1.14
91	2-Methyl-naphthalene	28.18
92	1-Methyl-naphthalene	23.68

Chrom Perfect Chromatogram Report



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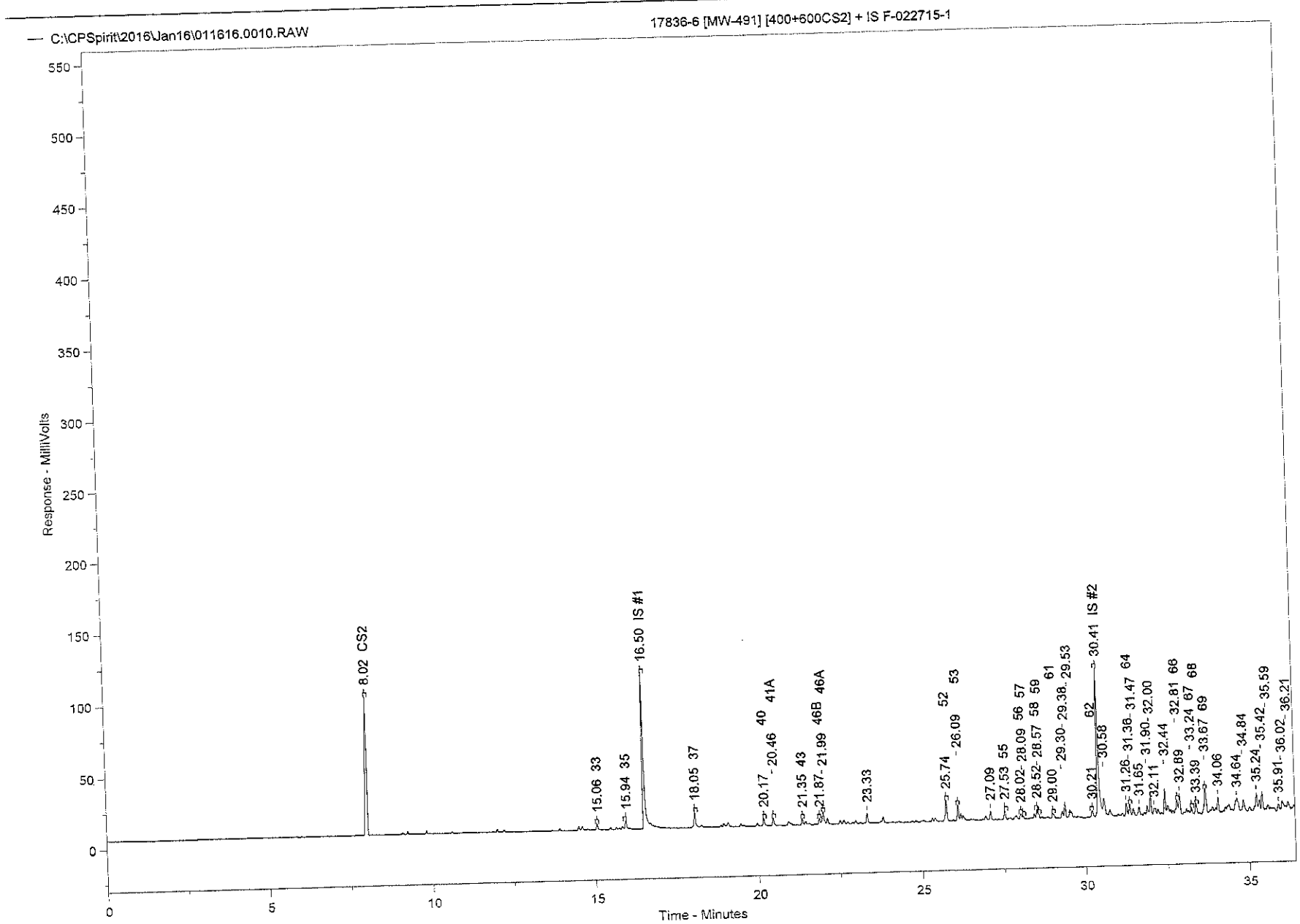

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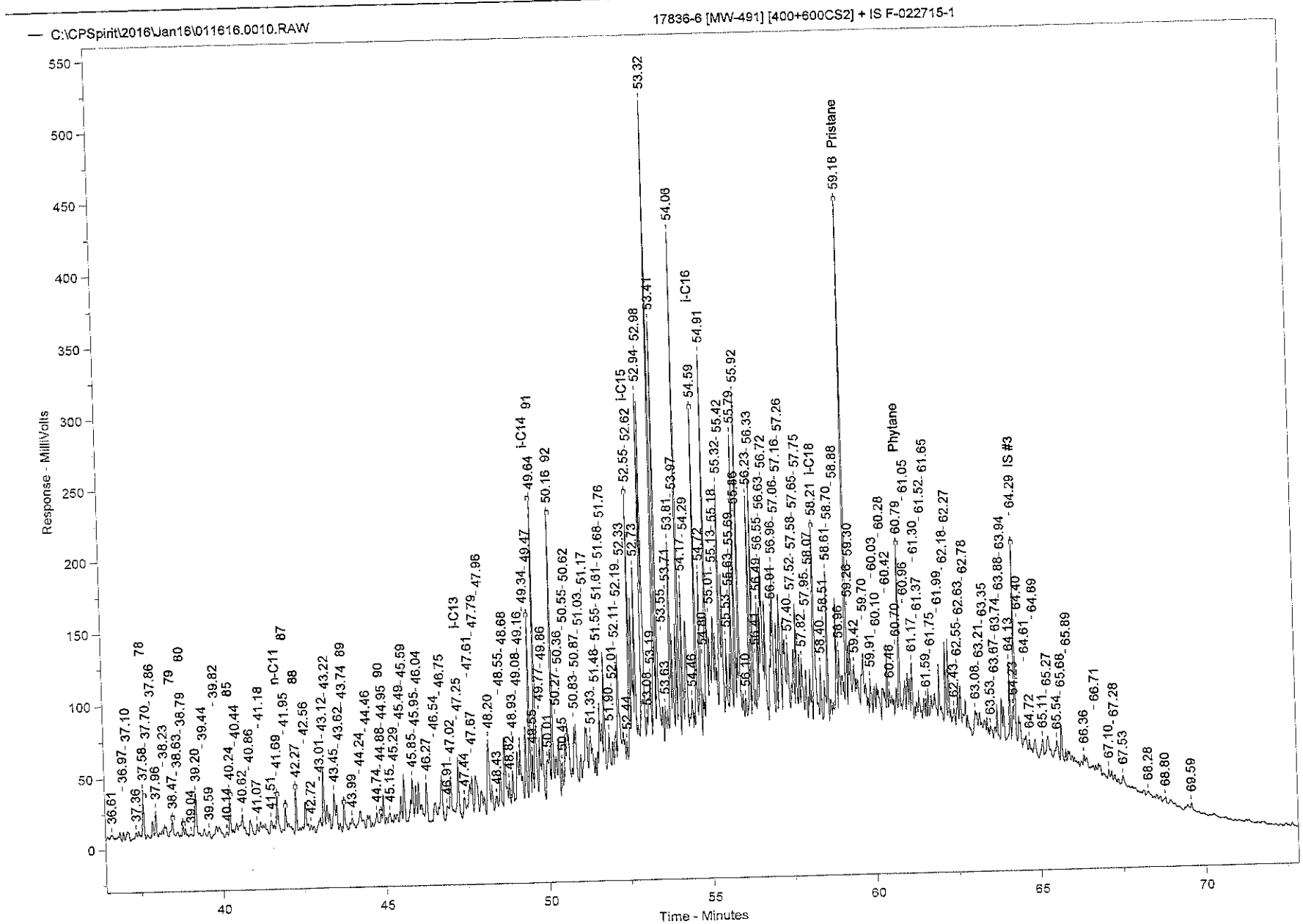

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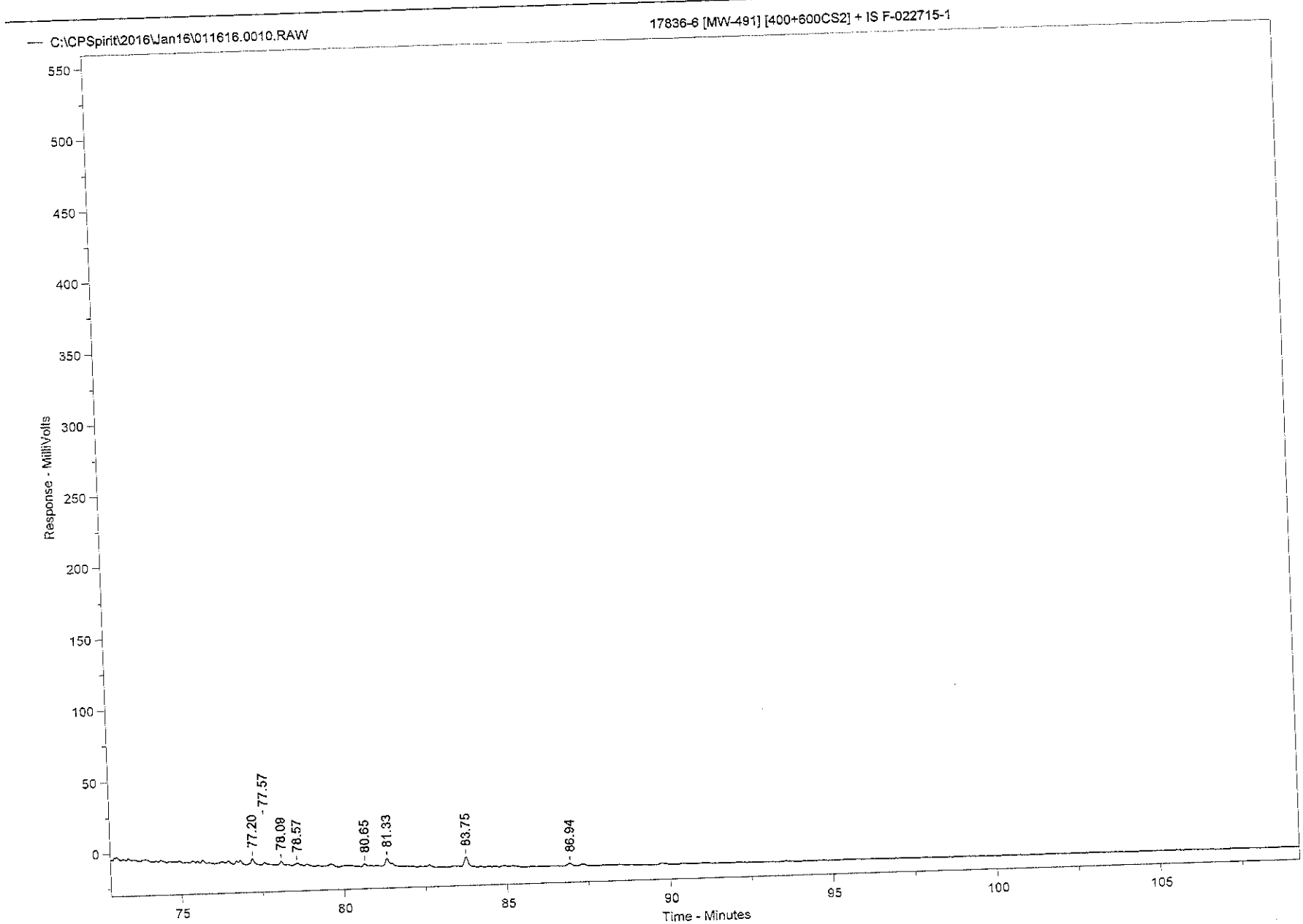

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Sample Name = **17836-6 [MW-491] [400+600CS2] + IS F-022715-1**

Acquisition Port = DP#

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0010.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 1:58:35 PM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.02	0.9845	348227.50
33	15.06	0.0418	14791.65
35	15.94	0.0523	18497.35
IS #1	16.50	0.9135	323113.20
37	18.05	0.1036	36657.32
40	20.17	0.0527	18639.92
41A	20.46	0.0538	19013.06
43	21.35	0.0322	11387.80
46B	21.87	0.0322	11398.24
46A	21.99	0.0862	30501.65
	23.33	0.0556	19671.79
52	25.74	0.1461	51677.23
53	26.09	0.0793	28049.80
	27.09	0.0452	15974.24
55	27.53	0.0546	19298.33
56	28.02	0.0312	11041.25
57	28.09	0.0163	5751.11
58	28.52	0.0424	14986.52
59	28.57	0.0189	6687.45
61	29.00	0.0428	15130.25
	29.30	0.0399	14096.21
	29.38	0.0850	30079.65
	29.53	0.0670	23708.75
62	30.21	0.0450	15933.08
IS #2	30.41	1.0163	359490.50
	30.58	0.1438	50876.01
	31.26	0.0798	28241.34
64	31.36	0.0728	25753.62
	31.47	0.0493	17439.01
	31.65	0.0629	22264.74
	31.90	0.0452	16000.09
	32.00	0.1092	38626.50
	32.11	0.0532	18832.81
	32.44	0.1160	41020.80
	32.81	0.1002	35441.10
66	32.89	0.1209	42775.50
	33.24	0.0281	9935.06
67	33.39	0.0644	22776.00
68	33.67	0.2134	75501.18
69	34.06	0.0682	24138.66
	34.64	0.1592	56321.93
	34.84	0.0936	33100.07
	35.24	0.1226	43352.61
	35.42	0.1042	36845.33
	35.59	0.0302	10699.75
	35.91	0.0520	18390.39
	36.02	0.0879	31086.67
	36.21	0.0689	24383.87
	36.61	0.0776	27432.58
	36.97	0.0556	19659.84
	37.10	0.1142	40382.13
	37.36	0.0272	9635.08
	37.58	0.2459	86975.17
78	37.70	0.0328	11609.51
	37.86	0.1070	37849.23

Peak Name	Ret. Time	Area %	Area
	37.96	0.1432	50670.43
	38.23	0.0945	33439.97
79	38.47	0.1593	56344.46
	38.63	0.0401	14173.78
80	38.79	0.0471	16645.84
	39.04	0.0334	11830.78
	39.20	0.3268	115608.30
	39.44	0.0759	26840.00
	39.59	0.0650	22987.06
	39.82	0.0594	21023.01
	40.14	0.0370	13090.90
85	40.24	0.2294	81141.97
	40.44	0.0661	23378.59
	40.62	0.1046	37001.25
	40.86	0.1481	52403.23
	41.07	0.0542	19171.01
	41.18	0.0451	15936.98
	41.51	0.1191	42136.25
n-C11	41.69	0.3034	107335.40
87	41.95	0.1117	39516.01
88	42.27	0.2519	89106.23
	42.56	0.1499	53021.91
	42.72	0.0295	10441.94
	43.01	0.1932	68354.37
	43.12	0.4211	148968.80
	43.22	0.2020	71464.57
	43.45	0.3341	118196.50
	43.62	0.0567	20045.76
89	43.74	0.2198	77733.46
	43.99	0.1521	53800.27
	44.24	0.1156	40884.07
	44.46	0.0451	15936.62
	44.74	0.1210	42799.45
90	44.88	0.0651	23037.44
	44.95	0.1695	59950.72
	45.15	0.0999	35343.88
	45.29	0.0280	9911.31
	45.49	0.1711	60513.08
	45.59	0.3073	108694.50
	45.85	0.3454	122182.50
	45.95	0.1783	63059.49
	46.04	0.1588	56178.06
	46.27	0.2319	82013.87
	46.54	0.2023	71543.55
	46.75	0.4866	172136.00
	46.91	0.1441	50982.36
	47.02	0.4030	142539.40
i-C13	47.25	0.4427	156580.80
	47.44	0.1873	66265.63
	47.61	0.2940	103990.70
	47.67	0.2527	89369.77
	47.79	0.5022	177654.90
	47.96	0.3418	120901.20
	48.20	0.6741	238455.70
	48.43	0.1462	51723.59
	48.55	0.3091	109342.30
	48.68	0.6387	225919.10
	48.82	0.1554	54967.87
	48.93	0.2588	91545.43
	49.08	0.4619	163399.10
	49.16	0.4349	153853.60
	49.34	0.5050	178618.70
i-C14	49.47	0.9343	330470.50
	49.55	0.2446	86529.37
91	49.64	1.6045	567548.90
	49.77	0.4824	170631.10
	49.86	0.4437	156962.80

Peak Name	Ret. Time	Area %	Area
	50.01	0.3263	115410.90
92	50.16	1.3483	476916.80
	50.27	0.2979	105381.50
	50.36	0.4025	142380.50
	50.45	0.1591	56270.57
	50.55	0.3652	129183.30
	50.62	0.7629	269847.50
	50.83	0.4220	149283.50
	50.87	0.4089	144624.20
	51.03	0.2072	73296.95
	51.17	0.7031	248722.00
	51.33	0.3812	134837.70
	51.48	0.0712	25168.81
	51.55	0.1202	42502.27
	51.61	0.3440	121671.50
	51.68	0.3325	117604.00
	51.76	0.5548	196264.70
	51.90	0.2667	94344.26
	52.01	0.1361	48151.46
	52.11	0.2350	83109.58
	52.19	0.9228	326404.90
	52.33	0.2800	99036.44
	52.44	0.0730	25825.16
	52.55	1.1251	397984.70
i-C15	52.62	0.9415	333047.30
	52.73	0.7307	258475.30
	52.94	1.6069	568420.60
	52.98	1.2794	452555.30
	53.08	0.1072	37926.81
	53.19	0.5509	194880.90
	53.32	2.9123	1030161.00
	53.41	2.0506	725346.40
	53.55	0.2079	73551.59
	53.63	0.2142	75779.55
	53.71	0.1629	57620.12
	53.81	1.6444	581670.30
	53.97	0.6072	214800.80
	54.06	2.1881	774005.10
	54.17	0.7707	272604.60
	54.29	1.0749	380231.70
	54.46	0.3806	134642.20
	54.59	1.4802	523573.60
i-C16	54.72	0.9474	335113.70
	54.80	0.3053	107996.30
	54.91	2.0555	727098.80
	55.01	0.6942	245563.20
	55.13	0.8800	311293.30
	55.18	0.8539	302059.50
	55.32	1.5272	540211.50
	55.42	0.8274	292681.50
	55.53	0.6449	228118.40
	55.63	0.3201	113233.10
	55.69	0.8070	285460.70
	55.79	1.3121	464125.20
	55.86	0.3303	116824.40
	55.92	1.4881	526389.80
	56.10	0.1734	61338.29
	56.23	1.1650	412096.60
	56.33	1.1097	392524.30
	56.41	0.1650	58348.52
	56.49	0.5286	186971.70
	56.55	0.4463	157867.90
	56.63	1.3772	487149.00
	56.72	0.6362	225042.80
	56.91	0.8181	289367.90
	56.96	0.6686	236504.60
	57.06	0.3081	108998.00

Peak Name	Ret. Time	Area %	Area
	57.16	0.8348	295281.80
	57.26	0.2068	73158.88
	57.40	0.2594	91770.81
	57.52	0.1254	44371.86
	57.58	0.3116	110233.70
	57.65	0.5137	181722.20
	57.75	0.2257	79821.33
	57.82	0.3660	129457.20
	57.95	0.2353	83246.34
	58.07	0.3578	126554.00
i-C18	58.21	1.4404	509496.30
	58.40	0.2923	103382.90
	58.51	0.2776	98183.48
	58.61	0.5642	199577.80
	58.70	0.1371	48499.39
	58.88	0.6235	220538.30
	58.96	0.9675	342235.00
Pristane	59.18	2.2165	784038.60
	59.26	0.3543	125309.30
	59.30	0.4612	163152.20
	59.42	0.6550	231676.30
	59.70	0.6748	238700.30
	59.91	0.3108	109950.20
	60.03	0.2525	89328.02
	60.10	0.4278	151340.90
	60.28	0.3054	108017.30
	60.42	0.2310	81707.05
	60.48	0.0668	23617.04
	60.70	0.1836	64940.02
Phytane	60.79	0.8097	286409.90
	60.96	0.3220	113913.40
	61.05	0.4440	157056.60
	61.17	0.2907	102842.90
	61.30	0.1220	43149.19
	61.37	0.2512	88845.87
	61.52	0.1890	66859.66
	61.59	0.1057	37373.45
	61.65	0.1749	61879.73
	61.75	0.3274	115822.70
	61.99	0.5307	187728.60
	62.18	0.4986	176385.50
	62.27	0.5249	185673.70
	62.43	0.2387	84417.65
	62.55	0.3127	110604.70
	62.63	0.3246	114830.60
	62.78	0.5795	204988.20
	63.08	0.3871	136920.20
	63.21	0.3309	117064.60
	63.35	0.2357	83359.69
	63.53	0.1762	62334.89
	63.67	0.1453	51402.20
	63.74	0.2569	90885.63
	63.88	0.2749	97247.03
	63.94	0.2490	88075.09
	64.13	0.5341	188920.80
	64.23	0.3018	106768.50
IS #3	64.29	0.9101	321934.80
	64.40	0.3883	137364.00
	64.61	0.2438	86245.99
	64.72	0.1313	46441.85
	64.89	0.1795	63506.29
	65.11	0.1690	59793.35
	65.27	0.3334	117930.10
	65.54	0.2560	90548.36
	65.68	0.2136	75564.40
	65.89	0.0766	27109.79
	66.36	0.0383	13549.10

Peak Name	Ret. Time	Area %	Area
	66.71	0.0206	7302.67
	67.10	0.0592	20949.53
	67.28	0.0446	15759.34
	67.53	0.0872	30857.70
	68.28	0.0623	22027.17
	68.80	0.0455	16094.62
	69.59	0.0354	12504.95
	77.20	0.1018	35998.01
	77.57	0.0441	15614.36
	78.09	0.0445	15741.05
	78.57	0.0439	15542.91
	80.65	0.0330	11682.00
	81.33	0.1622	57365.50
	83.75	0.1549	54808.90
	86.94	0.0513	18142.65

Total Area = 3.537274E+07 Total Height = 1.154115E+07 Total Amount = 0

1/16/2016

ZymaX ID	17836-7
Sample ID	MW-492

Evaporation

n-Pentane / n-Heptane	0.47
2-Methylpentane / 2-Methylheptane	1.80

Waterwashing

Benzene / Cyclohexane	0.04
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.19
Aromatics / Naphthenes	0.35

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	38.92
3-Methylhexane / n-Heptane	1.04
Methylcyclohexane / n-Heptane	9.07
Isoparaffins + Naphthenes / Paraffins	8.59

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	8.65
% Isoparaffinic	29.84
% Aromatic	15.40
% Naphthenic	44.47
% Olefinic	1.64

1/16/2016

ZymaX ID		17836-7
Sample ID		MW-492
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.14
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.98
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	1.08
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.50
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	1.13
18	2-Methylpentane	2.17
19	3-Methylpentane	1.74
20	Hexane	2.39
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.52
26	Methylcyclopentane	3.78
27	2,4-Dimethylpentane	0.83
28	Benzene	0.33
29	5-Methyl-1-hexene	0.44
30	Cyclohexane	9.49
31	2-Methylhexane/TAME	1.58
32	2,3-Dimethylpentane	1.74
33	3-Methylhexane	2.40
34A	1-trans-3-Dimethylcyclopentane	2.15
34B	1-cis-3-Dimethylcyclopentane	3.67
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

1/16/2016

ZymaX ID		17836-7
Sample ID		MW-492
		Relative Area %
36	n-Heptane	2.32
37	Methylcyclohexane	21.04
38	2,5-Dimethylhexane	1.17
39	2,4-Dimethylhexane	1.10
40	2,3,4-Trimethylpentane	0.28
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	1.90
43	2-Methylheptane	1.21
44	4-Methylheptane	0.52
45	3,4-Dimethylhexane	0.37
46A	3-Ethyl-3-methylpentane	5.49
46B	1,4-Dimethylcyclohexane	0.81
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.41
49	n-Octane	1.88
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.90
52	Ethylcyclohexane	3.53
53	2,6-Dimethylheptane	0.93
54	Ethylbenzene	0.71
55	m+p Xylenes	0.70
56	4-Methyloctane	0.19
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.76
59	3-Methyloctane	0.63
60	o-Xylene	0.00
61	1-Nonene	0.67
62	n-Nonane	0.84
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.17
64	3,3,5-Trimethylheptane	0.92
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.96
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.68
69	1,3,5-Trimethylbenzene	1.75
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-7
Sample ID		MW-492
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	1.77
79	1,3-Diethylbenzene	0.47
80	1,4-Diethylbenzene	0.16
81	n-Butylbenzene	2.11
82	1,3-Dimethyl-5-ethylbenzene	0.49
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	1.03
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.41
88	1,2,3,5-Tetramethylbenzene	1.27
89	1,2,3,4-Tetramethylbenzene	0.98
90	Naphthalene	1.41
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report

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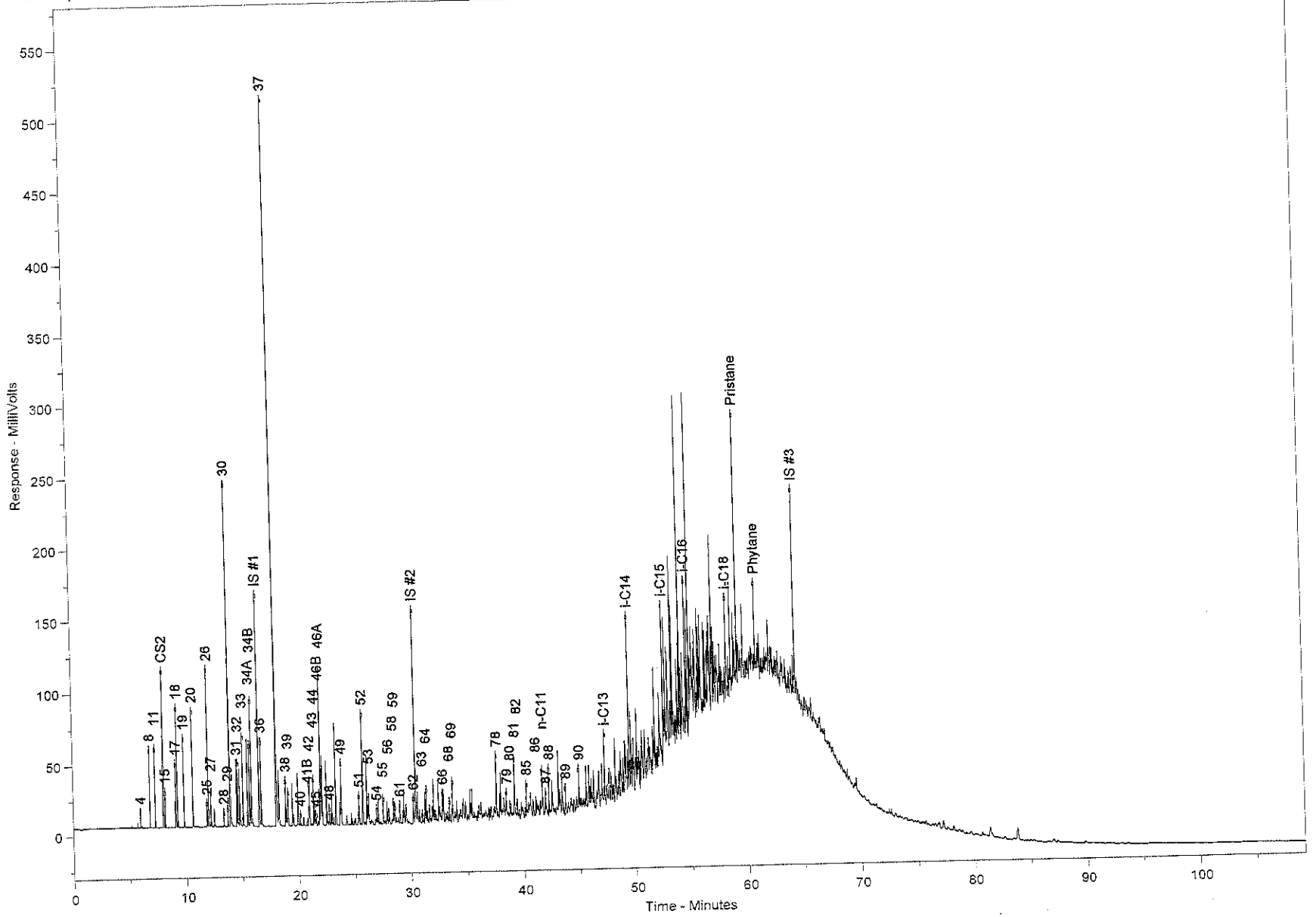
17836-7 [MW-492] [400+600CS2] + IS F-022715-1



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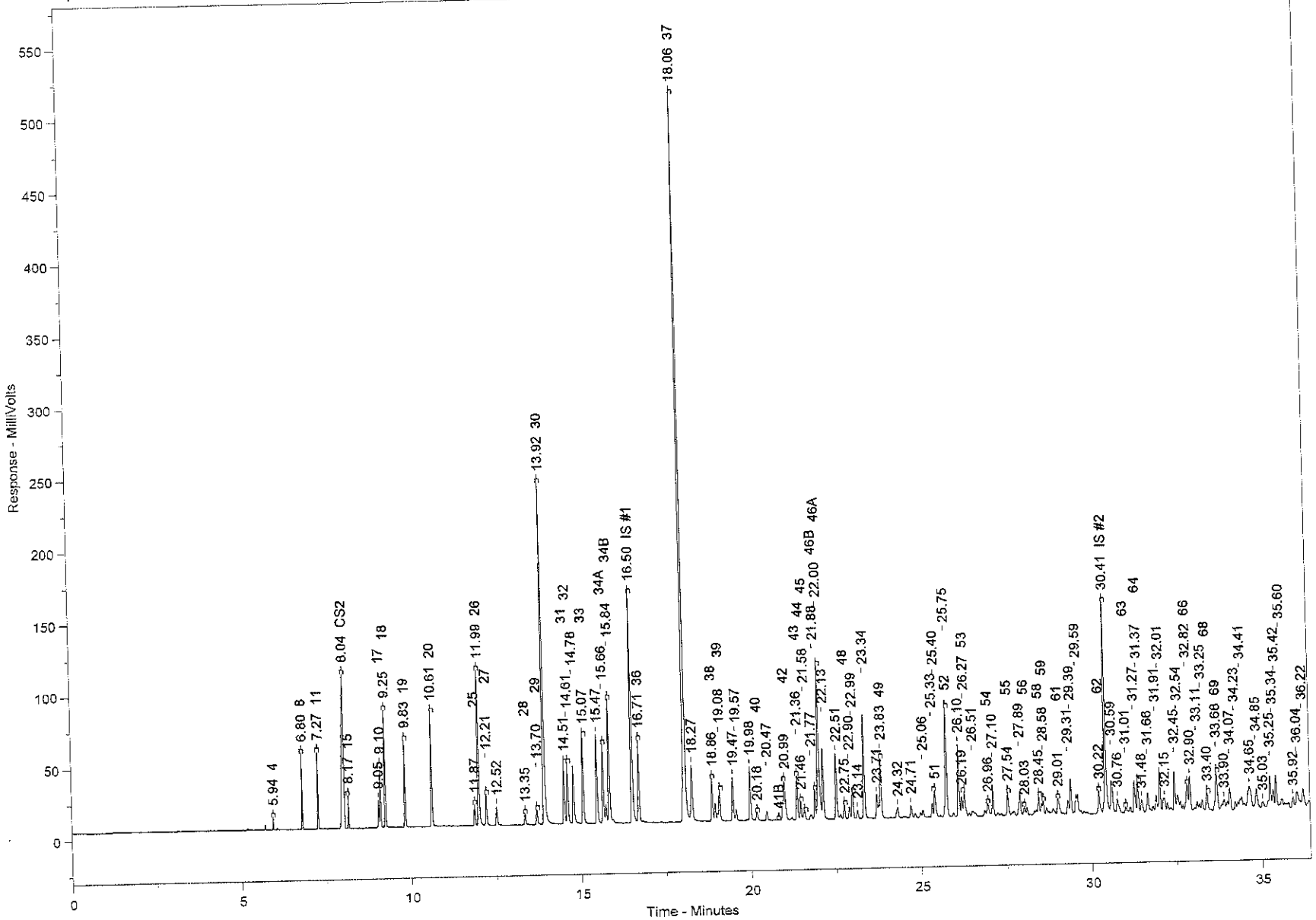

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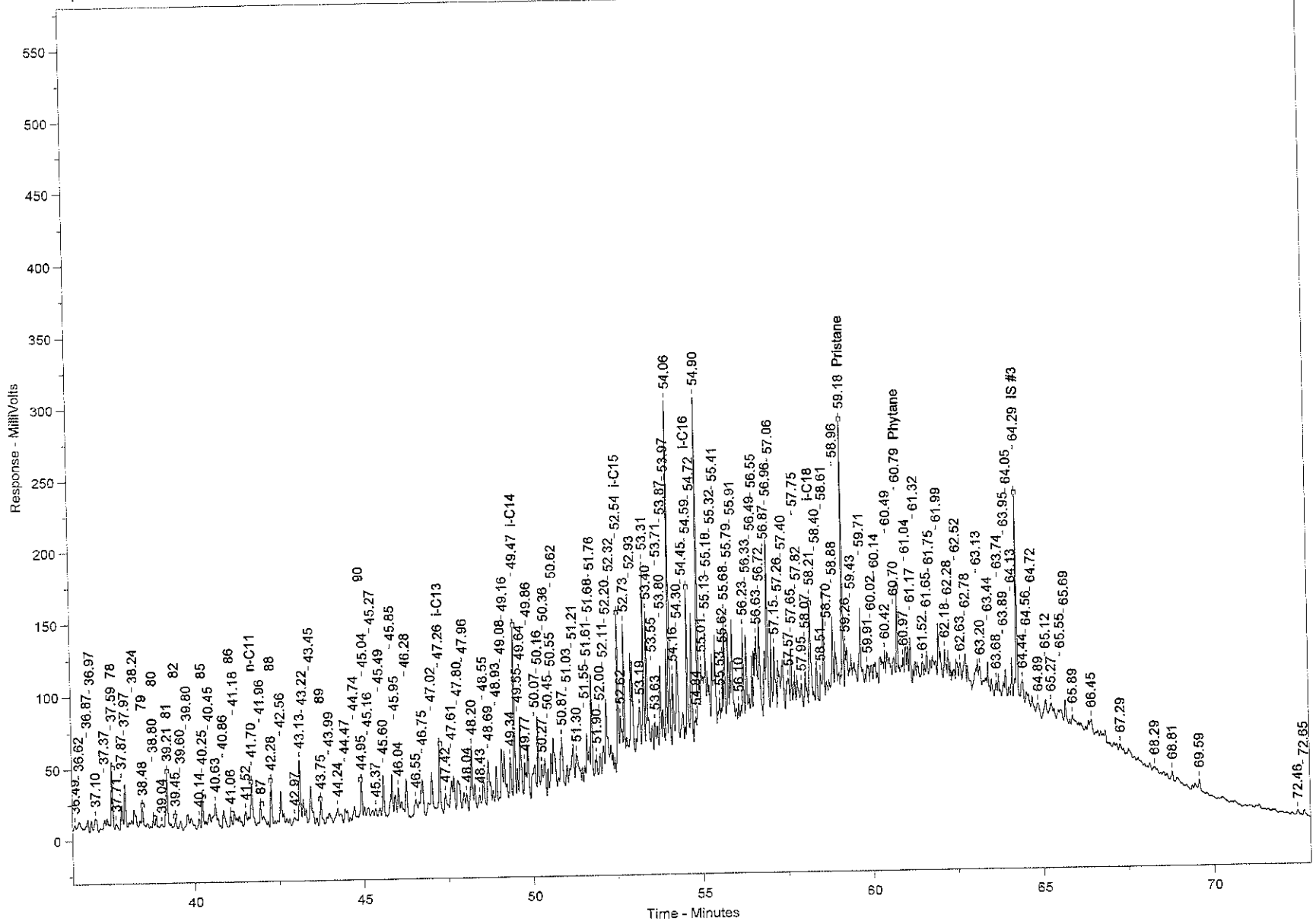

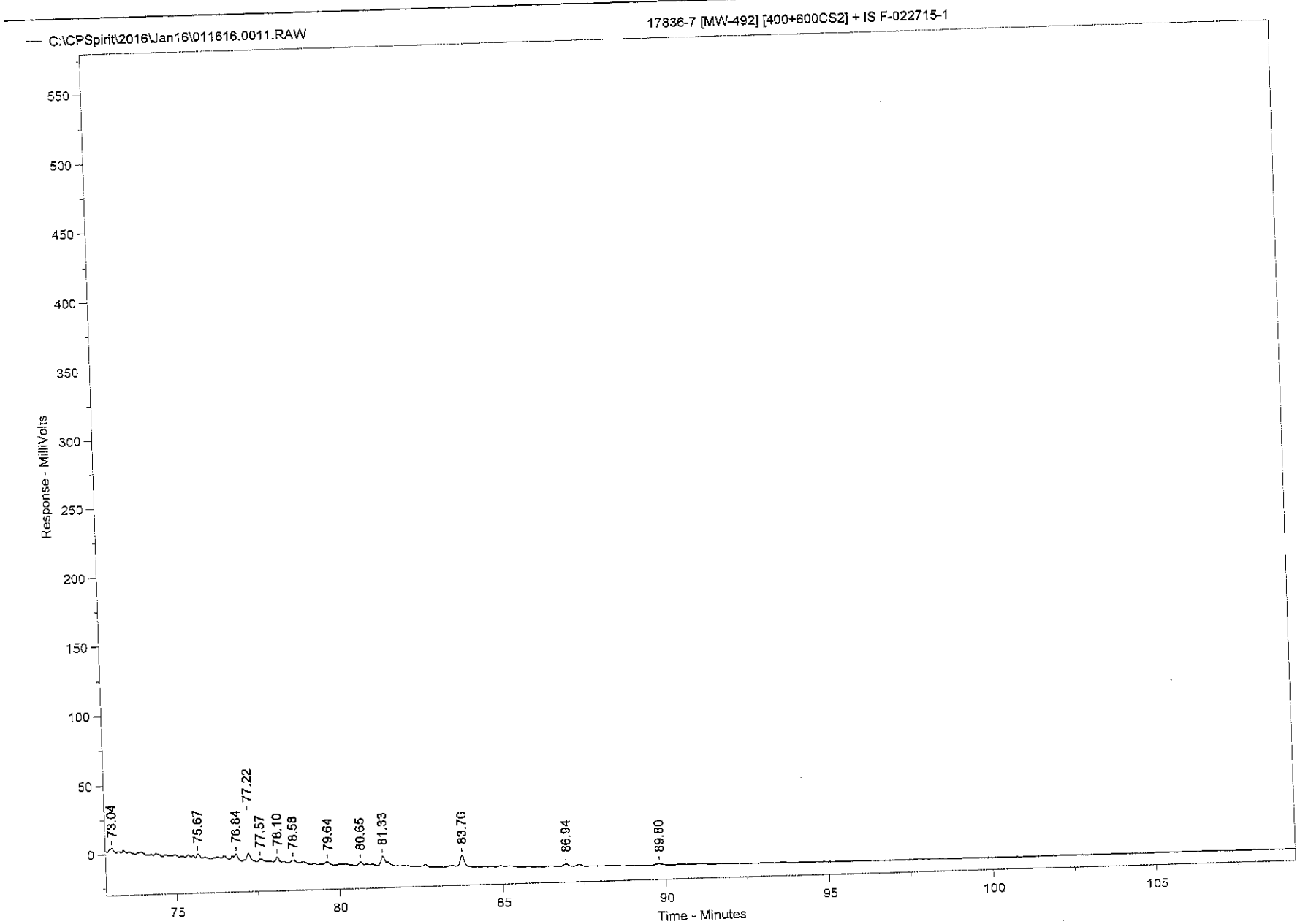

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Sample Name = **17836-7 [MW-492] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0011.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 4:02:04 PM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
4	5.94	0.0290	9718.10
8	6.80	0.2006	67197.92
11	7.27	0.2226	74560.80
CS2	8.04	1.3031	436584.30
15	8.17	0.1024	34298.46
	9.05	0.1009	33814.57
17	9.10	0.2332	78134.80
18	9.25	0.4473	149859.90
19	9.83	0.3579	119920.10
20	10.61	0.4906	164352.80
25	11.87	0.1078	36099.91
26	11.99	0.7784	260790.80
27	12.21	0.1701	56978.74
	12.52	0.1092	36576.89
28	13.35	0.0687	23003.71
29	13.70	0.0912	30552.15
30	13.92	1.9527	654223.00
31	14.51	0.3258	109140.50
32	14.61	0.3575	119763.10
	14.78	0.3680	123280.00
33	15.07	0.4937	165397.10
	15.47	0.4980	166844.00
34A	15.66	0.4414	147896.10
34B	15.84	0.7539	252586.50
IS #1	16.50	1.3027	436446.00
36	16.71	0.4770	159802.50
37	18.06	4.3276	1449855.00
	18.27	0.4352	145789.10
38	18.86	0.2405	80588.43
39	19.08	0.2262	75774.40
	19.47	0.2494	83560.76
	19.57	0.0774	25920.46
	19.98	0.3153	105640.80
40	20.18	0.0579	19382.59
	20.47	0.0559	18732.21
42	20.99	0.3908	130928.40
43	21.36	0.2481	83111.59
44	21.46	0.1078	36119.03
45	21.58	0.0756	25334.34
	21.77	0.0415	13895.83
46B	21.88	0.1664	55742.91
46A	22.00	1.1291	378277.90
	22.13	0.4271	143091.50
	22.51	0.3898	130585.90
48	22.75	0.0835	27981.54
	22.90	0.0684	22930.45
	22.99	0.1940	64996.07
	23.14	0.0560	18775.33
	23.34	0.6154	206170.50
	23.71	0.1905	63813.79
49	23.83	0.3872	129721.90
	24.32	0.0860	28815.45
	24.71	0.0722	24195.93
	25.06	0.0747	25016.55
	25.33	0.0794	26613.94

Peak Name	Ret. Time	Area %	Area
51	25.40	0.1848	61908.26
52	25.75	0.7262	243280.40
	26.10	0.4222	141459.70
	26.19	0.1232	41272.04
	26.27	0.1911	64011.56
53	26.51	0.0719	24097.69
	26.96	0.1468	49167.95
54	27.10	0.1583	53044.93
	27.54	0.1434	48030.45
55	27.89	0.1623	54376.77
	28.03	0.0392	13120.99
56	28.45	0.1556	52146.50
58	28.58	0.1294	43348.59
59	29.01	0.1384	46372.54
61	29.31	0.0912	30557.86
	29.39	0.2107	70578.39
	29.59	0.2509	84048.53
	30.22	0.1727	57856.07
62	30.41	1.3670	457993.80
IS #2	30.59	0.2888	96755.93
	30.76	0.1248	41805.13
	31.01	0.0356	11921.84
63	31.27	0.2121	71049.55
	31.37	0.1889	63277.01
64	31.48	0.0930	31146.14
	31.66	0.1374	46024.54
	31.91	0.0882	29535.82
	32.01	0.2483	83178.81
	32.15	0.1076	36036.20
	32.45	0.2045	68501.46
	32.54	0.0863	28919.79
	32.82	0.1974	66147.50
66	32.90	0.2075	69504.02
	33.11	0.0409	13705.10
	33.25	0.0613	20547.47
	33.40	0.1390	46568.23
68	33.68	0.3596	120490.90
69	33.90	0.1317	44135.66
	34.07	0.1970	65998.18
	34.23	0.0484	16208.33
	34.41	0.1462	48982.68
	34.65	0.3295	110401.10
	34.85	0.1755	58801.78
	35.03	0.0543	18186.82
	35.25	0.2175	72860.77
	35.34	0.1048	35105.61
	35.42	0.1836	61509.02
	35.60	0.0431	14440.74
	35.92	0.0843	28237.81
	36.04	0.2062	69080.02
	36.22	0.1697	56853.55
	36.49	0.0709	23742.38
	36.62	0.1579	52909.57
	36.87	0.0801	26852.14
	36.97	0.0716	24003.97
	37.10	0.1638	54882.96
	37.37	0.0377	12639.93
	37.59	0.3639	121913.60
78	37.71	0.0505	16923.39
	37.87	0.1681	56321.70
	37.97	0.2550	85432.92
	38.24	0.1376	46095.83
	38.48	0.0968	32430.58
79	38.80	0.0335	11238.10
80	39.04	0.0467	15652.89
	39.21	0.4332	145141.10
81	39.45	0.1014	33987.18
82			

Peak Name	Ret. Time	Area %	Area
	39.60	0.0843	28245.75
	39.80	0.0935	31322.69
	40.14	0.0787	26377.96
	40.25	0.2120	71017.43
85	40.45	0.1444	48378.47
	40.63	0.3951	132368.80
	40.86	0.1635	54791.39
	41.08	0.0612	20505.21
86	41.18	0.0510	17071.87
	41.52	0.1368	45816.83
	41.70	0.3854	129130.50
n-C11	41.96	0.0835	27974.73
87	42.28	0.2613	87534.63
88	42.56	0.1732	58015.63
	42.97	0.1195	40048.37
	43.13	0.4379	146714.10
	43.22	0.1848	61898.58
	43.45	0.3716	124498.50
	43.75	0.2024	67805.07
89	43.99	0.1589	53220.34
	44.24	0.0920	30818.63
	44.47	0.1619	54240.36
	44.74	0.1420	47574.14
	44.95	0.2896	97022.59
90	45.04	0.0858	28749.89
	45.16	0.1177	39419.96
	45.27	0.0847	28378.15
	45.37	0.0746	24977.54
	45.49	0.0841	28189.63
	45.60	0.2910	97482.24
	45.85	0.3164	105991.00
	45.95	0.1269	42501.09
	46.04	0.1219	40827.71
	46.28	0.2293	76830.05
	46.55	0.1934	64801.91
	46.75	0.3704	124096.60
	47.02	0.5163	172981.70
i-C13	47.26	0.4881	163538.80
	47.42	0.2140	71679.18
	47.61	0.2931	98180.57
	47.80	0.4154	139186.10
	47.96	0.1549	51899.42
	48.04	0.1160	38857.92
	48.20	0.4888	163758.50
	48.43	0.1249	41839.04
	48.55	0.2566	85953.34
	48.69	0.5111	171216.90
	48.93	0.2658	89034.24
	49.08	0.4368	146325.10
	49.16	0.3377	113154.50
	49.34	0.3635	121774.90
i-C14	49.47	0.9286	311115.20
	49.55	0.1876	62855.00
	49.64	0.6080	203701.90
	49.77	0.3368	112848.60
	49.86	0.3582	120021.30
	50.07	0.4995	167343.90
	50.16	0.4654	155909.40
	50.27	0.2655	88941.07
	50.36	0.3036	101713.00
	50.45	0.1413	47328.34
	50.55	0.2742	91876.49
	50.62	0.5495	184094.80
	50.87	0.5456	182789.20
	51.03	0.1478	49515.38
	51.21	0.4901	164211.60
	51.30	0.3868	129603.10

Peak Name	Ret. Time	Area %	Area
	51.55	0.0798	26731.64
	51.61	0.2656	88993.71
	51.68	0.1978	66257.44
	51.76	0.5159	172849.10
	51.90	0.1614	54060.56
	52.00	0.1134	37985.32
	52.11	0.1976	66200.17
	52.20	0.6477	217012.00
	52.32	0.2175	72858.35
i-C15	52.54	0.7639	255918.20
	52.62	0.3997	133900.20
	52.73	0.5441	182282.30
	52.93	0.8647	289708.90
	53.19	0.5014	167982.50
	53.31	0.9451	316641.70
	53.40	0.8589	287768.20
	53.55	0.1632	54692.82
	53.63	0.1699	56909.84
	53.71	0.1309	43857.43
	53.80	0.4593	153866.60
	53.87	0.2622	87849.92
	53.97	0.5325	178411.20
	54.06	1.5884	532156.90
	54.16	0.3997	133898.60
	54.30	0.7500	251269.60
	54.45	0.3917	131242.40
i-C16	54.59	0.7494	251081.90
	54.72	0.8063	270130.20
	54.84	0.2065	69178.52
	54.90	1.7598	589590.90
	55.01	0.9291	311257.50
	55.13	0.4999	167463.40
	55.18	0.7018	235124.20
	55.32	0.6533	218879.40
	55.41	0.5790	193986.50
	55.53	0.1738	58219.01
	55.62	0.3570	119616.10
	55.68	0.5898	197586.80
	55.79	0.9158	306829.50
	55.91	0.6738	225752.00
	56.10	0.1468	49194.04
	56.23	0.6665	223299.50
	56.33	0.5326	178450.10
	56.49	0.3487	116816.80
	56.55	0.2948	98754.47
	56.63	0.8802	294885.80
	56.72	0.6385	213929.50
	56.87	0.4664	156245.50
	56.96	1.1196	375094.30
	57.06	0.3619	121243.50
	57.15	0.6318	211660.50
	57.26	0.4906	164372.10
	57.40	0.5119	171509.40
	57.57	0.4247	142284.80
	57.65	0.3716	124511.60
	57.75	0.1878	62912.37
	57.82	0.2688	90042.88
	57.95	0.2008	67285.68
	58.07	0.2368	79321.02
i-C18	58.21	0.8309	278377.90
	58.40	0.2512	84156.99
	58.51	0.1697	56870.11
	58.61	0.5388	180506.90
	58.70	0.1342	44961.54
	58.88	0.4854	162638.80
	58.96	0.4074	136481.80
Pristane	59.18	1.2772	427910.80

Peak Name	Ret. Time	Area %	Area
	59.26	0.4799	160792.60
	59.43	0.4877	163401.30
	59.71	0.6202	207800.30
	59.91	0.1581	52951.84
	60.02	0.1207	40428.11
	60.14	0.1379	46195.33
	60.42	0.3997	133898.20
	60.49	0.0766	25671.99
	60.70	0.1481	49607.31
	60.79	0.4424	148207.00
Phytane	60.97	0.1023	34261.66
	61.04	0.4024	134801.60
	61.17	0.2179	73014.27
	61.32	0.0735	24640.11
	61.52	0.1279	42859.58
	61.65	0.1138	38110.75
	61.75	0.0457	15313.02
	61.99	0.4103	137448.70
	62.18	0.2176	72895.26
	62.28	0.2042	68396.31
	62.52	0.1836	61526.97
	62.63	0.1817	60868.48
	62.78	0.5151	172578.70
	63.13	0.3236	108424.60
	63.20	0.1408	47181.53
	63.44	0.0794	26616.47
	63.68	0.1031	34537.34
	63.74	0.1633	54714.78
	63.89	0.1328	44496.82
	63.95	0.2001	67041.41
	64.05	0.1287	43134.36
	64.13	0.2325	77899.27
	64.29	1.2327	413004.30
IS #3	64.44	0.3331	111600.50
	64.56	0.2808	94085.30
	64.72	0.1702	57036.03
	64.89	0.1711	57329.93
	65.12	0.2309	77367.33
	65.27	0.2314	77540.70
	65.55	0.2899	97110.55
	65.69	0.2056	68885.40
	65.89	0.2466	82634.27
	66.45	0.2193	73474.68
	67.29	0.0910	30503.46
	68.29	0.0788	26387.01
	68.81	0.0683	22892.21
	69.59	0.0626	20959.25
	72.46	0.0424	14207.13
	72.65	0.0712	23865.66
	73.04	0.0750	25127.34
	75.67	0.0493	16516.40
	76.84	0.1298	43497.29
	77.22	0.1325	44394.14
	77.57	0.0804	26929.38
	78.10	0.0652	21827.39
	78.58	0.0610	20429.79
	79.64	0.0579	19406.75
	80.65	0.0510	17097.33
	81.33	0.2223	74468.05
	83.76	0.2075	69505.53
	86.94	0.0559	18724.82
	89.80	0.0497	16651.79

Total Area = 3.350273E+07 Total Height = 1.023089E+07 Total Amount = 0

1/16/2016

ZymaX ID	17836-8
Sample ID	RW-26

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.30

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.01
Aromatics / Total Paraffins (n+iso+cyc)	0.54
Aromatics / Naphthenes	1.20

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	83.94
3-Methylhexane / n-Heptane	6.33
Methylcyclohexane / n-Heptane	47.44
Isoparaffins + Naphthenes / Paraffins	13.75

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	4.32
% Isoparaffinic	30.68
% Aromatic	34.41
% Naphthenic	28.75
% Olefinic	1.84

1/16/2016

ZymaX ID		17836-8
Sample ID		RW-26
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.14
18	2-Methylpentane	0.40
19	3-Methylpentane	0.49
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.18
26	Methylcyclopentane	0.44
27	2,4-Dimethylpentane	0.33
28	Benzene	0.00
29	5-Methyl-1-hexene	0.22
30	Cyclohexane	0.79
31	2-Methylhexane/TAME	0.85
32	2,3-Dimethylpentane	1.11
33	3-Methylhexane	1.94
34A	1-trans-3-Dimethylcyclopentane	1.46
34B	1-cis-3-Dimethylcyclopentane	2.85
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

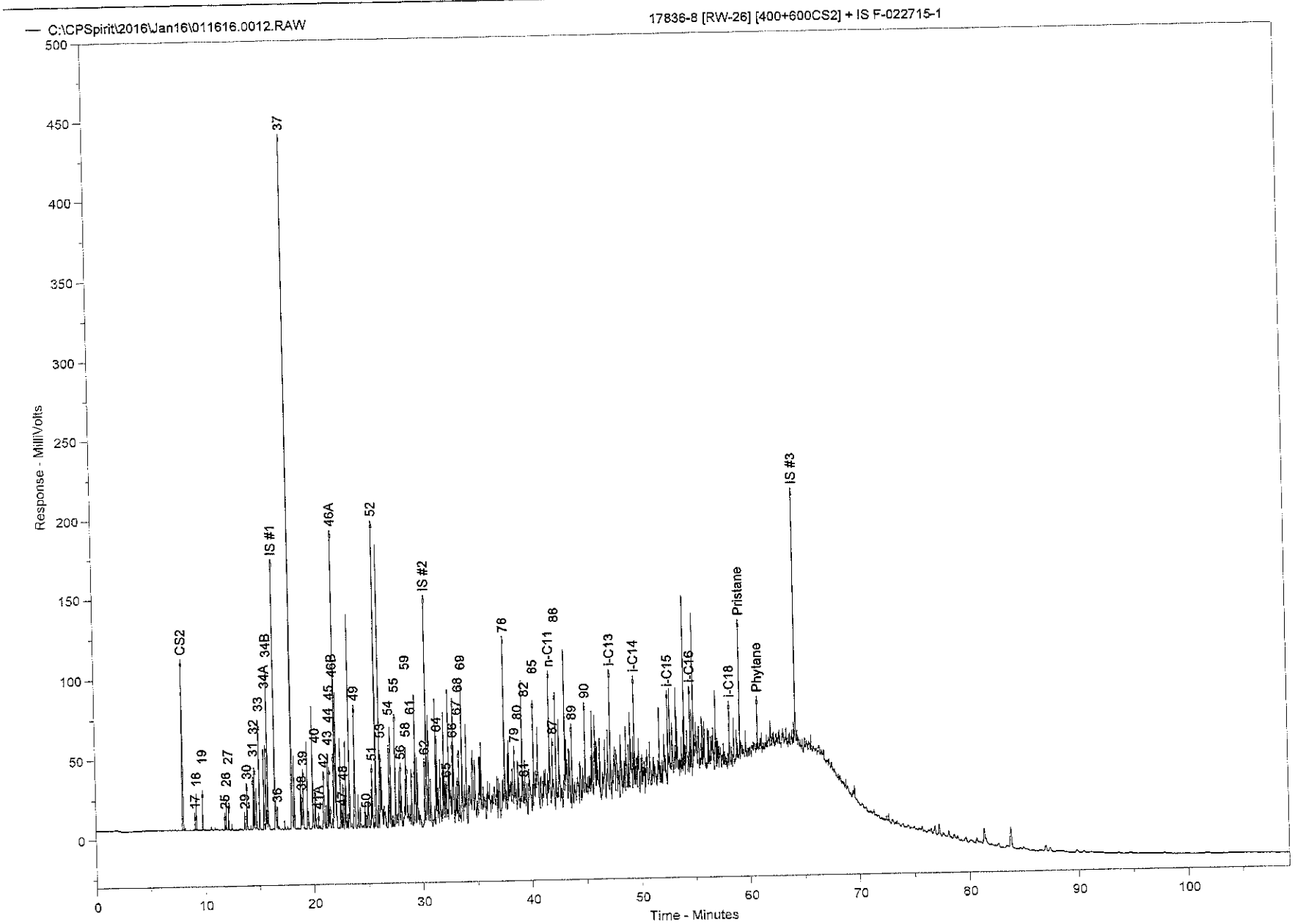
1/16/2016

ZymaX ID		17836-8
Sample ID		RW-26
		Relative Area %
36	n-Heptane	0.31
37	Methylcyclohexane	14.54
38	2,5-Dimethylhexane	0.54
39	2,4-Dimethylhexane	1.23
40	2,3,4-Trimethylpentane	0.83
41	Toluene/2,3,3-Trimethylpentane	0.20
42	2,3-Dimethylhexane	2.33
43	2-Methylheptane	1.33
44	4-Methylheptane	1.09
45	3,4-Dimethylhexane	0.50
46A	3-Ethyl-3-methylpentane	7.74
46B	1,4-Dimethylcyclohexane	1.31
47	3-Methylheptane	0.25
48	2,2,5-Trimethylhexane	0.75
49	n-Octane	2.54
50	2,2-Dimethylheptane	0.19
51	2,4-Dimethylheptane	1.49
52	Ethylcyclohexane	7.37
53	2,6-Dimethylheptane	1.32
54	Ethylbenzene	1.77
55	m+p Xylenes	2.48
56	4-Methyloctane	0.86
57	2-Methyloctane	0.00
58	3-Ethylheptane	1.26
59	3-Methyloctane	0.83
60	o-Xylene	0.00
61	1-Nonene	1.44
62	n-Nonane	1.48
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	1.92
65	2,4,5-Trimethylheptane	0.99
66	n-Propylbenzene	2.25
67	1-Methyl-3-ethylbenzene	0.98
68	1-Methyl-4-ethylbenzene	1.80
69	1,3,5-Trimethylbenzene	3.86
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-8
Sample ID		RW-26
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	4.30
79	1,3-Diethylbenzene	2.61
80	1,4-Diethylbenzene	1.09
81	n-Butylbenzene	0.71
82	1,3-Dimethyl-5-ethylbenzene	1.61
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	2.40
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.86
88	1,2,3,5-Tetramethylbenzene	2.53
89	1,2,3,4-Tetramethylbenzene	2.14
90	Naphthalene	2.82
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report



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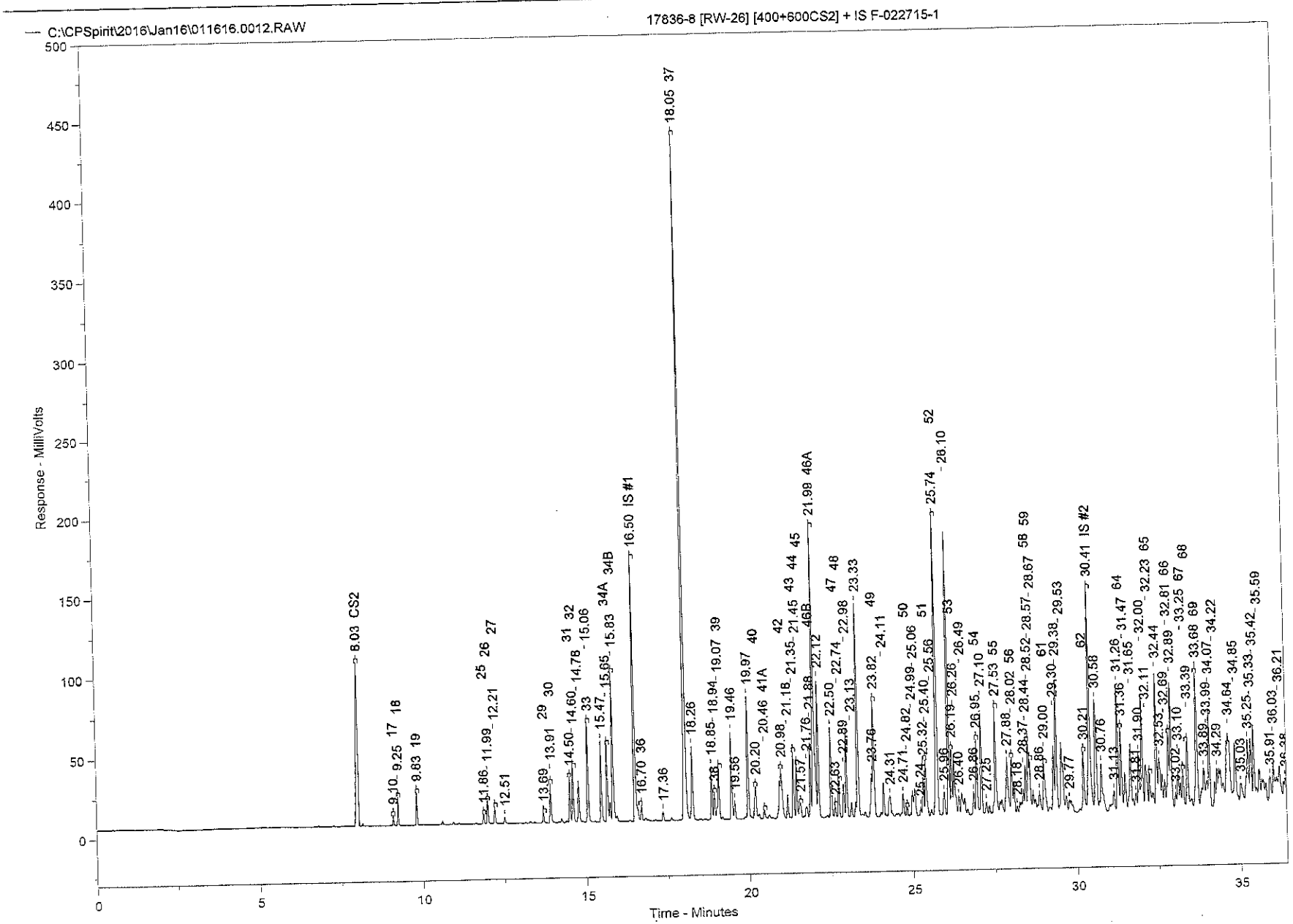

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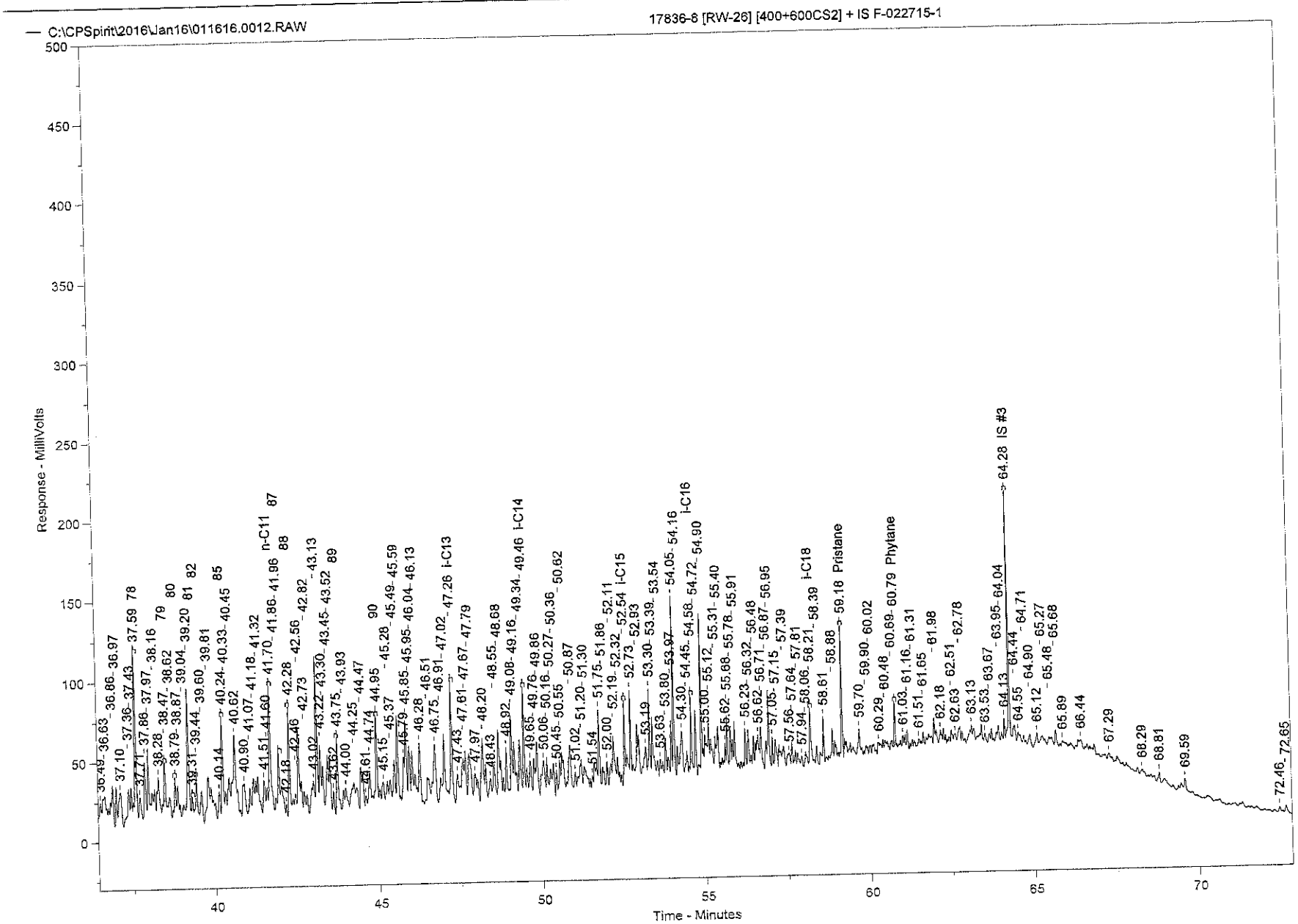

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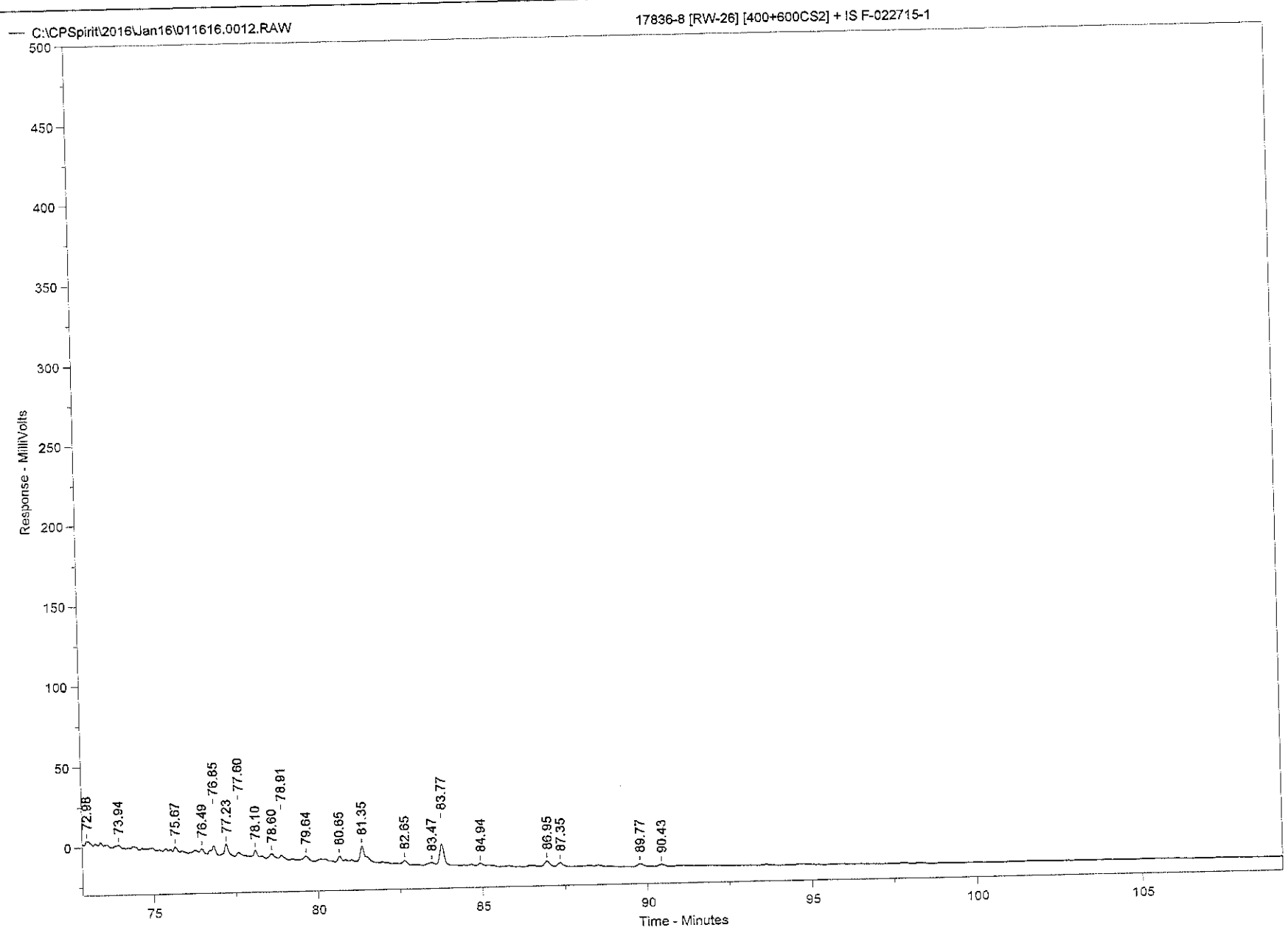

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Sample Name = **17836-8 [RW-26] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0012.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 6:05:04 PM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.03	1.0824	394903.60
17	9.10	0.0312	11383.72
18	9.25	0.0917	33439.22
19	9.83	0.1123	40986.57
25	11.86	0.0417	15215.77
26	11.99	0.1003	36581.00
27	12.21	0.0767	27999.75
	12.51	0.0317	11554.93
29	13.69	0.0501	18267.19
30	13.91	0.1826	66624.11
31	14.50	0.1943	70900.83
32	14.60	0.2545	92842.59
	14.78	0.2022	73750.65
33	15.06	0.4457	162616.70
	15.47	0.3623	132179.90
34A	15.65	0.3360	122584.70
34B	15.83	0.6543	238695.50
IS #1	16.50	1.2336	450048.60
36	16.70	0.0704	25691.58
	17.36	0.0430	15701.68
37	18.05	3.3409	1218863.00
	18.26	0.4010	146309.50
	18.85	0.2380	86818.27
38	18.94	0.1242	45320.73
39	19.07	0.2831	103301.10
	19.46	0.4015	146466.10
	19.56	0.0877	31995.81
	19.97	0.5662	206564.10
40	20.20	0.1896	69171.66
41A	20.46	0.0452	16475.12
42	20.98	0.5345	195007.60
	21.18	0.1150	41952.77
43	21.35	0.3053	111366.90
44	21.45	0.2499	91189.22
45	21.57	0.1153	42054.15
	21.76	0.0823	30027.00
46B	21.88	0.3008	109728.00
46A	21.99	1.7795	649221.10
	22.12	0.6246	227863.60
	22.50	0.4222	154029.80
47	22.63	0.0579	21113.19
48	22.74	0.1719	62726.85
	22.89	0.1488	54285.84
	22.98	0.4105	149747.20
	23.13	0.0698	25474.65
	23.33	1.0517	383708.00
	23.76	0.2450	89382.89
49	23.82	0.5827	212588.20
	24.11	0.1695	61846.96
	24.31	0.1732	63194.76
	24.71	0.1238	45150.75
50	24.82	0.0434	15816.92
	24.99	0.1382	50412.59
	25.06	0.1708	62328.86
	25.24	0.0432	15775.70

Peak Name	Ret. Time	Area %	Area
	25.32	0.1849	67469.60
51	25.40	0.3416	124629.40
	25.56	0.0315	11509.96
52	25.74	1.6931	617690.30
	25.96	0.1369	49941.24
	26.10	1.3264	483904.80
53	26.19	0.3029	110494.80
	26.26	0.3665	133704.40
	26.40	0.0683	24925.14
	26.49	0.0849	30990.21
	26.86	0.1203	43873.19
54	26.95	0.4075	148672.10
	27.10	0.4800	175124.00
	27.25	0.0582	21219.22
55	27.53	0.5693	207699.60
	27.88	0.3581	130649.80
56	28.02	0.1971	71911.56
	28.18	0.0236	8607.61
	28.37	0.0554	20210.92
	28.44	0.1595	58173.06
58	28.52	0.2896	105655.80
59	28.57	0.1899	69290.46
	28.67	0.0492	17947.16
	28.86	0.0787	28703.62
61	29.00	0.3307	120644.90
	29.30	0.3480	126955.00
	29.38	0.6256	228251.50
	29.53	0.5643	205864.20
	29.77	0.1427	52074.99
62	30.21	0.3402	124126.80
IS #2	30.41	1.3977	509941.30
	30.58	0.7322	267113.60
	30.76	0.3363	122694.70
	31.13	0.1922	70117.71
	31.26	0.6846	249776.60
64	31.36	0.4413	160991.00
	31.47	0.2706	98724.08
	31.65	0.4882	178127.50
	31.81	0.1106	40367.66
	31.90	0.3129	114167.80
	32.00	0.5880	214535.30
	32.11	0.3845	140276.30
65	32.23	0.2269	82763.27
	32.44	0.6609	241118.70
	32.53	0.3808	138940.00
	32.69	0.1599	58322.24
66	32.81	0.5169	188565.90
	32.89	0.6833	249278.30
	33.02	0.0820	29905.39
	33.10	0.1999	72912.77
67	33.25	0.2251	82107.90
68	33.39	0.4131	150709.10
69	33.68	0.8875	323803.90
	33.89	0.3948	144037.50
	33.99	0.1858	67797.04
	34.07	0.4897	178669.80
	34.22	0.0677	24715.54
	34.29	0.0698	25470.01
	34.64	0.7536	274947.60
	34.85	0.3660	133519.00
	35.03	0.1315	47976.09
	35.25	0.3772	137625.90
	35.33	0.2747	100203.60
	35.42	0.3220	117467.80
	35.59	0.1178	42962.03
	35.91	0.1901	69353.40
	36.03	0.2695	98336.02

Peak Name	Ret. Time	Area %	Area
	36.21	0.2768	100984.10
	36.38	0.2205	80442.21
	36.49	0.1763	64317.93
	36.63	0.5463	199325.00
	36.86	0.3490	127338.00
	36.97	0.2114	77107.06
	37.10	0.3740	136438.10
	37.36	0.3083	112480.00
	37.43	0.2161	78831.01
78	37.59	0.9890	360825.70
	37.71	0.2555	93210.05
	37.86	0.4320	157607.50
	37.97	0.4850	176934.00
	38.16	0.2266	82665.89
	38.28	0.4915	179332.20
79	38.47	0.5990	218516.60
	38.62	0.2307	84150.80
80	38.79	0.2513	91690.33
	38.87	0.2229	81334.05
	39.04	0.2041	74453.98
	39.20	0.8698	317321.60
81	39.31	0.1622	59173.84
82	39.44	0.3711	135381.80
	39.60	0.2513	91673.67
	39.81	0.2197	80148.24
	40.14	0.1652	60255.78
85	40.24	0.5521	201408.70
	40.33	0.1342	48970.23
	40.45	0.3118	113750.00
	40.62	0.8758	319518.10
	40.90	0.3264	119076.40
	41.07	0.1787	65204.20
	41.18	0.2480	90494.41
	41.32	0.2590	94492.80
	41.51	0.2151	78464.77
	41.60	0.1389	50687.37
n-C11	41.70	0.8180	298416.00
	41.86	0.0373	13613.13
87	41.96	0.1971	71911.91
	42.18	0.0358	13044.26
88	42.28	0.5816	212176.50
	42.46	0.1554	56703.26
	42.56	0.7301	266374.10
	42.73	0.1617	58979.26
	42.82	0.1271	46364.95
	43.02	0.4150	151411.90
	43.13	0.8851	322894.30
	43.22	0.4405	160713.90
	43.30	0.2728	99539.71
	43.45	0.4716	172060.20
	43.52	0.3102	113173.00
	43.62	0.1225	44700.89
89	43.75	0.4913	179236.80
	43.93	0.1406	51278.46
	44.00	0.2431	88682.07
	44.25	0.4051	147810.00
	44.47	0.2651	96705.60
	44.61	0.0973	35505.34
	44.74	0.3308	120671.40
90	44.95	0.6476	236261.30
	45.15	0.2513	91683.40
	45.28	0.2533	92428.50
	45.37	0.2194	80031.73
	45.49	0.3677	134159.60
	45.59	0.6418	234151.70
	45.79	0.3493	127421.90
	45.85	0.4764	173788.90

Peak Name	Ret. Time	Area %	Area
	45.95	0.4176	152352.10
	46.04	0.3570	130238.90
	46.13	0.3280	119657.20
	46.28	0.4168	152056.20
	46.51	0.3157	115167.60
	46.75	0.6666	243200.50
	46.91	0.2249	82057.76
	47.02	0.6024	219780.60
i-C13	47.26	0.7468	272439.50
	47.43	0.3408	124325.60
	47.61	0.3623	132167.60
	47.67	0.2946	107495.70
	47.79	0.5499	200623.80
	47.97	0.3778	137830.50
	48.20	0.5093	185807.10
	48.43	0.1908	69597.91
	48.55	0.3254	118716.40
	48.68	0.6227	227181.30
	48.92	0.3470	126594.50
	49.08	0.4920	179486.80
	49.16	0.4520	164891.00
	49.34	0.4344	158481.40
i-C14	49.46	0.5371	195966.00
	49.65	0.2985	108905.50
	49.76	0.3013	109931.70
	49.86	0.3155	115110.50
	50.06	0.4316	157473.40
	50.16	0.2081	75910.04
	50.27	0.1994	72763.11
	50.36	0.2104	76767.00
	50.45	0.1074	39175.36
	50.55	0.1927	70295.41
	50.62	0.3909	142616.90
	50.87	0.4167	152020.10
	51.02	0.1095	39961.09
	51.20	0.3196	116596.60
	51.30	0.2511	91607.64
	51.54	0.0317	11568.44
	51.75	0.2800	102138.00
	51.86	0.1063	38785.38
	52.00	0.0979	35722.57
	52.11	0.1524	55585.04
	52.19	0.3493	127441.60
	52.32	0.1563	57019.76
i-C15	52.54	0.3941	143796.10
	52.73	0.5369	195891.50
	52.93	0.5784	211035.70
	53.19	0.3309	120731.70
	53.30	0.4537	165518.80
	53.39	0.4463	162836.00
	53.54	0.1225	44678.76
	53.63	0.1229	44834.43
	53.80	0.2201	80314.77
	53.97	0.2844	103760.30
	54.05	0.7125	259925.10
	54.16	0.1433	52284.09
	54.30	0.4342	158400.40
	54.45	0.1876	68446.46
i-C16	54.58	0.3449	125813.60
	54.72	0.3453	125992.30
	54.90	0.6356	231873.60
	55.00	0.1736	63328.51
	55.12	0.1300	47438.77
	55.31	0.1740	63492.93
	55.40	0.1858	67784.27
	55.62	0.0715	26087.78
	55.68	0.1759	64179.85

Peak Name	Ret. Time	Area %	Area
	55.78	0.1491	54383.28
	55.91	0.1921	70090.06
	56.23	0.1495	54526.42
	56.32	0.1737	63375.21
	56.48	0.1253	45700.36
	56.62	0.3501	127713.80
	56.71	0.2173	79269.12
	56.87	0.1477	53872.38
	56.95	0.3899	142231.30
	57.05	0.1086	39630.62
	57.15	0.2086	76109.10
	57.39	0.1794	65465.06
	57.56	0.1621	59139.08
	57.64	0.1295	47229.40
	57.81	0.0994	36257.31
	57.94	0.0636	23221.12
	58.06	0.1124	41011.78
i-C18	58.21	0.3780	137890.40
	58.39	0.0973	35491.74
	58.61	0.1303	47539.47
	58.88	0.1105	40302.30
Pristane	59.18	0.4694	171236.40
	59.70	0.1844	67280.57
	59.90	0.0615	22438.67
	60.02	0.0463	16902.04
	60.29	0.1336	48730.77
	60.48	0.1594	58140.93
	60.69	0.0961	35047.03
Phytane	60.79	0.2209	80602.70
	61.03	0.0880	32087.37
	61.16	0.0819	29862.55
	61.31	0.0279	10188.14
	61.51	0.0574	20939.71
	61.65	0.0525	19142.30
	61.98	0.0724	26413.94
	62.18	0.0670	24429.18
	62.51	0.0591	21575.62
	62.63	0.0525	19163.57
	62.78	0.1091	39799.36
	63.13	0.0939	34242.04
	63.53	0.0383	13990.93
	63.67	0.0345	12603.51
	63.95	0.1301	47452.76
	64.04	0.0569	20755.33
	64.13	0.1026	37440.07
IS #3	64.28	1.0229	373203.40
	64.44	0.1721	62787.45
	64.55	0.1438	52458.57
	64.71	0.0880	32105.33
	64.90	0.1103	40249.34
	65.12	0.1347	49151.84
	65.27	0.1406	51292.51
	65.48	0.1852	67552.09
	65.68	0.1307	47699.95
	65.89	0.1418	51715.30
	66.44	0.1386	50572.46
	67.29	0.0729	26600.40
	68.29	0.0670	24447.88
	68.81	0.0579	21126.39
	69.59	0.0508	18524.88
	72.46	0.0487	17752.88
	72.65	0.0721	26314.17
	72.98	0.0721	26312.45
	73.94	0.0596	21732.01
	75.67	0.0485	17711.87
	76.49	0.0434	15826.76
	76.85	0.0588	21466.10

Peak Name	Ret. Time	Area %	Area
	77.23	0.1727	63009.59
	77.60	0.1105	40320.91
	78.10	0.0983	35864.86
	78.60	0.1024	37363.04
	78.91	0.0703	25631.29
	79.64	0.0714	26047.79
	80.65	0.0795	28993.11
	81.35	0.1492	54434.61
	82.65	0.0545	19882.53
	83.47	0.0718	26197.23
	83.77	0.3784	138068.00
	84.94	0.0990	36111.87
	86.95	0.0935	34110.89
	87.35	0.0680	24809.41
	89.77	0.0642	23414.42
	90.43	0.0409	14938.46

Total Area = 3.648311E+07 Total Height = 1.02526E+07 Total Amount = 0

1/16/2016

ZymaX ID	17836-9
Sample ID	RW-31

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.53

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.11
Aromatics / Total Paraffins (n+iso+cyc)	0.74
Aromatics / Naphthenes	2.22

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	11.02

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.32

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	4.73
% Isoparaffinic	33.30
% Aromatic	41.79
% Naphthenic	18.82
% Olefinic	1.36

1/16/2016

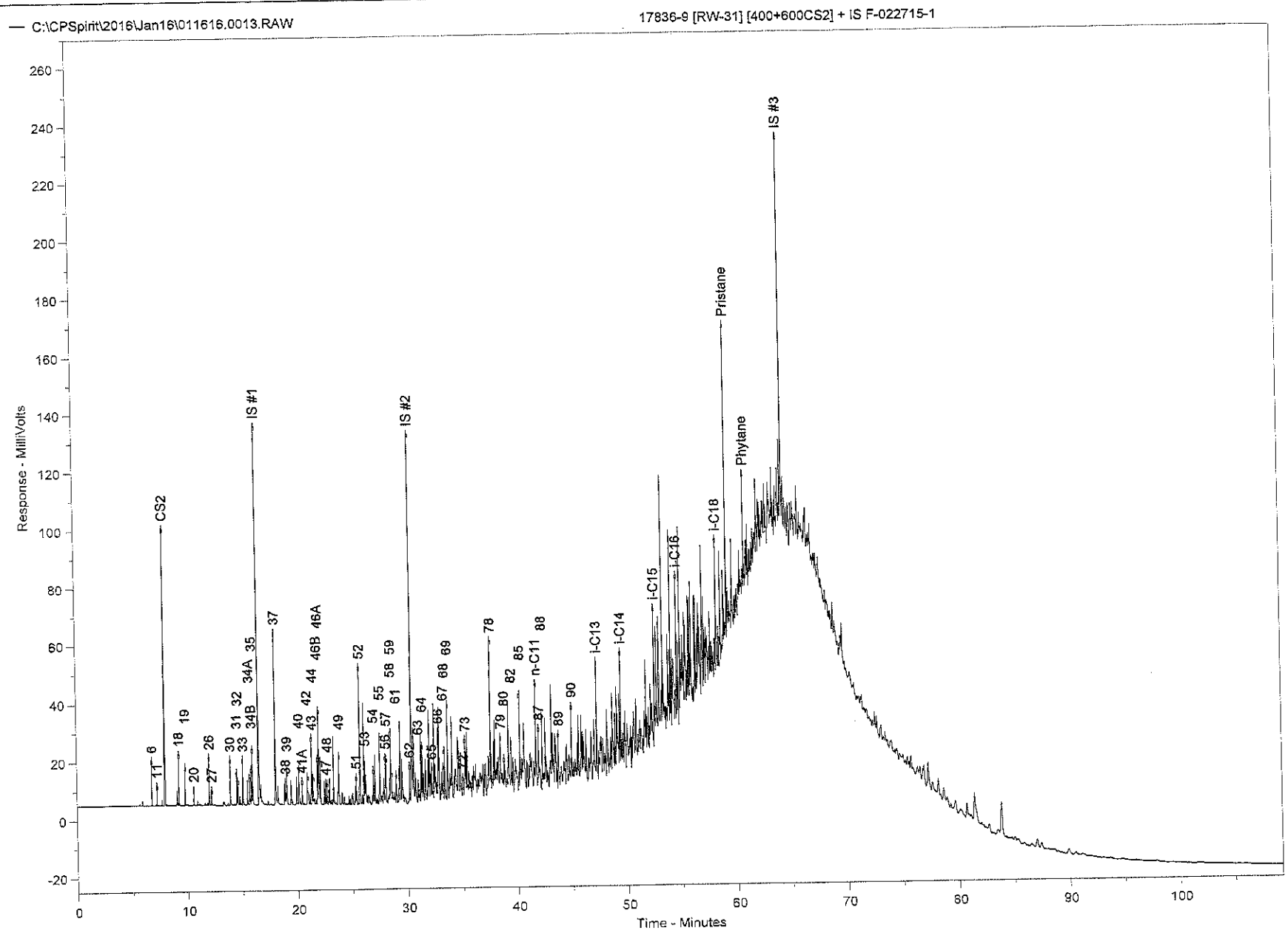
ZymaX ID		17836-9
Sample ID		RW-31
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.67
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.28
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	1.11
19	3-Methylpentane	0.86
20	Hexane	0.34
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	1.37
27	2,4-Dimethylpentane	0.38
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	1.57
31	2-Methylhexane/TAME	0.96
32	2,3-Dimethylpentane	0.74
33	3-Methylhexane	1.50
34A	1-trans-3-Dimethylcyclopentane	0.84
34B	1-cis-3-Dimethylcyclopentane	1.18
35	2,2,4-Trimethylpentane	2.17
I.S. #1	à,à,à-Trifluorotoluene	0.00

1/16/2016

ZymaX ID		17836-9
Sample ID		RW-31
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	6.73
38	2,5-Dimethylhexane	0.68
39	2,4-Dimethylhexane	1.41
40	2,3,4-Trimethylpentane	1.36
41	Toluene/2,3,3-Trimethylpentane	0.74
42	2,3-Dimethylhexane	1.69
43	2-Methylheptane	2.11
44	4-Methylheptane	0.67
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	4.20
46B	1,4-Dimethylcyclohexane	1.42
47	3-Methylheptane	0.64
48	2,2,5-Trimethylhexane	0.60
49	n-Octane	2.65
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	1.05
52	Ethylcyclohexane	5.71
53	2,6-Dimethylheptane	0.81
54	Ethylbenzene	1.66
55	m+p Xylenes	2.62
56	4-Methyloctane	1.37
57	2-Methyloctane	1.39
58	3-Ethylheptane	2.28
59	3-Methyloctane	0.49
60	o-Xylene	0.00
61	1-Nonene	1.36
62	n-Nonane	1.46
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.72
64	3,3,5-Trimethylheptane	2.04
65	2,4,5-Trimethylheptane	1.25
66	n-Propylbenzene	3.20
67	1-Methyl-3-ethylbenzene	0.99
68	1-Methyl-4-ethylbenzene	1.83
69	1,3,5-Trimethylbenzene	4.65
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-9
Sample ID		RW-31
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.85
73	1,2,4-Trimethylbenzene	2.37
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	5.66
79	1,3-Diethylbenzene	1.42
80	1,4-Diethylbenzene	0.59
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	2.31
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	3.76
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	1.44
88	1,2,3,5-Tetramethylbenzene	2.40
89	1,2,3,4-Tetramethylbenzene	2.38
90	Naphthalene	3.01
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00



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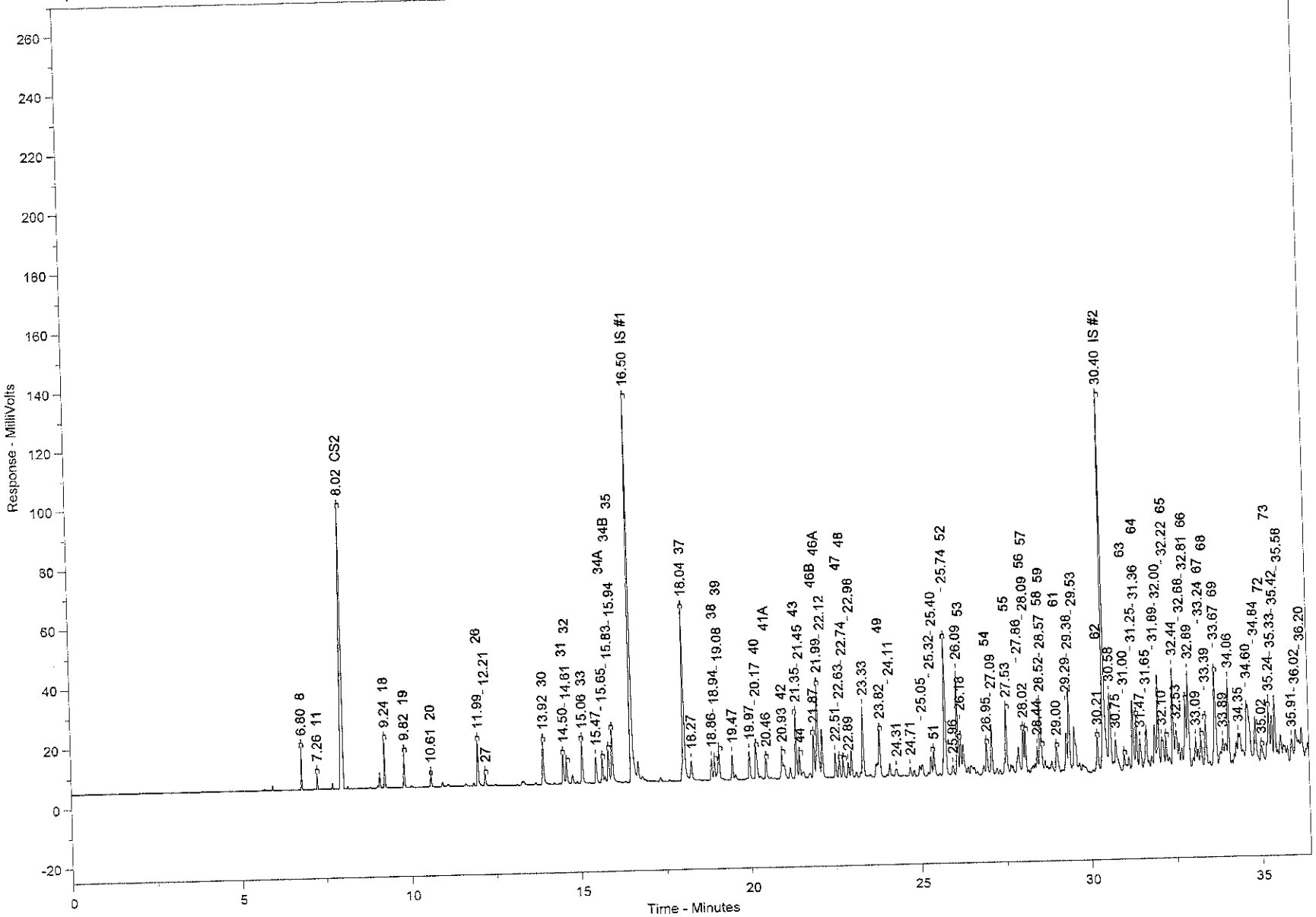
17836-9 [RW-31] [400+600CS2] + IS F-022715-1



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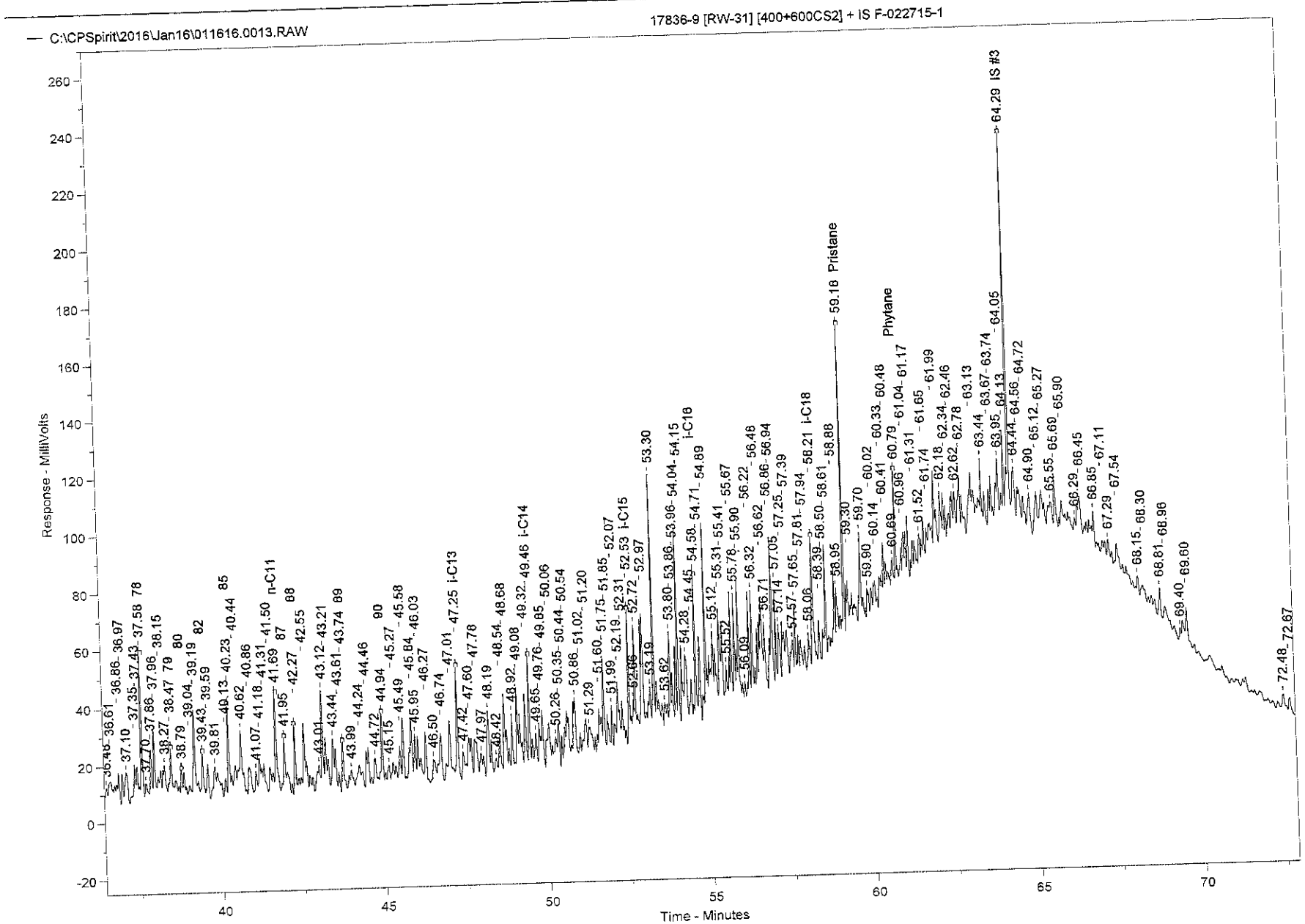

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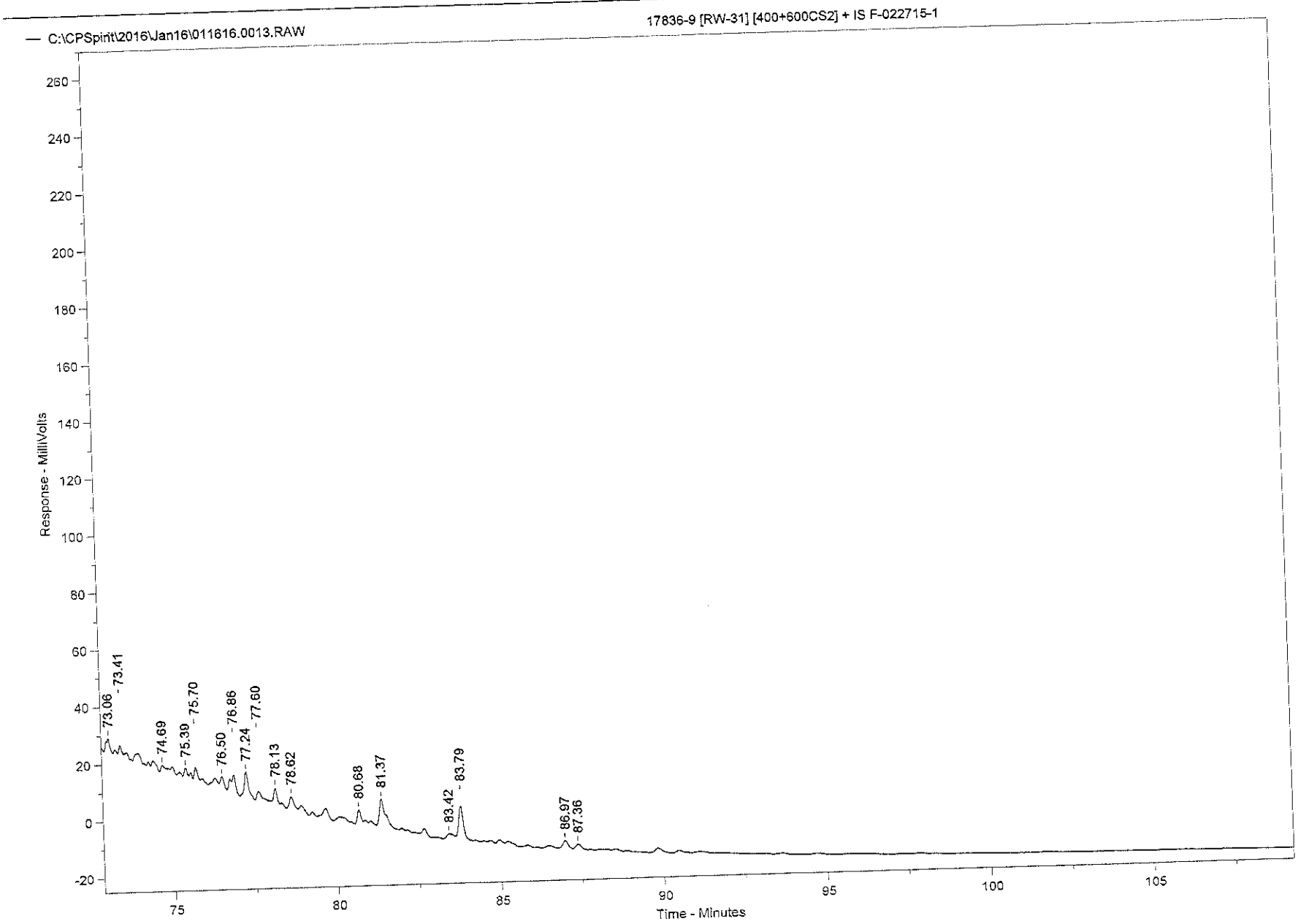

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Sample Name = **17836-9 [RW-31] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0013.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 8:08:07 PM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
8	6.80	0.0972	18260.68
11	7.26	0.0405	7601.78
CS2	8.02	1.7765	333741.20
18	9.24	0.1614	30329.35
19	9.82	0.1251	23501.02
20	10.61	0.0491	9217.94
26	11.99	0.1986	37312.09
27	12.21	0.0556	10437.39
30	13.92	0.2272	42689.96
31	14.50	0.1395	26207.29
32	14.61	0.1067	20048.18
33	15.06	0.2168	40730.57
	15.47	0.1325	24900.67
34A	15.65	0.1213	22793.68
34B	15.83	0.1708	32089.24
35	15.94	0.3136	58908.25
IS #1	16.50	1.9507	366477.80
37	18.04	0.9743	183035.90
	18.27	0.1308	24565.55
	18.86	0.1028	19318.27
38	18.94	0.0987	18550.21
39	19.08	0.2045	38414.05
	19.47	0.1139	21397.83
	19.97	0.1374	25810.23
40	20.17	0.1964	36894.61
41A	20.46	0.1078	20253.20
42	20.93	0.2444	45923.44
43	21.35	0.3054	57380.60
44	21.45	0.0976	18327.35
46B	21.87	0.2059	38686.13
46A	21.99	0.6081	114246.00
	22.12	0.2497	46917.18
	22.51	0.1210	22728.34
47	22.63	0.0933	17529.97
48	22.74	0.0864	16236.30
	22.89	0.0700	13150.65
	22.98	0.1343	25237.27
	23.33	0.3249	61042.36
49	23.82	0.3837	72080.46
	24.11	0.0771	14484.12
	24.31	0.0692	12992.55
	24.71	0.0539	10126.88
	25.05	0.1339	25152.97
	25.32	0.0969	18208.65
51	25.40	0.1520	28555.90
52	25.74	0.8260	155175.20
	25.96	0.0602	11307.43
	26.09	0.4721	88692.66
53	26.18	0.1175	22078.74
54	26.95	0.2407	45211.76
	27.09	0.2502	47011.65
55	27.53	0.3794	71269.98
	27.88	0.1739	32676.69
56	28.02	0.1990	37380.68
57	28.09	0.2008	37731.95

Peak Name	Ret. Time	Area %	Area
	28.44	0.0888	16688.58
58	28.52	0.3306	62101.66
59	28.57	0.0710	13339.01
61	29.00	0.1969	36997.43
	29.29	0.2136	40122.95
	29.38	0.4046	76017.12
	29.53	0.3105	58327.18
	30.21	0.2117	39769.94
62	30.40	2.2252	418052.60
IS #2	30.58	0.5796	108884.00
	30.75	0.2431	45673.11
	31.00	0.1049	19702.20
63	31.25	0.3950	74211.15
	31.36	0.2955	55519.75
64	31.47	0.2009	37742.46
	31.65	0.3256	61161.11
	31.89	0.2394	44983.00
	32.00	0.4960	93190.40
	32.10	0.2792	52443.53
	32.22	0.1808	33963.29
65	32.44	0.4987	93682.20
	32.53	0.2869	53899.68
	32.68	0.1004	18860.22
	32.81	0.4632	87012.93
66	32.89	0.5314	99839.40
	33.09	0.1118	21005.64
	33.24	0.1439	27030.99
67	33.39	0.2656	49898.65
68	33.67	0.6731	126444.50
69	33.89	0.2675	50250.69
	34.06	0.4392	82516.30
	34.35	0.5282	99229.67
	34.60	0.7768	145933.20
	34.84	0.3525	66224.18
	35.02	0.1226	23036.50
72	35.24	0.3432	64471.42
73	35.33	0.2302	43254.40
	35.42	0.3367	63264.40
	35.58	0.1015	19070.47
	35.91	0.1749	32855.36
	36.02	0.4150	77969.15
	36.20	0.2567	48223.48
	36.48	0.1387	26053.86
	36.61	0.3672	68992.09
	36.86	0.1762	33099.06
	36.97	0.1787	33576.62
	37.10	0.3498	65722.11
	37.35	0.1814	34071.50
	37.43	0.2177	40898.18
	37.58	0.8198	154019.90
78	37.70	0.1000	18782.89
	37.86	0.2798	52568.19
	37.96	0.3631	68218.89
	38.15	0.1406	26406.69
	38.27	0.2610	49041.51
	38.47	0.2050	38519.91
79	38.79	0.0851	15982.17
80	39.04	0.0839	15756.33
	39.19	0.6097	114548.50
	39.43	0.3347	62878.13
82	39.59	0.2432	45697.07
	39.81	0.1585	29775.24
	40.13	0.1308	24564.65
	40.23	0.5447	102340.30
85	40.44	0.2810	52796.76
	40.62	0.7380	138655.40
	40.86	0.2909	54645.30

Peak Name	Ret. Time	Area %	Area
	41.07	0.1560	29312.67
	41.18	0.2557	48044.40
	41.31	0.2239	42072.35
	41.50	0.1947	36573.70
	41.69	0.7112	133607.10
n-C11	41.95	0.2086	39189.98
87	42.27	0.3481	65393.67
88	42.55	0.2838	53318.28
	43.01	0.3445	64727.88
	43.12	0.6317	118683.90
	43.21	0.3567	67005.05
	43.44	0.4277	80349.17
	43.61	0.1151	21619.32
	43.74	0.3450	64816.77
89	43.99	0.2331	43782.96
	44.24	0.1225	23019.46
	44.46	0.0996	18707.31
	44.72	0.2242	42127.94
	44.94	0.4364	81982.16
90	45.15	0.1260	23676.04
	45.27	0.1446	27160.31
	45.49	0.2210	41516.45
	45.58	0.3779	70992.70
	45.84	0.4626	86899.30
	45.95	0.2079	39065.67
	46.03	0.1569	29476.77
	46.27	0.2676	50275.51
	46.50	0.2244	42149.94
	46.74	0.4034	75776.85
	47.01	0.6706	125989.00
	47.25	0.7026	131987.30
i-C13	47.42	0.2155	40490.36
	47.60	0.3222	60522.83
	47.78	0.3880	72893.92
	47.97	0.1001	18804.42
	48.19	0.5248	98601.72
	48.42	0.1075	20186.63
	48.54	0.2538	47673.96
	48.68	0.6220	116862.50
	48.92	0.2515	47241.70
	49.08	0.3240	60872.05
	49.32	0.4257	79984.18
	49.46	0.5122	96231.92
i-C14	49.65	0.2489	46760.07
	49.76	0.3258	61201.36
	49.85	0.3253	61104.26
	50.06	0.5505	103422.80
	50.26	0.2829	53143.73
	50.35	0.2725	51187.00
	50.44	0.1046	19649.43
	50.54	0.0609	11440.15
	50.86	0.4692	88145.96
	51.02	0.1019	19136.73
	51.20	0.2811	52808.68
	51.29	0.3252	61093.25
	51.60	0.2775	52124.30
	51.75	0.4545	85391.74
	51.85	0.2397	45024.89
	51.99	0.1723	32367.62
	52.07	0.1595	29958.52
	52.19	0.4908	92212.96
	52.31	0.2403	45139.92
	52.53	0.6503	122176.10
i-C15	52.66	0.1387	26060.39
	52.72	0.3949	74191.89
	52.97	0.8964	168398.40
	53.19	0.2368	44487.23

Peak Name	Ret. Time	Area %	Area
	53.30	0.9553	179473.30
	53.62	0.1369	25726.24
	53.80	0.4965	93273.71
	53.86	0.2829	53146.24
	53.96	0.3929	73811.54
	54.04	0.8461	158952.50
	54.15	0.4342	81580.49
	54.28	0.6733	126499.60
	54.45	0.3956	74314.27
i-C16	54.58	0.6495	122023.00
	54.71	0.4941	92821.38
	54.89	0.9679	181833.20
	55.12	0.2326	43698.71
	55.31	0.5104	95880.32
	55.41	0.3562	66921.34
	55.52	0.1236	23227.78
	55.67	0.5300	99567.47
	55.78	0.5854	109977.70
	55.90	0.4896	91977.79
	56.09	0.0597	11209.98
	56.22	0.4050	76083.94
	56.32	0.4550	85473.12
	56.48	0.3267	61385.61
	56.62	0.9783	183796.00
	56.71	0.3913	73518.05
	56.86	0.2715	51002.40
	56.94	0.8531	160271.40
	57.05	0.3357	63069.59
	57.14	0.4847	91059.73
	57.25	0.2734	51358.51
	57.39	0.4356	81836.23
	57.57	0.3736	70180.27
	57.65	0.3574	67146.12
	57.81	0.2360	44334.71
	57.94	0.1545	29030.22
	58.06	0.2461	46240.73
i-C18	58.21	0.8765	164672.40
	58.39	0.2163	40632.98
	58.50	0.1846	34682.43
	58.61	0.4272	80266.42
	58.88	0.3424	64326.76
	58.95	0.4727	88810.25
Pristane	59.18	1.1934	224198.90
	59.30	0.3241	60886.63
	59.70	0.6678	125449.90
	59.90	0.2075	38975.07
	60.02	0.1746	32805.00
	60.14	0.3071	57693.65
	60.33	0.2871	53928.57
	60.41	0.1684	31628.13
	60.48	0.1017	19115.29
	60.69	0.1932	36295.82
Phytane	60.79	0.5137	96507.65
	60.96	0.1966	36935.79
	61.04	0.2931	55058.48
	61.17	0.2656	49901.80
	61.31	0.3997	75087.47
	61.52	0.1616	30358.44
	61.65	0.1675	31461.47
	61.74	0.0722	13564.75
	61.99	0.4979	93537.02
	62.18	0.3384	63582.81
	62.34	0.1011	19001.17
	62.46	0.0950	17849.73
	62.62	0.1578	29647.97
	62.78	0.3665	68855.96
	63.13	0.3259	61220.40

Peak Name	Ret. Time	Area %	Area
	63.44	0.1673	31438.06
	63.67	0.2155	40478.21
	63.74	0.3104	58307.18
	63.95	0.6918	129966.00
	64.05	0.2801	52616.41
	64.13	0.4656	87472.49
	64.29	2.1760	408799.80
IS #3	64.44	0.7072	132863.50
	64.56	0.6018	113056.40
	64.72	0.3302	62041.80
	64.90	0.4099	77000.46
	65.12	0.4531	85123.30
	65.27	0.7182	134922.40
	65.55	0.5900	110842.80
	65.69	0.4617	86729.34
	65.90	0.4760	89432.49
	66.29	0.1156	21709.11
	66.45	0.3407	64006.89
	66.85	0.1345	25265.69
	67.11	0.0442	8306.22
	67.29	0.1084	20373.87
	67.54	0.1569	29467.12
	68.15	0.0855	16068.81
	68.30	0.1789	33602.10
	68.81	0.2034	38217.77
	68.96	0.2503	47028.03
	69.40	0.0825	15498.93
	69.60	0.3029	56897.82
	72.48	0.1663	31246.04
	72.67	0.1708	32092.31
	73.06	0.2045	38425.89
	73.41	0.0783	14713.72
	74.69	0.0894	16792.76
	75.39	0.1041	19559.49
	75.70	0.2453	46092.46
	76.50	0.2010	37757.53
	76.86	0.4018	75494.49
	77.24	0.4268	80174.96
	77.60	0.2110	39631.38
	78.13	0.1853	34815.61
	78.62	0.2002	37615.09
	80.68	0.2946	55353.47
	81.37	0.6915	129918.10
	83.42	0.1554	29202.67
	83.79	0.6411	120441.40
	86.97	0.1685	31654.63
	87.36	0.1162	21831.85

Total Area = 1.878678E+07 Total Height = 5258620 Total Amount = 1

1/16/2016

ZymaX ID	17836-10
Sample ID	RW-29

Evaporation

n-Pentane / n-Heptane	0.33
2-Methylpentane / 2-Methylheptane	1.48

Waterwashing

Benzene / Cyclohexane	0.19
Toluene / Methylcyclohexane	0.39
Aromatics / Total Paraffins (n+iso+cyc)	0.71
Aromatics / Naphthenes	2.27

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	45.92
3-Methylhexane / n-Heptane	0.89
Methylcyclohexane / n-Heptane	3.67
Isoparaffins + Naphthenes / Paraffins	6.82

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.76

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	7.39
% Isoparaffinic	32.38
% Aromatic	40.89
% Naphthenic	18.05
% Olefinic	1.28

1/16/2016

ZymaX ID		17836-10
Sample ID		RW-29
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	1.01
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.67
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.17
15	2,2-Dimethylbutane	0.16
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.87
18	2-Methylpentane	1.86
19	3-Methylpentane	1.32
20	Hexane	1.89
21	trans-2-Hexene	0.13
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.13
25	3-Methyl-trans-2-pentene	0.20
26	Methylcyclopentane	2.52
27	2,4-Dimethylpentane	0.89
28	Benzene	0.58
29	5-Methyl-1-hexene	0.19
30	Cyclohexane	3.09
31	2-Methylhexane/TAME	1.51
32	2,3-Dimethylpentane	1.24
33	3-Methylhexane	1.80
34A	1-trans-3-Dimethylcyclopentane	0.90
34B	1-cis-3-Dimethylcyclopentane	1.31
35	2,2,4-Trimethylpentane	5.59
I.S. #1	à,à,à-Trifluorotoluene	0.00

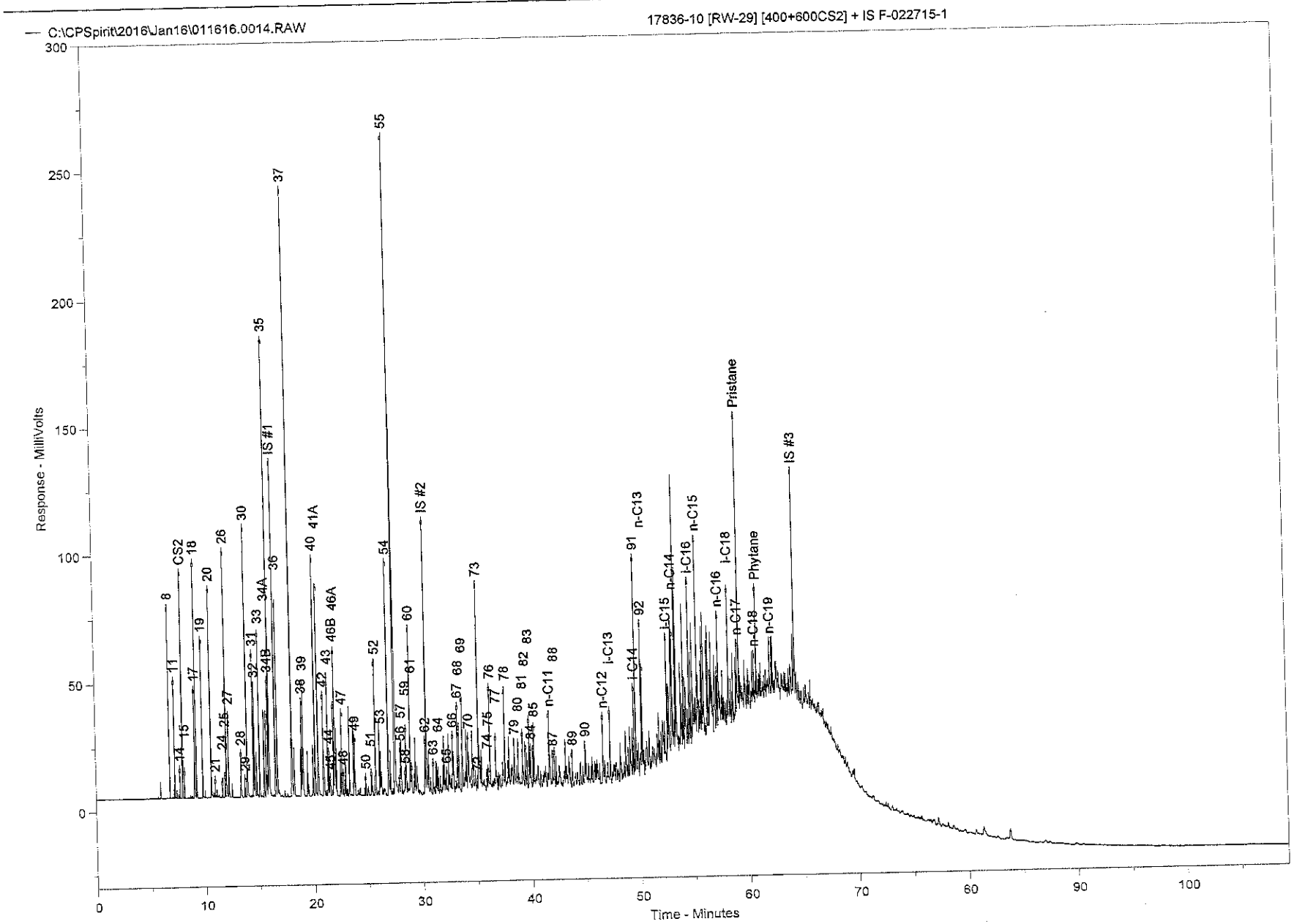
1/16/2016

ZymaX ID		17836-10
Sample ID		RW-29
		Relative Area %
36	n-Heptane	2.02
37	Methylcyclohexane	7.40
38	2,5-Dimethylhexane	1.06
39	2,4-Dimethylhexane	1.33
40	2,3,4-Trimethylpentane	2.80
41	Toluene/2,3,3-Trimethylpentane	2.89
42	2,3-Dimethylhexane	1.65
43	2-Methylheptane	1.26
44	4-Methylheptane	0.48
45	3,4-Dimethylhexane	0.31
46A	3-Ethyl-3-methylpentane	2.20
46B	1,4-Dimethylcyclohexane	1.00
47	3-Methylheptane	0.95
48	2,2,5-Trimethylhexane	0.24
49	n-Octane	0.71
50	2,2-Dimethylheptane	0.18
51	2,4-Dimethylheptane	0.22
52	Ethylcyclohexane	1.83
53	2,6-Dimethylheptane	0.46
54	Ethylbenzene	3.18
55	m+p Xylenes	11.83
56	4-Methyloctane	0.50
57	2-Methyloctane	0.52
58	3-Ethylheptane	0.17
59	3-Methyloctane	0.83
60	o-Xylene	2.02
61	1-Nonene	0.46
62	n-Nonane	0.83
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.34
64	3,3,5-Trimethylheptane	0.29
65	2,4,5-Trimethylheptane	0.19
66	n-Propylbenzene	0.79
67	1-Methyl-3-ethylbenzene	0.93
68	1-Methyl-4-ethylbenzene	0.87
69	1,3,5-Trimethylbenzene	1.69
70	3,3,4-Trimethylheptane	0.35

1/16/2016

ZymaX ID		17836-10
Sample ID		RW-29
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.13
73	1,2,4-Trimethylbenzene	2.45
74	Isobutylbenzene	0.22
75	sec-Butylbenzene	0.41
76	n-Decane	1.28
77	1,2,3-Trimethylbenzene	0.62
78	Indan	1.15
79	1,3-Diethylbenzene	0.85
80	1,4-Diethylbenzene	0.38
81	n-Butylbenzene	0.78
82	1,3-Dimethyl-5-ethylbenzene	0.59
83	1,4-Dimethyl-2-ethylbenzene	1.04
84	1,3-Dimethyl-4-ethylbenzene	0.68
85	1,2-Dimethyl-4-ethylbenzene	0.74
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.42
88	1,2,3,5-Tetramethylbenzene	0.49
89	1,2,3,4-Tetramethylbenzene	0.51
90	Naphthalene	0.64
91	2-Methyl-naphthalene	2.41
92	1-Methyl-naphthalene	1.41

Chrom Perfect Chromatogram Report



Page 1 of 1

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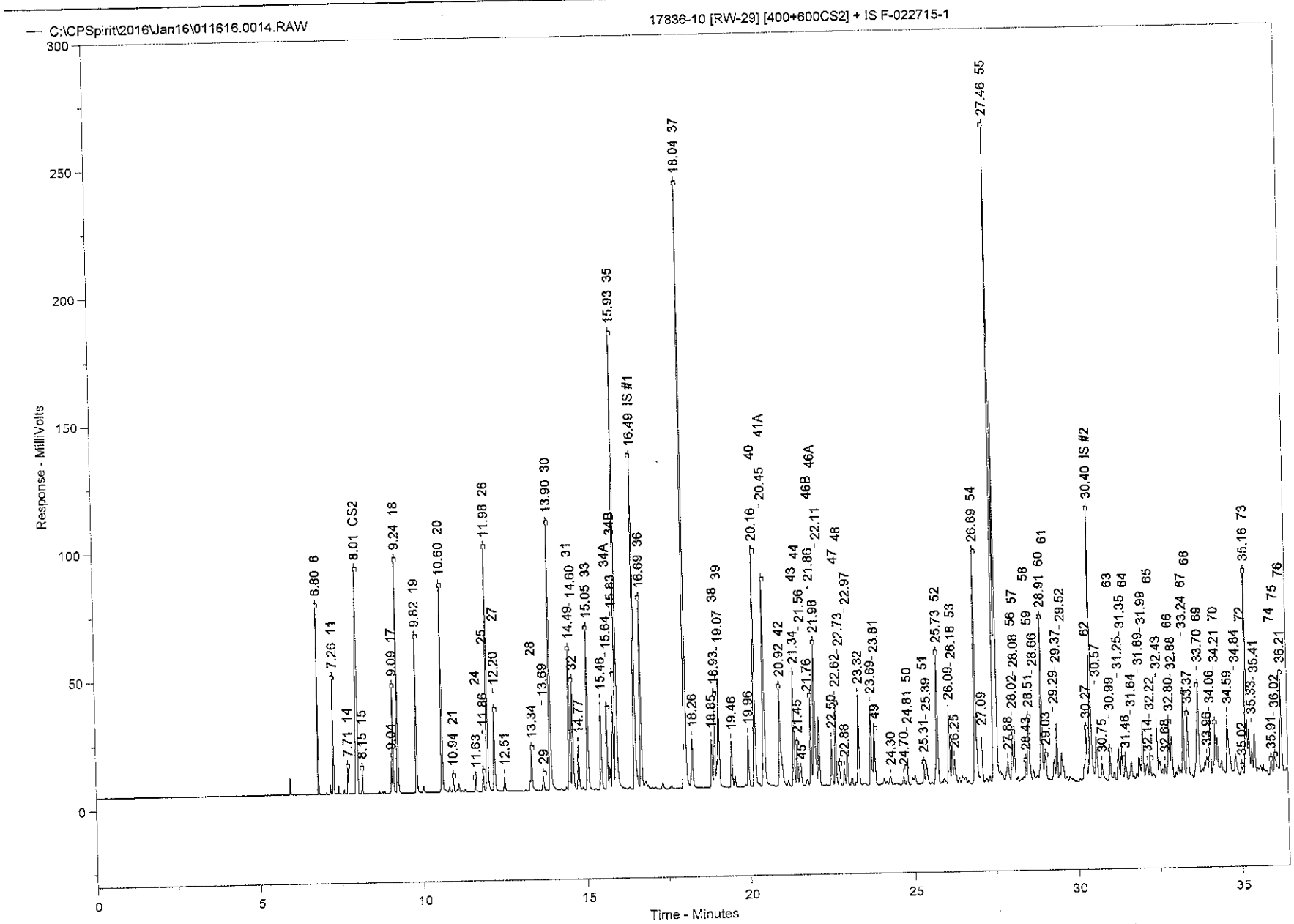

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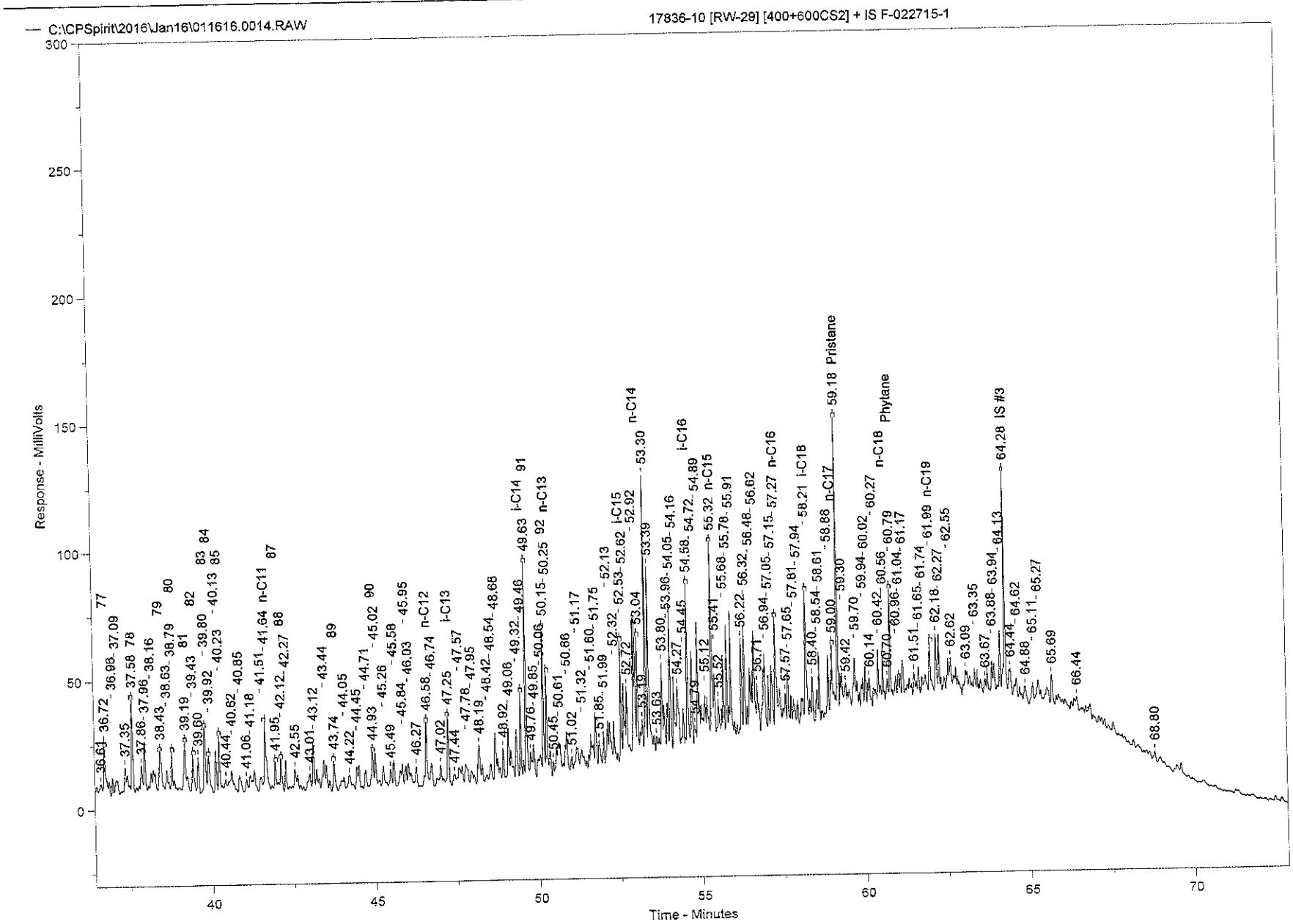

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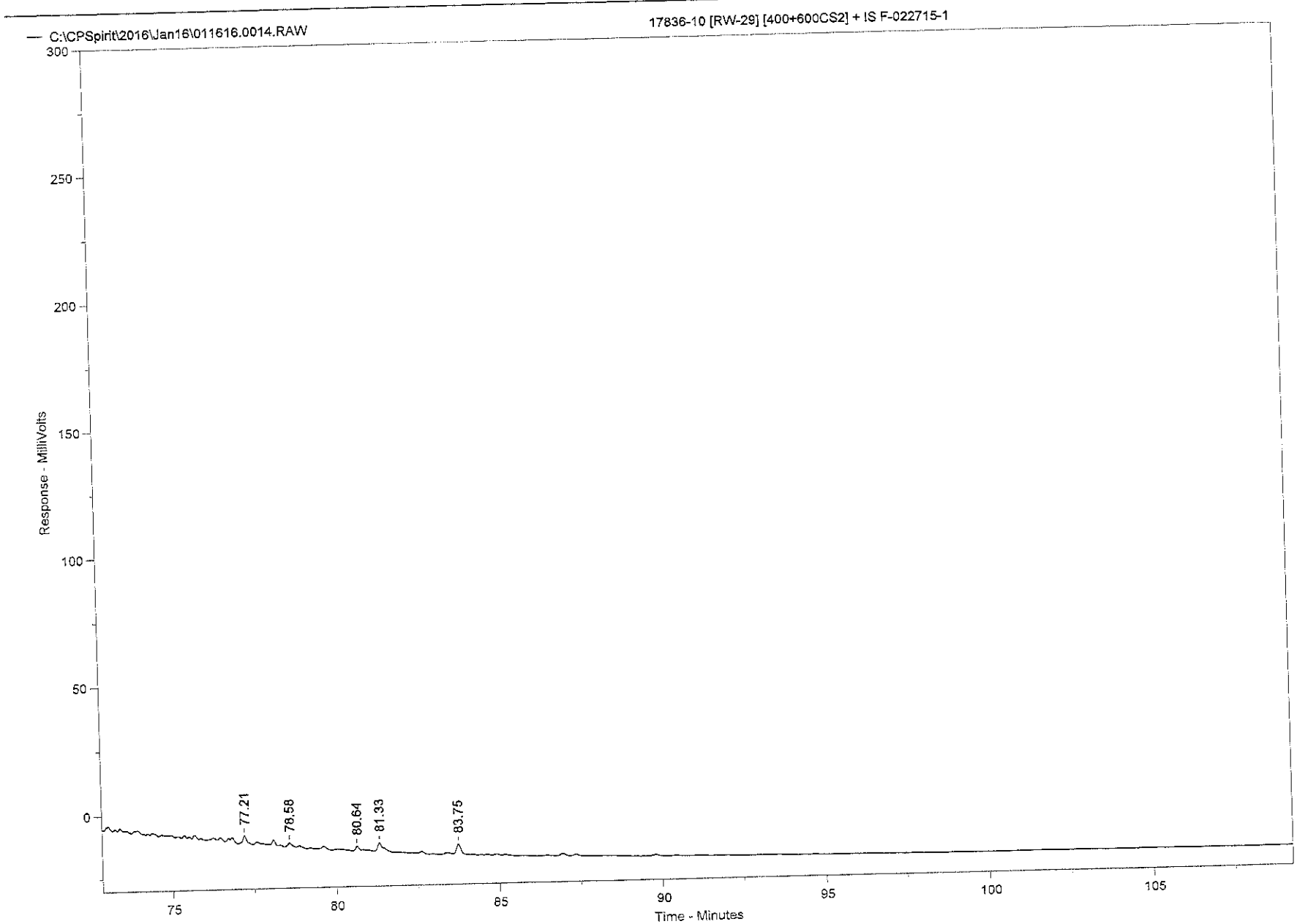

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Sample Name = **17836-10 [RW-29] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0014.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 10:11:21 PM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
8	6.80	0.4351	91894.07
11	7.26	0.2875	60714.05
14	7.71	0.0736	15542.97
CS2	8.01	1.3489	284872.70
15	8.15	0.0683	14419.25
	9.04	0.1038	21918.00
17	9.09	0.3755	79291.99
18	9.24	0.8004	169022.00
19	9.82	0.5689	120139.50
20	10.60	0.8122	171523.90
21	10.94	0.0573	12103.00
24	11.63	0.0543	11458.24
25	11.86	0.0843	17793.62
26	11.98	1.0817	228436.70
27	12.20	0.3808	80421.59
	12.51	0.0750	15847.22
28	13.34	0.2477	52308.96
29	13.69	0.0829	17503.61
30	13.90	1.3266	280162.80
31	14.49	0.6486	136968.20
32	14.60	0.5338	112719.00
	14.77	0.2215	46778.31
33	15.05	0.7712	162868.10
	15.46	0.4285	90485.37
34A	15.64	0.3859	81493.49
34B	15.83	0.5611	118485.50
35	15.93	2.4004	506922.50
IS #1	16.49	1.6422	346799.30
36	16.69	0.8662	182923.50
37	18.04	3.1773	670976.40
	18.26	0.3109	65663.89
	18.85	0.2314	48875.41
38	18.93	0.4537	95814.84
39	19.07	0.5718	120743.00
	19.46	0.2119	44742.69
	19.96	0.2453	51807.60
40	20.16	1.2046	254397.20
41A	20.45	1.2397	261801.90
42	20.92	0.7082	149560.40
43	21.34	0.5408	114213.90
44	21.45	0.2041	43110.97
45	21.56	0.1322	27927.53
	21.76	0.0526	11106.92
46B	21.86	0.4307	90955.80
46A	21.98	0.9439	199325.70
	22.11	0.3445	72751.60
	22.50	0.2344	49508.12
47	22.62	0.4080	86159.99
48	22.73	0.1033	21808.81
	22.88	0.0803	16964.44
	22.97	0.1702	35953.58
	23.32	0.4339	91638.30
	23.69	0.4482	94656.42
49	23.81	0.3040	64198.14
	24.30	0.0558	11779.16

Peak Name	Ret. Time	Area %	Area
	24.70	0.0474	10009.68
50	24.81	0.0787	16626.75
51	25.31	0.0960	20263.98
	25.39	0.1440	30419.17
52	25.73	0.7878	166360.90
	26.09	0.3627	76603.87
53	26.18	0.1971	41625.86
	26.25	0.1563	33015.57
54	26.89	1.3644	288126.50
	27.09	0.2416	51030.14
55	27.46	5.0825	1073321.00
	27.88	0.1523	32169.72
56	28.02	0.2137	45137.70
57	28.08	0.2251	47541.90
58	28.43	0.0746	15755.87
59	28.51	0.3584	75679.67
	28.66	0.0566	11947.74
60	28.91	0.8667	183024.00
61	29.03	0.1981	41836.47
	29.29	0.1218	25718.22
	29.37	0.2820	59555.01
	29.52	0.1890	39918.71
62	30.27	0.3577	75548.64
IS #2	30.40	1.5834	334389.10
	30.57	0.3324	70187.39
	30.75	0.1217	25700.05
63	30.99	0.1445	30510.19
	31.25	0.1913	40395.68
	31.35	0.1763	37237.32
64	31.46	0.1235	26083.94
	31.64	0.1293	27312.71
	31.89	0.1330	28090.92
	31.99	0.2772	58549.34
	32.14	0.1046	22094.94
65	32.22	0.0804	16980.33
	32.43	0.2522	53260.55
	32.68	0.0493	10400.93
66	32.80	0.3394	71670.61
	32.88	0.2402	50722.13
67	33.24	0.4002	84523.98
68	33.37	0.3748	79157.11
69	33.70	0.7258	153281.80
	33.96	0.2035	42980.76
	34.06	0.2872	60660.68
70	34.21	0.1508	31853.36
	34.59	0.4737	100041.10
	34.84	0.1555	32839.49
72	35.02	0.0568	11991.28
73	35.16	1.0510	221942.30
	35.33	0.1366	28852.70
	35.41	0.1980	41810.21
74	35.91	0.0942	19888.29
75	36.02	0.1749	36928.24
76	36.21	0.5479	115715.50
	36.61	0.0503	10628.46
77	36.72	0.2660	56182.50
	36.96	0.0952	20114.01
	37.09	0.1682	35511.14
	37.35	0.0836	17657.99
78	37.58	0.4929	104083.40
	37.86	0.1341	28323.80
	37.96	0.2470	52156.32
	38.16	0.0498	10519.70
79	38.43	0.3654	77161.34
	38.63	0.1432	30242.52
80	38.79	0.1640	34627.65
81	39.19	0.3354	70828.52

Peak Name	Ret. Time	Area %	Area
82	39.43	0.2535	53525.81
	39.60	0.1974	41685.87
83	39.80	0.4470	94398.52
84	39.92	0.2913	61525.50
	40.13	0.2242	47345.78
85	40.23	0.3174	67022.05
	40.44	0.0968	20443.45
	40.62	0.2344	49503.95
	40.85	0.1473	31113.77
	41.06	0.0566	11945.53
	41.18	0.0664	14016.16
	41.51	0.1166	24623.26
n-C11	41.64	0.6268	132374.80
87	41.95	0.1788	37764.70
88	42.12	0.2097	44275.03
	42.27	0.1610	34007.02
	42.55	0.0864	18240.24
	43.01	0.1401	29585.80
	43.12	0.2239	47283.96
	43.44	0.1466	30951.36
89	43.74	0.2183	46090.70
	44.05	0.1429	30179.89
	44.22	0.0889	18780.17
	44.45	0.0688	14535.64
	44.71	0.1315	27775.17
90	44.93	0.2756	58194.60
	45.02	0.2209	46650.02
	45.26	0.1594	33663.59
	45.49	0.1308	27631.97
	45.58	0.1830	38637.02
	45.84	0.2588	54651.81
	45.95	0.1422	30022.31
	46.03	0.2805	59227.75
	46.27	0.1432	30236.94
n-C12	46.58	0.4379	92477.89
	46.74	0.1953	41251.32
	47.02	0.2772	58542.40
i-C13	47.25	0.4141	87456.84
	47.44	0.1026	21667.21
	47.57	0.1718	36285.37
	47.78	0.1993	42097.54
	47.95	0.0667	14076.46
	48.19	0.3245	68537.12
	48.42	0.0564	11903.88
	48.54	0.1316	27788.09
	48.68	0.3869	81705.34
	48.92	0.1388	29317.05
	49.08	0.2018	42622.21
	49.32	0.2749	58052.31
i-C14	49.46	0.3721	78575.90
91	49.63	1.0367	218931.70
	49.76	0.1914	40415.52
	49.85	0.1871	39513.12
	50.06	0.2405	50792.91
92	50.15	0.6067	128129.10
n-C13	50.25	0.3869	81710.29
	50.45	0.0663	13994.46
	50.61	0.5120	108128.70
	50.86	0.3333	70381.76
	51.02	0.0785	16571.17
	51.17	0.2234	47187.55
	51.32	0.1980	41812.59
	51.60	0.3639	76841.35
	51.75	0.2780	58712.88
	51.85	0.1613	34060.20
	51.99	0.1359	28703.37
	52.13	0.1227	25911.87

Peak Name	Ret. Time	Area %	Area
	52.32	0.1552	32769.48
i-C15	52.53	0.5065	106961.70
	52.62	0.5098	107670.30
	52.72	0.4427	93490.42
	52.92	1.2348	260770.50
n-C14	53.04	0.5073	107141.70
	53.19	0.1960	41383.89
	53.30	1.2177	257145.70
	53.39	0.9569	202085.00
	53.63	0.1053	22245.12
	53.80	0.7081	149542.20
	53.96	0.2370	50045.94
	54.05	0.6211	131159.90
	54.16	0.3871	81738.15
	54.27	0.5046	106562.20
	54.45	0.2352	49671.31
i-C16	54.58	0.7221	152486.40
	54.72	0.4438	93716.55
	54.79	0.0897	18945.19
	54.89	0.7076	149438.80
	55.12	0.1438	30367.51
n-C15	55.32	0.8946	188925.50
	55.41	0.2648	55927.53
	55.52	0.1619	34190.23
	55.68	0.2926	61800.54
	55.78	0.4003	84545.65
	55.91	0.4680	98840.87
	56.22	0.4056	85662.95
	56.32	0.5098	107651.60
	56.48	0.5320	112346.50
	56.62	0.6899	145684.20
	56.71	0.3351	70762.84
	56.94	0.7110	150158.20
	57.05	0.1952	41212.07
	57.15	0.4489	94803.09
n-C16	57.27	0.7721	163057.40
	57.57	0.3034	64070.56
	57.65	0.2839	59957.19
	57.81	0.1836	38766.13
	57.94	0.1554	32824.27
i-C18	58.21	0.8033	169643.60
	58.40	0.2166	45748.68
	58.54	0.2023	42723.90
	58.61	0.2476	52277.94
	58.88	0.2497	52732.13
n-C17	59.00	0.5815	122810.10
Pristane	59.18	1.1746	248046.20
	59.30	0.3756	79325.92
	59.42	0.4593	96998.38
	59.70	0.5509	116345.40
	59.94	0.2196	46367.71
	60.02	0.2026	42787.15
	60.14	0.2708	57184.13
	60.27	0.1914	40419.86
	60.42	0.2163	45687.72
n-C18	60.56	0.2195	46351.31
	60.70	0.1501	31689.75
Phytane	60.79	0.4718	99629.07
	60.96	0.1276	26940.59
	61.04	0.1316	27800.46
	61.17	0.1543	32576.19
	61.51	0.1751	36976.23
	61.65	0.1241	26210.53
	61.74	0.0521	10997.83
n-C19	61.99	0.2970	62728.02
	62.18	0.2495	52689.81
	62.27	0.1959	41369.90

Peak Name	Ret. Time	Area %	Area
	62.55	0.1504	31759.58
	62.62	0.1605	33902.24
	63.09	0.1398	29512.63
	63.35	0.0840	17731.17
	63.67	0.0561	11840.23
	63.88	0.1353	28582.85
	63.94	0.1434	30273.46
	64.13	0.2151	45414.57
IS #3	64.28	1.0336	218276.30
	64.44	0.2278	48113.57
	64.62	0.1720	36331.84
	64.88	0.1508	31839.88
	65.11	0.1265	26716.81
	65.27	0.1096	23146.62
	65.69	0.1756	37076.17
	66.44	0.2196	46366.76
	68.80	0.0604	12752.42
	77.21	0.1313	27717.58
	78.58	0.0653	13798.78
	80.64	0.0536	11325.99
	81.33	0.1938	40935.19
	83.75	0.1775	37474.23

Total Area = 2.111812E+07 Total Height = 6886237 Total Amount = 1

1/16/2016

ZymaX ID	17836-11
Sample ID	RW-169

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	8.21
Aromatics / Naphthenes	72.24

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	2.34

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	3.22
% Isoparaffinic	6.29
% Aromatic	88.14
% Naphthenic	1.22
% Olefinic	1.13

1/16/2016

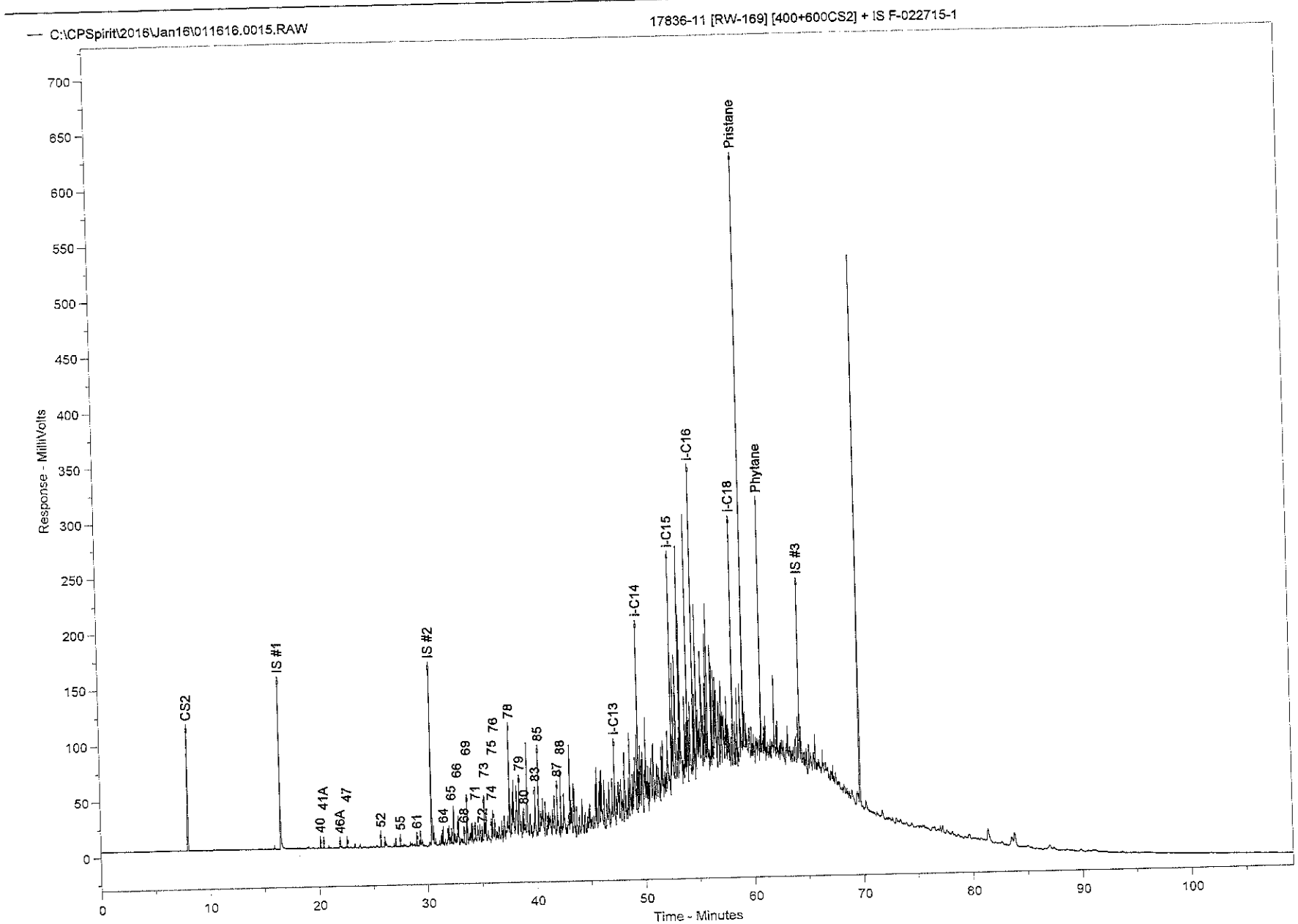
ZymaX ID		17836-11
Sample ID		RW-169
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

1/16/2016

ZymaX ID		17836-11
Sample ID		RW-169
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.58
41	Toluene/2,3,3-Trimethylpentane	0.50
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.51
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.43
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	1.22
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.63
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	1.13
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	1.57
65	2,4,5-Trimethylheptane	1.83
66	n-Propylbenzene	2.75
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	1.39
69	1,3,5-Trimethylbenzene	7.63
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-11
Sample ID		RW-169
		Relative Area %
71	1-Methyl-2-ethylbenzene	1.26
72	3-Methylnonane	1.37
73	1,2,4-Trimethylbenzene	4.96
74	Isobutylbenzene	2.48
75	sec-Butylbenzene	4.51
76	n-Decane	3.22
77	1,2,3-Trimethylbenzene	0.00
78	Indan	14.46
79	1,3-Diethylbenzene	13.45
80	1,4-Diethylbenzene	3.97
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	7.75
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	9.01
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	6.79
88	1,2,3,5-Tetramethylbenzene	6.60
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00



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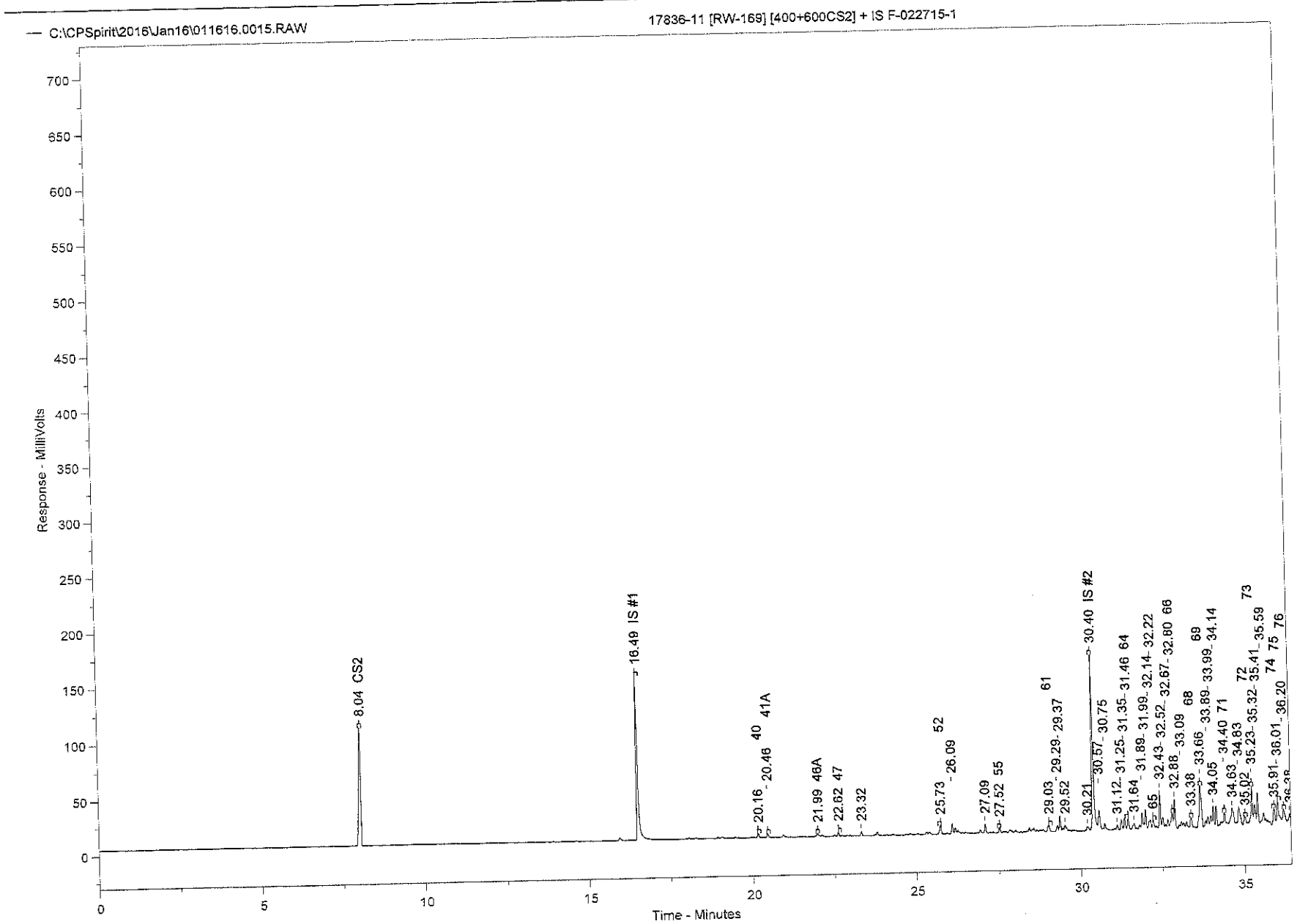

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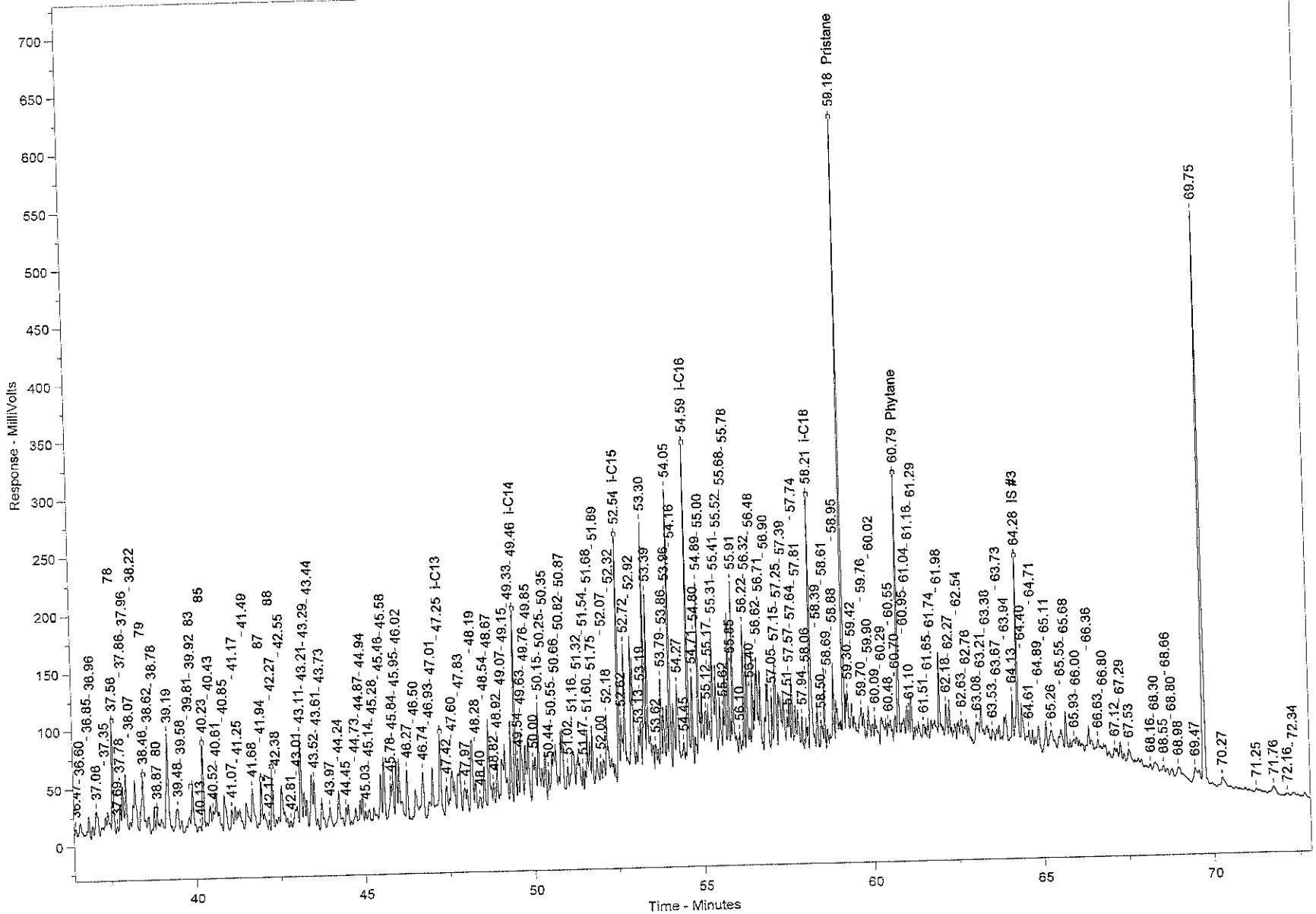
17836-11 [RW-169] [400+600CS2] + IS F-022715-1



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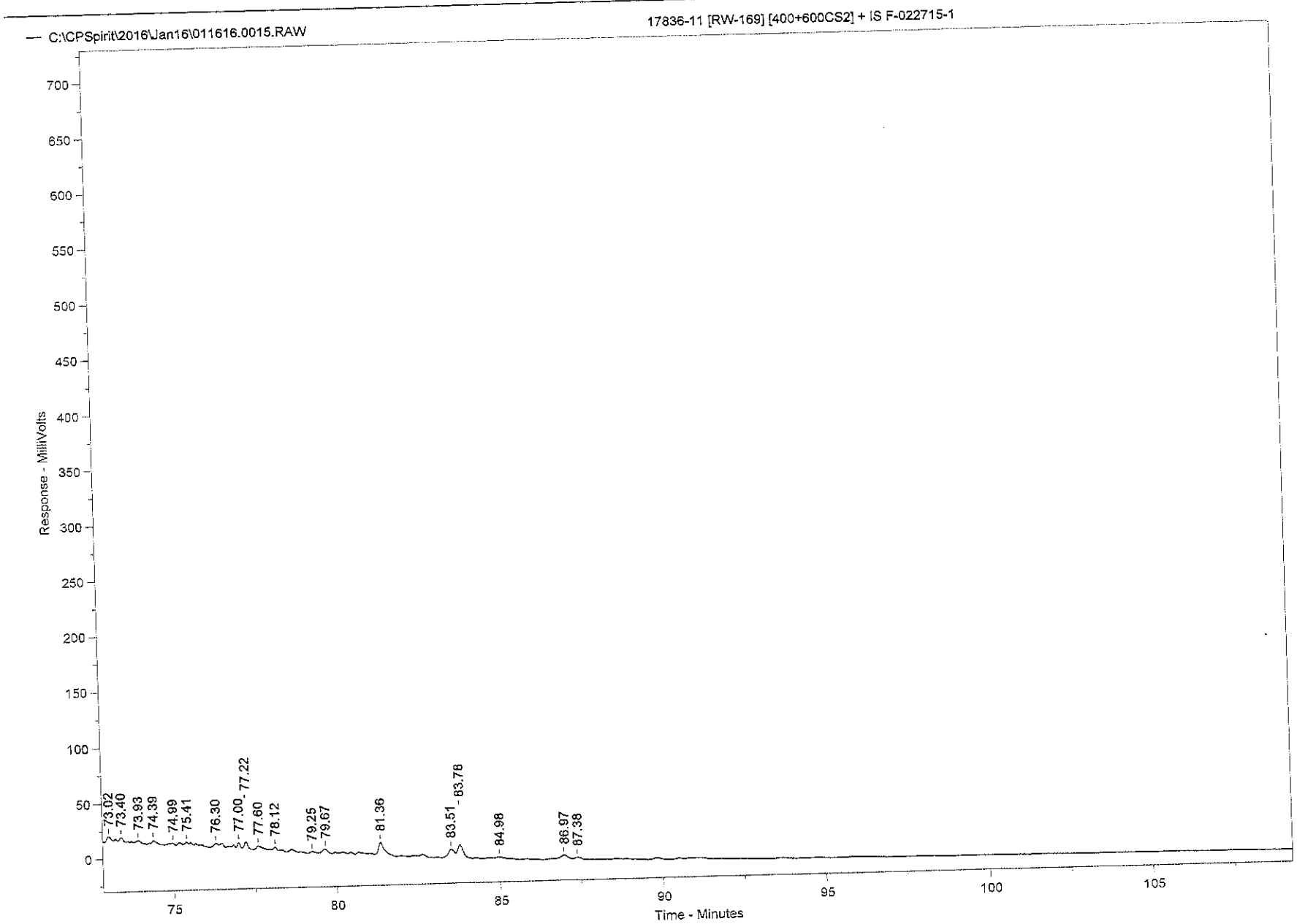

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Sample Name = **17836-11 [RW-169] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0015.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/18/2016 12:15:12 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.04	1.0954	433656.30
IS #1	16.49	1.2462	493372.30
40	20.16	0.0334	13207.28
41A	20.46	0.0287	11369.76
46A	21.99	0.0295	11696.53
47	22.62	0.0245	9714.92
	23.32	0.0255	10076.13
52	25.73	0.0701	27758.88
	26.09	0.0575	22760.87
	27.09	0.0551	21822.11
55	27.52	0.0364	14394.69
61	29.03	0.0650	25741.29
	29.29	0.0419	16593.56
	29.37	0.0952	37696.41
	29.52	0.0564	22330.12
	30.21	0.0482	19070.29
IS #2	30.40	1.2659	501164.00
	30.57	0.1968	77926.72
	30.75	0.0661	26156.25
	31.12	0.0378	14984.34
	31.25	0.0732	28990.32
	31.35	0.0884	34997.65
64	31.46	0.0904	35799.26
	31.64	0.0663	26254.29
	31.89	0.1639	64885.91
	31.99	0.1299	51439.54
	32.14	0.1072	42434.69
65	32.22	0.1053	41695.95
	32.43	0.2443	96728.70
	32.52	0.0959	37965.84
	32.67	0.0647	25621.35
66	32.80	0.1579	62530.43
	32.88	0.2052	81256.73
	33.09	0.0405	16050.18
68	33.38	0.0797	31549.38
69	33.66	0.4383	173510.60
	33.89	0.1294	51241.37
	33.99	0.0814	32227.29
	34.05	0.1284	50836.46
	34.14	0.1215	48097.68
71	34.40	0.0725	28694.21
	34.63	0.2092	82807.13
	34.83	0.1848	73174.60
72	35.02	0.0785	31083.44
73	35.23	0.2850	112837.70
	35.32	0.1474	58366.06
	35.41	0.1971	78026.09
	35.59	0.0628	24864.69
74	35.91	0.1428	56518.19
75	36.01	0.2593	102642.50
76	36.20	0.1849	73202.73
	36.38	0.0783	31010.92
	36.47	0.0944	37391.84
	36.60	0.2255	89283.32
	36.85	0.1405	55603.38

Peak Name	Ret. Time	Area %	Area
	36.96	0.0892	35299.59
	37.08	0.3468	137301.90
	37.35	0.3189	126238.60
	37.58	0.8309	328956.40
78	37.69	0.0858	33948.20
	37.78	0.2230	88272.70
	37.86	0.4043	160065.00
	37.96	0.4726	187091.20
	38.07	0.1154	45680.64
	38.22	0.7740	306416.80
	38.46	0.7729	305986.40
79	38.62	0.1718	68024.69
	38.78	0.1568	62092.47
	38.87	0.2280	90281.05
80	39.19	0.9963	394431.80
	39.48	0.3419	135375.50
	39.58	0.0989	39164.23
	39.81	0.1902	75283.38
	39.92	0.4452	176265.90
83	40.13	0.0561	22224.04
	40.23	0.5179	205036.00
85	40.43	0.1292	51153.48
	40.52	0.0828	32781.95
	40.61	0.1566	62011.80
	40.85	0.3638	144042.80
	41.07	0.1114	44085.66
	41.17	0.0883	34960.76
	41.25	0.0292	11546.48
	41.49	0.3455	136780.60
	41.68	0.4703	186172.90
	41.94	0.3904	154540.70
87	42.17	0.0558	22100.68
	42.27	0.3795	150234.40
88	42.38	0.0287	11350.32
	42.55	0.2323	91966.80
	42.81	0.0421	16660.83
	43.01	0.3476	137619.30
	43.11	0.6614	261844.90
	43.21	0.2746	108723.20
	43.29	0.1888	74761.77
	43.44	0.5238	207372.00
	43.52	0.3318	131352.60
	43.61	0.0781	30917.24
	43.73	0.3011	119206.20
	43.97	0.2360	93411.93
	44.24	0.2347	92897.09
	44.45	0.0703	27814.16
	44.73	0.1487	58864.32
	44.87	0.1668	66043.80
	44.94	0.1767	69946.27
	45.03	0.0774	30649.63
	45.14	0.1433	56735.45
	45.28	0.0994	39356.10
	45.48	0.3577	141629.00
	45.58	0.4569	180880.90
	45.78	0.2740	108466.30
	45.84	0.2603	103042.10
	45.95	0.3108	123030.50
	46.02	0.2950	116806.60
	46.27	0.3311	131070.70
	46.50	0.3091	122364.80
	46.74	0.4722	186942.10
	46.93	0.1826	72288.50
	47.01	0.5087	201410.50
i-C13	47.25	0.7218	285762.60
	47.42	0.2691	106550.20
	47.60	0.5444	215526.10

Peak Name	Ret. Time	Area %	Area
	47.83	0.6265	248024.50
	47.97	0.4054	160501.30
	48.19	0.7790	308407.40
	48.28	0.2216	87747.70
	48.40	0.1322	52325.21
	48.54	0.3488	138099.60
	48.67	0.7707	305124.30
	48.82	0.1548	61276.85
	48.92	0.3256	128888.30
	49.07	0.4905	194185.20
	49.15	0.4234	167629.00
	49.33	0.5568	220424.20
	49.46	1.0523	416617.80
i-C14	49.54	0.2476	98012.24
	49.63	0.6784	268562.00
	49.76	0.4936	195425.80
	49.85	0.4290	169852.20
	50.00	0.3491	138212.20
	50.15	0.6214	246026.20
	50.25	0.2437	96468.47
	50.35	0.3395	134416.00
	50.44	0.1625	64315.95
	50.55	0.3511	138979.40
	50.66	0.3683	145815.80
	50.82	0.3607	142808.00
	50.87	0.4372	173075.00
	51.02	0.2222	87966.40
	51.16	0.6156	243730.60
	51.32	0.5368	212499.40
	51.47	0.0973	38508.49
	51.54	0.1019	40355.73
	51.60	0.2923	115705.50
	51.68	0.3159	125046.30
	51.75	0.3164	125266.70
	51.89	0.2320	91866.28
	52.00	0.1295	51275.21
	52.07	0.1777	70341.98
	52.18	0.6085	240912.90
	52.32	0.2005	79390.33
	52.54	1.1483	454592.70
i-C15	52.62	0.4510	178562.00
	52.72	0.5751	227664.20
	52.92	1.1423	452216.10
	53.13	0.1476	58447.32
	53.19	0.2230	88295.74
	53.30	1.2354	489094.40
	53.39	0.9674	382978.90
	53.62	0.2646	104765.10
	53.79	0.5190	205464.20
	53.86	0.4212	166737.10
	53.96	0.3878	153520.20
	54.05	1.3703	542485.10
	54.16	0.4558	180467.70
	54.27	0.7695	304645.50
	54.45	0.2540	100559.00
	54.59	1.5959	631795.10
i-C16	54.71	0.5862	232063.20
	54.80	0.2088	82678.77
	54.89	1.0727	424687.40
	55.00	0.4663	184602.50
	55.12	0.4419	174946.40
	55.17	0.5688	225183.50
	55.31	1.0030	397085.30
	55.41	0.5523	218658.50
	55.52	0.5228	206988.00
	55.62	0.2372	93896.19
	55.68	0.5487	217238.00

Peak Name	Ret. Time	Area %	Area
	55.78	0.7208	285353.20
	55.85	0.1875	74238.98
	55.91	1.0395	411515.20
	56.10	0.1446	57254.95
	56.22	0.6567	259991.20
	56.32	0.6185	244875.20
	56.40	0.1498	59294.71
	56.48	0.7369	291718.70
	56.62	0.8766	347048.30
	56.71	0.4807	190304.20
	56.90	0.8620	341274.90
	57.05	0.2083	82450.68
	57.15	0.6862	271647.50
	57.25	0.1169	46281.21
	57.39	0.1980	78374.91
	57.51	0.1399	55383.53
	57.57	0.2575	101938.90
	57.64	0.3502	138642.60
	57.74	0.1886	74671.07
	57.81	0.2502	99066.82
	57.94	0.1542	61064.28
	58.06	0.2165	85722.60
i-C18	58.21	1.6511	653676.30
	58.39	0.2727	107964.50
	58.50	0.2472	97854.24
	58.61	0.3440	136188.70
	58.69	0.1733	68625.73
	58.88	0.4777	189123.60
	58.95	0.5273	208765.50
Pristane	59.18	2.9459	1166268.00
	59.30	0.4110	162706.70
	59.42	0.1575	62350.35
	59.70	0.2706	107136.30
	59.76	0.1571	62189.62
	59.90	0.2212	87555.50
	60.02	0.1392	55095.91
	60.09	0.2945	116577.80
	60.29	0.3720	147266.10
	60.48	0.1363	53969.79
	60.55	0.2417	95692.63
	60.70	0.2437	96483.43
Phytane	60.79	1.3362	528987.80
	60.95	0.2842	112522.20
	61.04	0.2269	89810.87
	61.10	0.1491	59017.24
	61.16	0.2473	97885.37
	61.29	0.1479	58546.29
	61.51	0.1844	72983.22
	61.65	0.0915	36219.66
	61.74	0.0695	27513.49
	61.98	0.4799	189994.00
	62.18	0.2138	84650.27
	62.27	0.2262	89558.99
	62.54	0.1386	54855.23
	62.63	0.1678	66435.95
	62.78	0.0768	30413.96
	63.08	0.3366	133240.90
	63.21	0.4124	163258.60
	63.38	0.3566	141190.00
	63.53	0.1867	73900.46
	63.67	0.1638	64844.65
	63.73	0.2182	86389.01
	63.94	0.4743	187757.50
	64.13	0.4416	174837.40
IS #3	64.28	1.2337	488418.10
	64.40	0.4889	193548.20
	64.61	0.1608	63664.71

Peak Name	Ret. Time	Area %	Area
	64.71	0.1545	61171.01
	64.89	0.2813	111351.60
	65.11	0.2625	103931.90
	65.26	0.4120	163115.20
	65.55	0.3046	120605.60
	65.68	0.2546	100797.60
	65.93	0.0723	28622.77
	66.00	0.0676	26753.26
	66.36	0.2299	91022.53
	66.63	0.1583	62681.90
	66.80	0.1546	61192.73
	67.12	0.0931	36838.65
	67.29	0.1173	46443.52
	67.53	0.1522	60235.92
	68.16	0.0351	13911.09
	68.30	0.1393	55148.13
	68.55	0.0716	28333.58
	68.66	0.0584	23110.92
	68.80	0.0768	30391.82
	68.98	0.3024	119711.70
	69.47	0.2205	87291.64
	69.75	3.7896	1500290.00
	70.27	0.1176	46563.11
	71.25	0.0230	9110.23
	71.76	0.1044	41328.43
	72.16	0.0336	13297.53
	72.34	0.0373	14766.45
	73.02	0.1335	52832.52
	73.40	0.1444	57149.95
	73.93	0.0977	38690.21
	74.39	0.0939	37163.40
	74.99	0.0591	23415.60
	75.41	0.0242	9574.56
	76.30	0.0375	14852.24
	77.00	0.0640	25356.41
	77.22	0.1132	44810.64
	77.60	0.1179	46678.36
	78.12	0.0460	18199.43
	79.25	0.0591	23416.19
	79.67	0.1190	47113.24
	81.36	0.3513	139069.60
	83.51	0.2677	105978.20
	83.78	0.3919	155160.50
	84.98	0.1127	44630.00
	86.97	0.1364	53980.96
	87.38	0.0673	26635.39

Total Area = 3.95894E+07 Total Height = 1.17262E+07 Total Amount = 0

1/16/2016

ZymaX ID	17836-12
Sample ID	MW-188

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.00
Aromatics / Naphthenes	0.00

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.00
% Isoparaffinic	0.00
% Aromatic	100.00
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

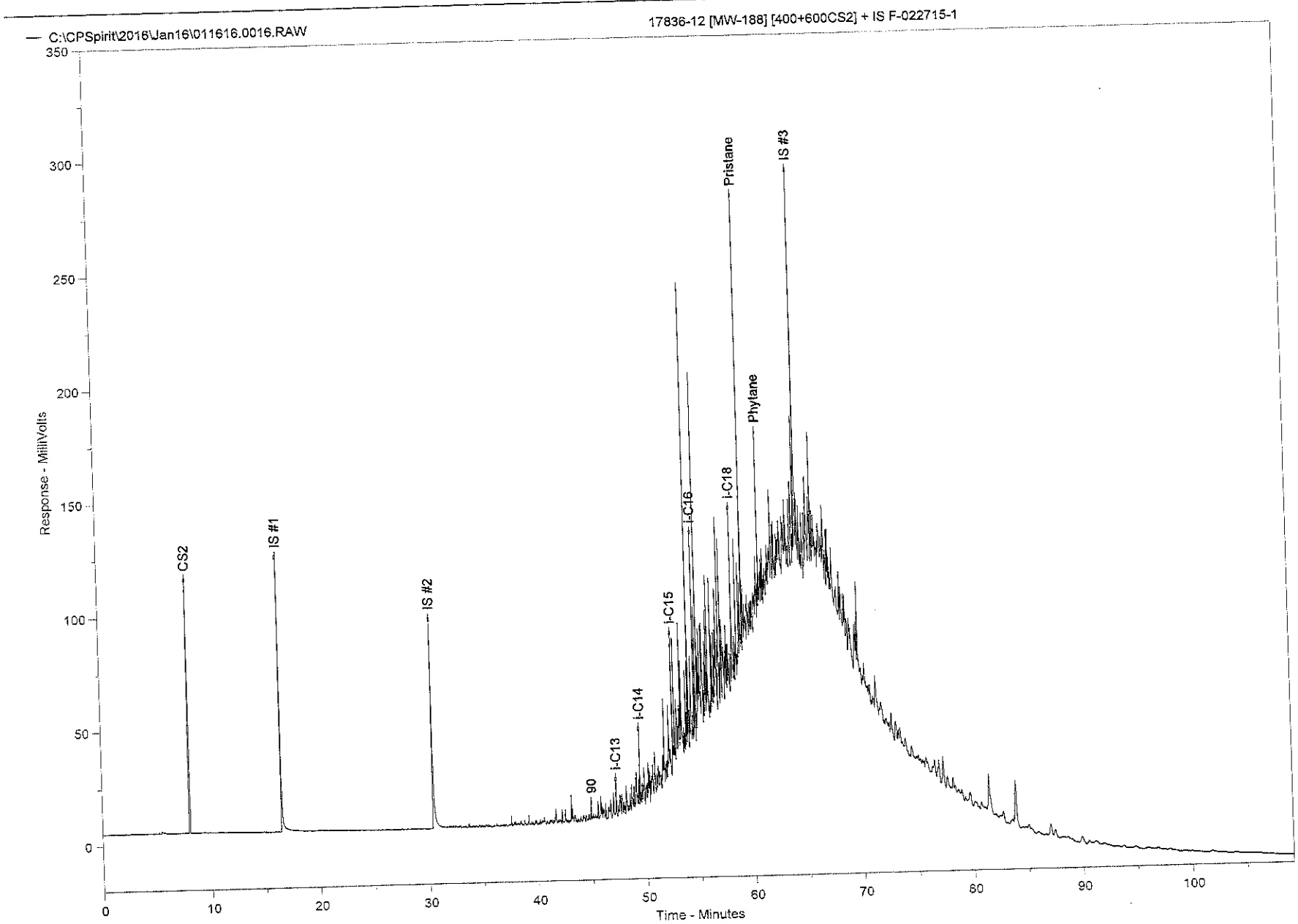
ZymaX ID		17836-12
Sample ID		MW-188
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

1/16/2016

ZymaX ID		17836-12
Sample ID		MW-188
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	0.00
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-12
Sample ID		MW-188
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	0.00
79	1,3-Diethylbenzene	0.00
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	0.00
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.00
88	1,2,3,5-Tetramethylbenzene	0.00
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	100.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00



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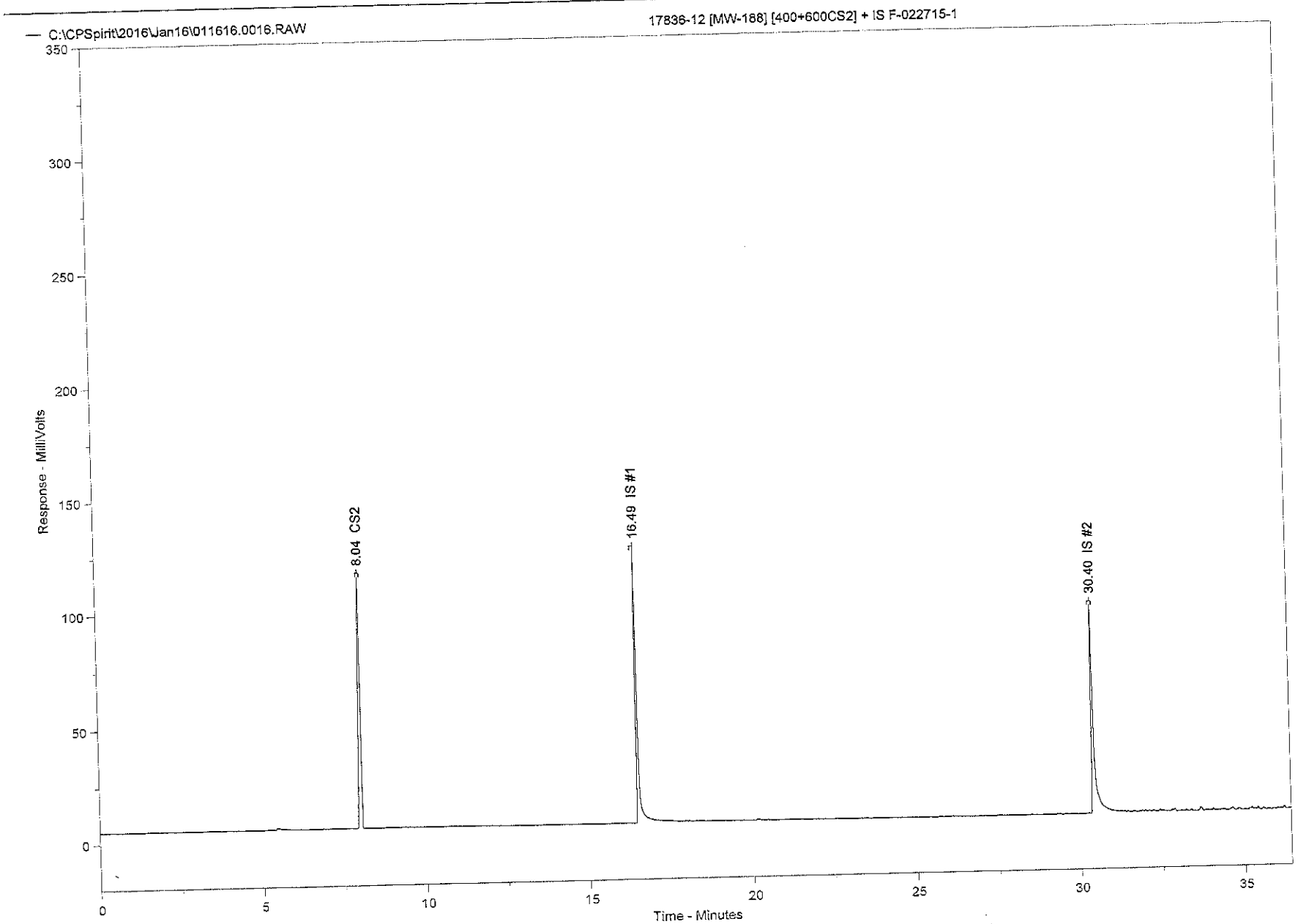
Chrom Perfect Chromatogram Report



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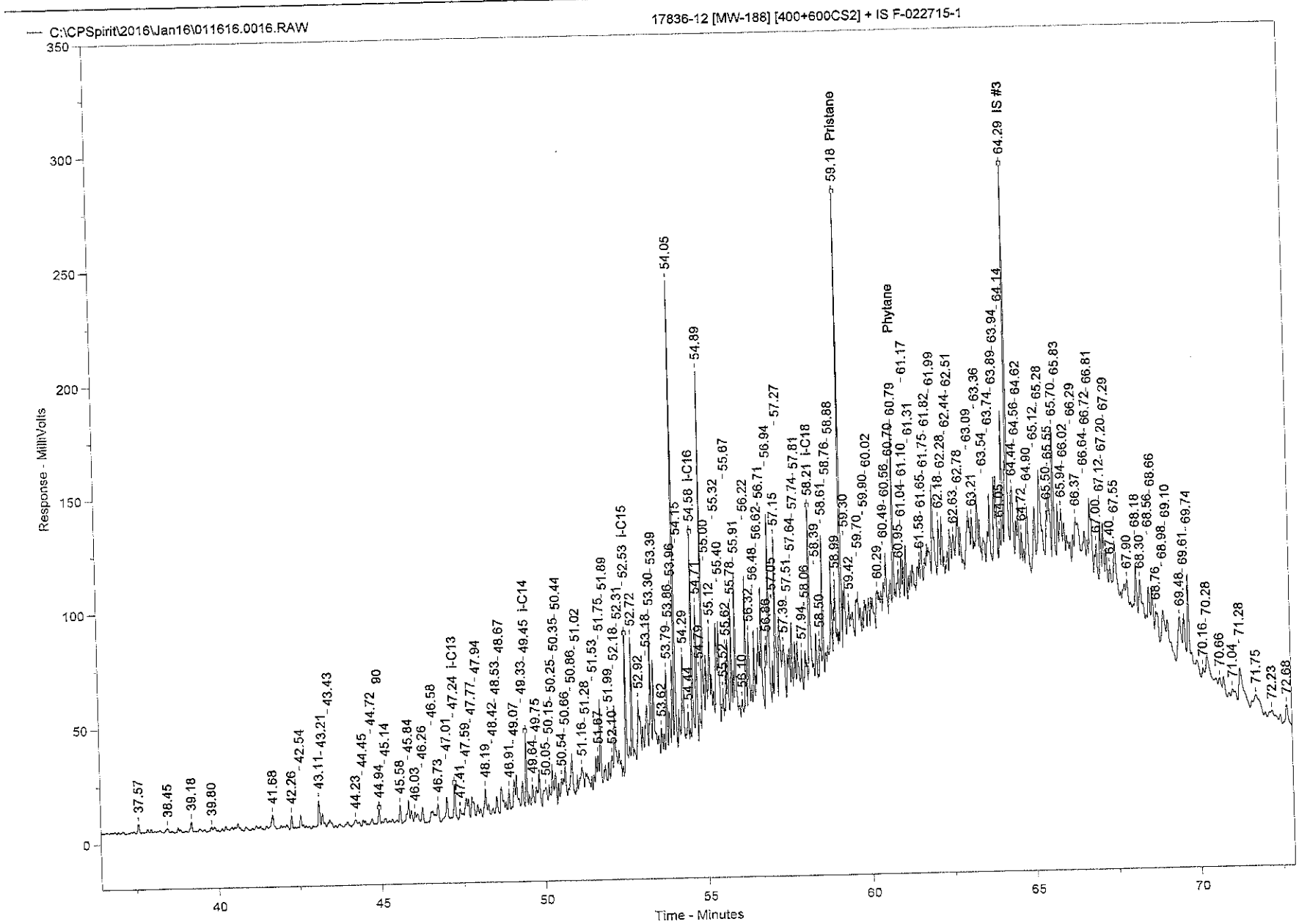
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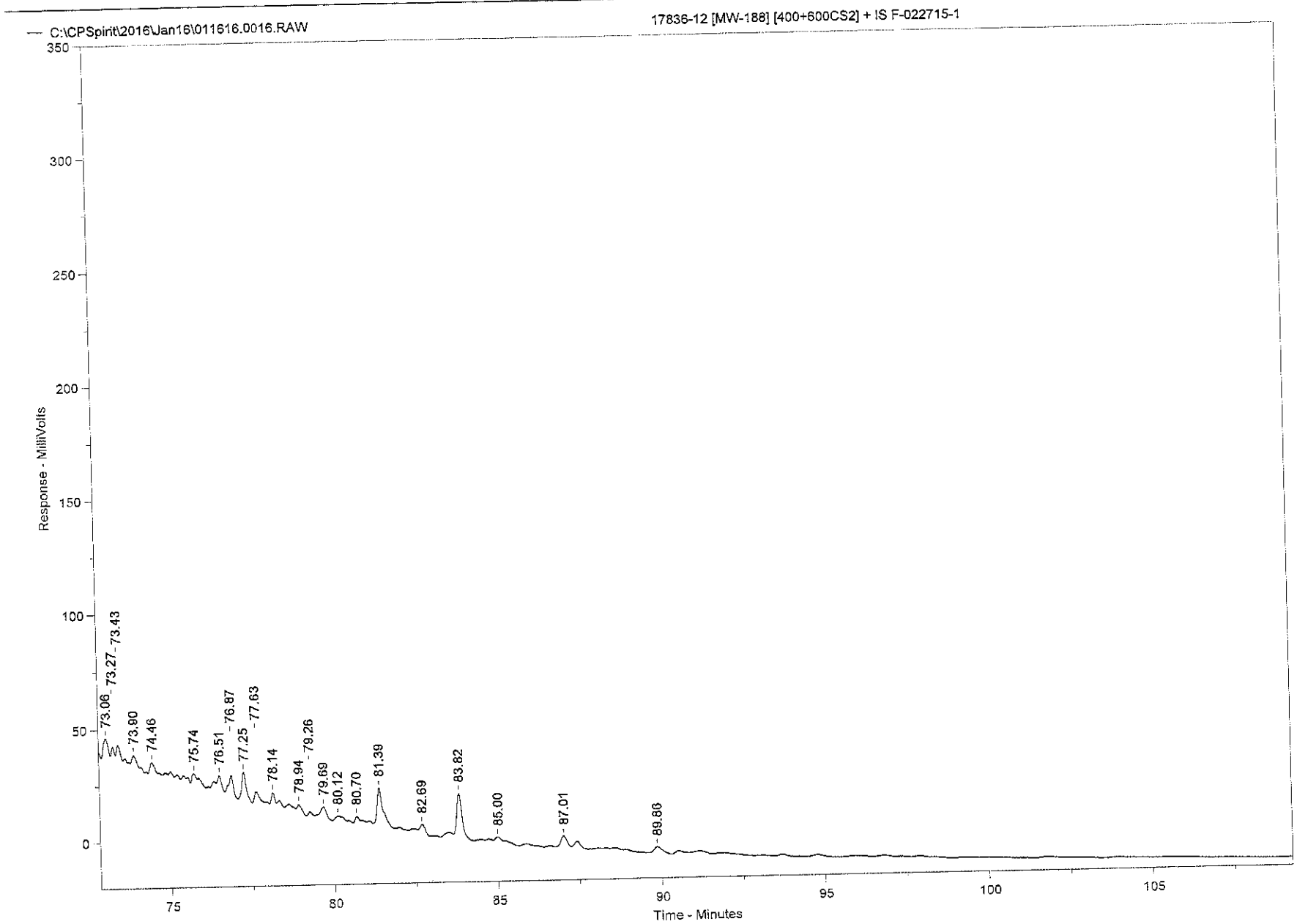
17836-12 [MW-188] [400+600CS2] + IS F-022715-1
Response - MilliVolts
Time - Minutes
Pristane
Phytane
IS #3
i-C13
i-C14
i-C15
i-C16
i-C18



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Sample Name = **17836-12 [MW-188] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0016.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/18/2016 2:18:29 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.04	2.3252	465590.40
IS #1	16.49	2.2335	447218.20
IS #2	30.40	2.2730	455122.00
	37.57	0.0668	13376.77
	38.45	0.0456	9137.69
	39.18	0.0746	14933.43
	39.80	0.0837	16756.87
	41.68	0.1513	30289.68
	42.26	0.0853	17071.73
	42.54	0.0712	14259.83
	43.11	0.1839	36826.20
	43.21	0.1269	25408.53
	43.43	0.1159	23205.87
	44.23	0.0494	9887.80
	44.45	0.0784	15693.47
	44.72	0.0694	13892.96
90	44.94	0.1029	20597.46
	45.14	0.0465	9308.12
	45.58	0.1159	23205.76
	45.84	0.0816	16330.82
	46.03	0.0409	8187.73
	46.26	0.1052	21059.98
	46.58	0.2083	41703.75
	46.73	0.1635	32733.52
	47.01	0.1784	35723.57
i-C13	47.24	0.2602	52105.37
	47.41	0.0846	16940.23
	47.59	0.1840	36850.26
	47.77	0.2286	45779.48
	47.94	0.0688	13771.73
	48.19	0.2563	51316.69
	48.42	0.0575	11520.80
	48.53	0.1469	29406.63
	48.67	0.2894	57943.99
	48.91	0.1248	24989.49
	49.07	0.1324	26513.81
	49.33	0.1794	35931.03
i-C14	49.45	0.3835	76787.31
	49.64	0.1383	27690.10
	49.75	0.0720	14407.81
	50.05	0.3178	63628.71
	50.15	0.1632	32671.23
	50.25	0.2890	57870.88
	50.35	0.2540	50849.54
	50.44	0.1184	23705.96
	50.54	0.1752	35075.22
	50.66	0.2435	48760.55
	50.86	0.4237	84839.77
	51.02	0.0954	19099.51
	51.16	0.3645	72983.64
	51.28	0.2460	49259.06
	51.53	0.0497	9951.21
	51.67	0.1041	20838.81
	51.75	0.3803	76148.73
	51.89	0.1388	27800.86

Peak Name	Ret. Time	Area %	Area
	51.99	0.0986	19748.07
	52.10	0.1931	38663.95
	52.18	0.6507	130299.80
	52.31	0.2378	47616.05
i-C15	52.53	0.7514	150459.20
	52.72	0.5452	109176.70
	52.92	0.6377	127680.50
	53.18	0.4665	93410.45
	53.30	0.7034	140845.20
	53.39	0.5502	110172.70
	53.62	0.1454	29105.70
	53.79	0.4056	81211.16
	53.86	0.2918	58426.92
	53.96	0.4980	99723.88
	54.05	2.1468	429864.70
	54.15	0.2487	49805.91
	54.29	0.8409	168382.00
	54.44	0.2989	59856.76
i-C16	54.58	1.0313	206496.10
	54.71	0.8751	175233.90
	54.79	0.2092	41890.10
	54.89	1.8918	378806.10
	55.00	0.6055	121242.70
	55.12	1.1604	232344.50
	55.32	0.8553	171269.30
	55.40	0.7093	142016.60
	55.52	0.3078	61634.36
	55.62	0.3957	79239.31
	55.67	0.4815	96420.63
	55.78	0.6501	130172.50
	55.91	0.8762	175437.00
	56.10	0.1823	36509.72
	56.22	0.7489	149956.60
	56.32	0.5463	109384.50
	56.48	0.7742	155029.70
	56.62	0.7982	159831.00
	56.71	0.7074	141646.70
	56.86	0.4839	96896.98
	56.94	1.2697	254240.80
	57.05	0.1710	34233.39
	57.15	1.1429	228856.10
	57.27	0.7549	151151.20
	57.39	0.6252	125189.50
	57.51	0.2568	51427.68
	57.64	0.3815	76383.58
	57.74	0.3109	62258.90
	57.81	0.3685	73783.01
	57.94	0.2158	43213.82
	58.06	0.2707	54200.98
i-C18	58.21	1.3961	279538.60
	58.39	0.2585	51766.28
	58.50	0.2941	58884.26
	58.61	0.5811	116350.60
	58.76	0.2531	50683.89
	58.88	0.6555	131250.60
	58.99	0.6246	125056.10
Pristane	59.18	2.1315	426792.50
	59.30	0.5615	112430.70
	59.42	0.1980	39643.20
	59.70	0.3737	74828.03
	59.90	0.3322	66511.91
	60.02	0.1835	36739.36
	60.29	0.5495	110029.90
	60.49	0.2917	58408.42
	60.56	0.4834	96799.77
	60.70	0.3374	67557.18
Phytane	60.79	0.9852	197275.60

Peak Name	Ret. Time	Area %	Area
	60.95	0.3435	68779.30
	61.04	0.3331	66691.82
	61.10	0.2017	40380.23
	61.17	0.3109	62260.38
	61.31	0.0858	17179.94
	61.58	0.3414	68353.98
	61.65	0.3165	63375.31
	61.75	0.2500	50059.74
	61.82	0.7441	148991.10
	61.99	1.0893	218107.00
	62.18	0.6198	124109.10
	62.28	0.5765	115443.90
	62.44	0.3394	67957.50
	62.51	0.4994	100004.20
	62.63	0.5330	106732.80
	62.78	1.5162	303594.50
	63.09	1.2031	240902.40
	63.21	0.8038	160942.60
	63.36	1.3718	274670.80
	63.54	0.4906	98236.63
	63.74	1.1029	220840.00
	63.89	0.7159	143353.20
	63.94	0.7396	148099.90
	64.05	0.4012	80331.15
	64.14	1.0328	206791.50
IS #3	64.29	3.2474	650230.20
	64.44	1.1162	223495.00
	64.56	0.4335	86796.89
	64.62	0.5525	110628.60
	64.72	0.2877	57604.83
	64.90	0.6874	137642.30
	65.12	0.6363	127404.10
	65.28	1.4231	284952.70
	65.50	0.3611	72307.32
	65.55	0.7441	148998.60
	65.70	0.9413	188481.60
	65.83	0.3267	65410.02
	65.94	0.4075	81598.52
	66.02	0.2016	40370.05
	66.29	0.1112	22256.82
	66.37	0.0936	18733.48
	66.64	0.2577	51600.61
	66.72	0.1429	28617.54
	66.81	0.7202	144213.40
	67.00	0.2956	59192.16
	67.12	0.3942	78941.45
	67.20	0.3973	79553.84
	67.29	0.2834	56744.59
	67.40	0.1848	37007.27
	67.55	0.5881	117758.20
	67.90	0.2033	40699.98
	68.18	0.2993	59931.32
	68.30	0.4969	99502.98
	68.56	0.3467	69424.01
	68.66	0.3922	78539.34
	68.76	0.3550	71079.78
	68.98	0.4171	83526.27
	69.10	0.1814	36318.91
	69.48	0.5985	119834.90
	69.61	0.3637	72815.30
	69.74	0.5303	106189.60
	70.16	0.0910	18224.87
	70.28	0.4316	86424.76
	70.66	0.0701	14038.63
	71.04	0.1512	30275.21
	71.28	0.6645	133050.50
	71.75	0.2830	56671.84

Peak Name	Ret. Time	Area %	Area
	72.23	0.2677	53607.55
	72.68	0.3835	76793.55
	73.06	0.4377	87640.95
	73.27	0.1701	34060.58
	73.43	0.2405	48146.09
	73.90	0.2516	50372.86
	74.46	0.2578	51620.12
	75.74	0.1150	23027.03
	76.51	0.4558	91270.82
	76.87	0.4648	93068.78
	77.25	0.5906	118264.10
	77.63	0.2892	57912.03
	78.14	0.1415	28342.95
	78.94	0.1356	27142.91
	79.26	0.0970	19413.51
	79.69	0.3356	67206.74
	80.12	0.2219	44426.30
	80.70	0.0855	17125.44
	81.39	1.0350	207250.70
	82.69	0.2690	53857.32
	83.82	1.0440	209047.50
	85.00	0.1878	37612.79
	87.01	0.2884	57753.53
	89.86	0.2533	50717.52

Total Area = 2.002331E+07 Total Height = 5300373 Total Amount = 2

1/16/2016

ZymaX ID	17836-13
Sample ID	MW-439

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.00
Aromatics / Naphthenes	0.00

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.00
% Isoparaffinic	0.00
% Aromatic	100.00
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-13
Sample ID		MW-439
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

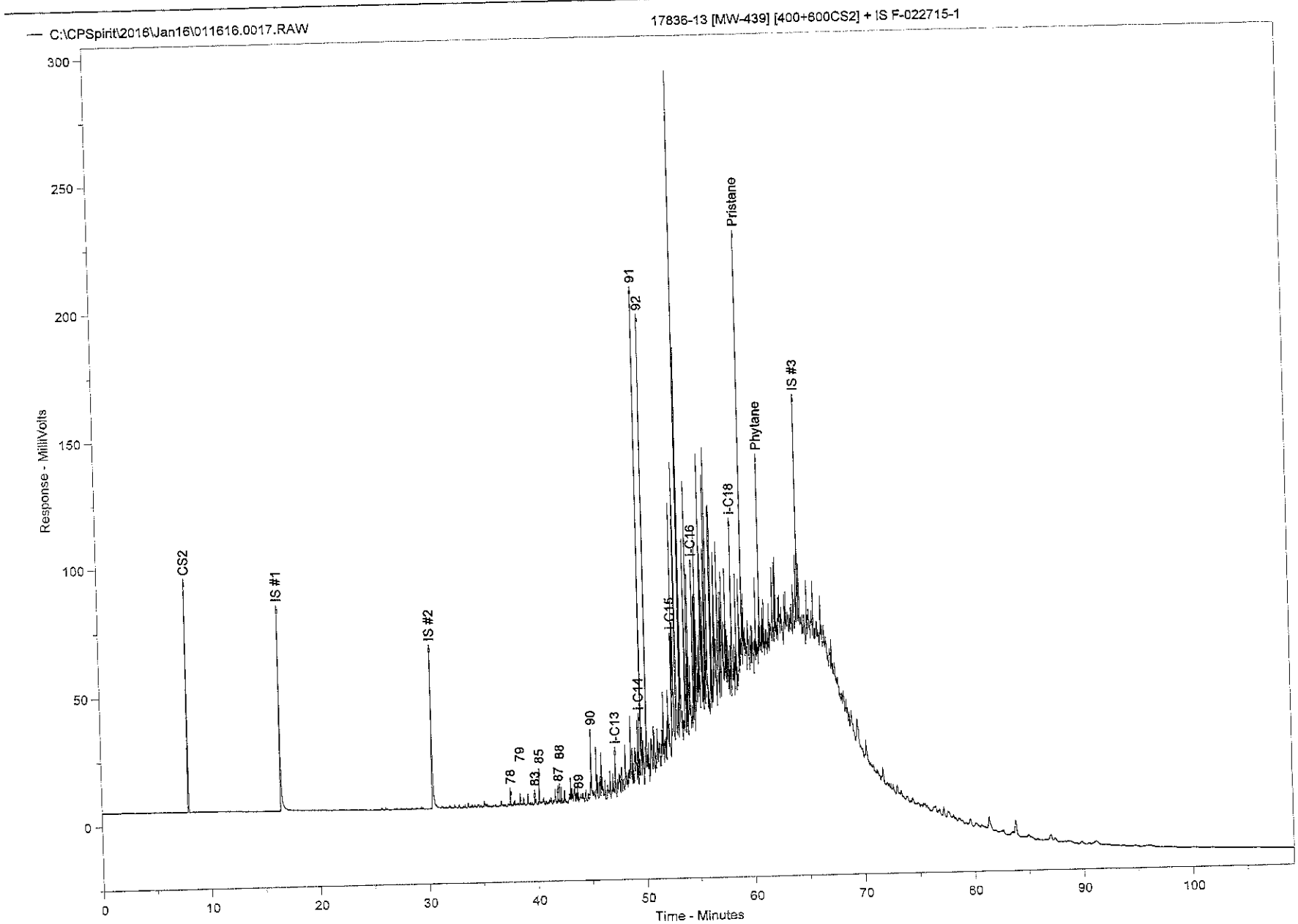
1/16/2016

ZymaX ID		17836-13
Sample ID		MW-439
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	0.00
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-13
Sample ID		MW-439
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	1.22
79	1,3-Diethylbenzene	0.77
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.79
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	3.29
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	1.58
88	1,2,3,5-Tetramethylbenzene	1.52
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	7.62
91	2-Methyl-naphthalene	43.26
92	1-Methyl-naphthalene	39.94

Chrom Perfect Chromatogram Report



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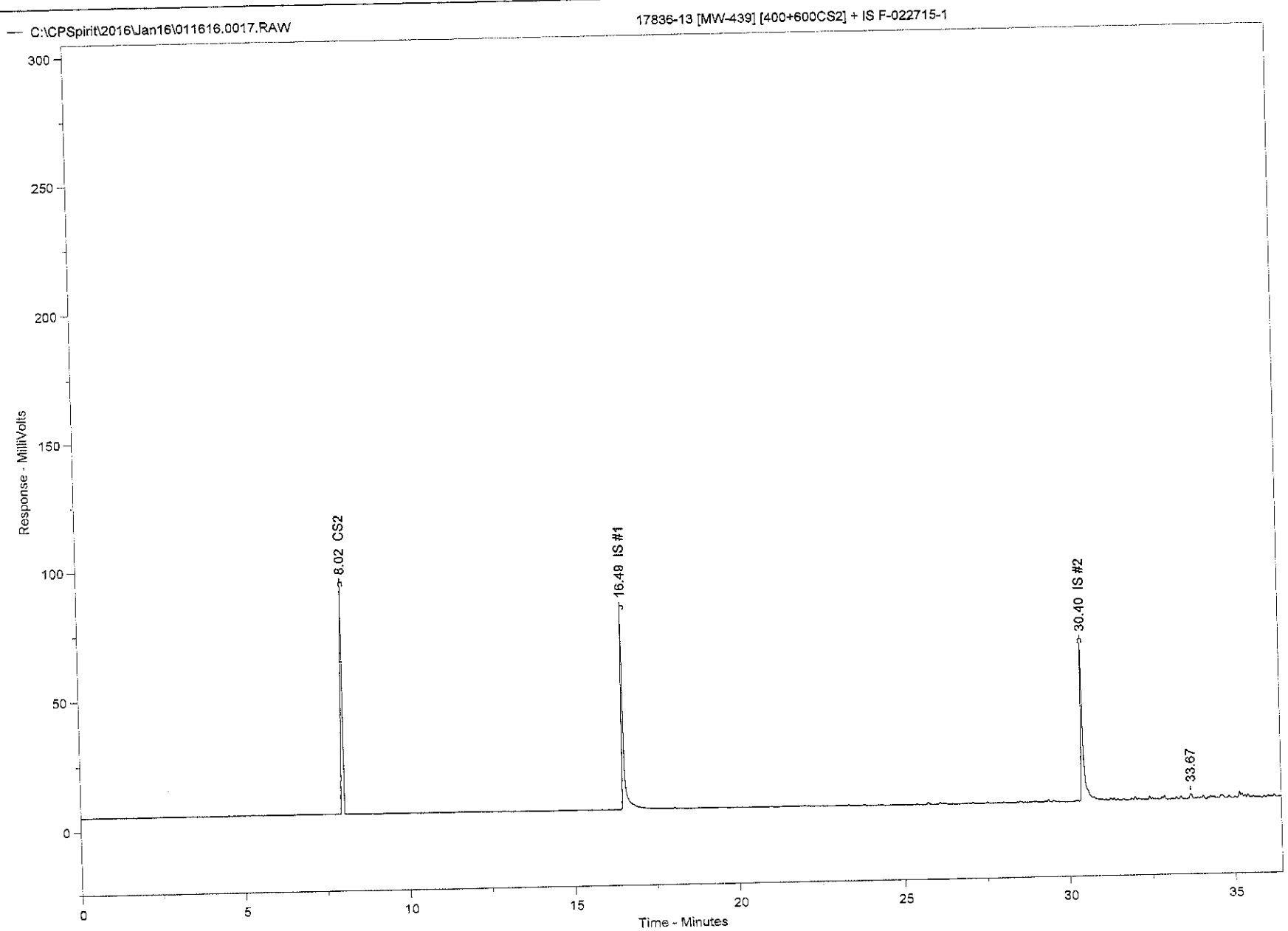

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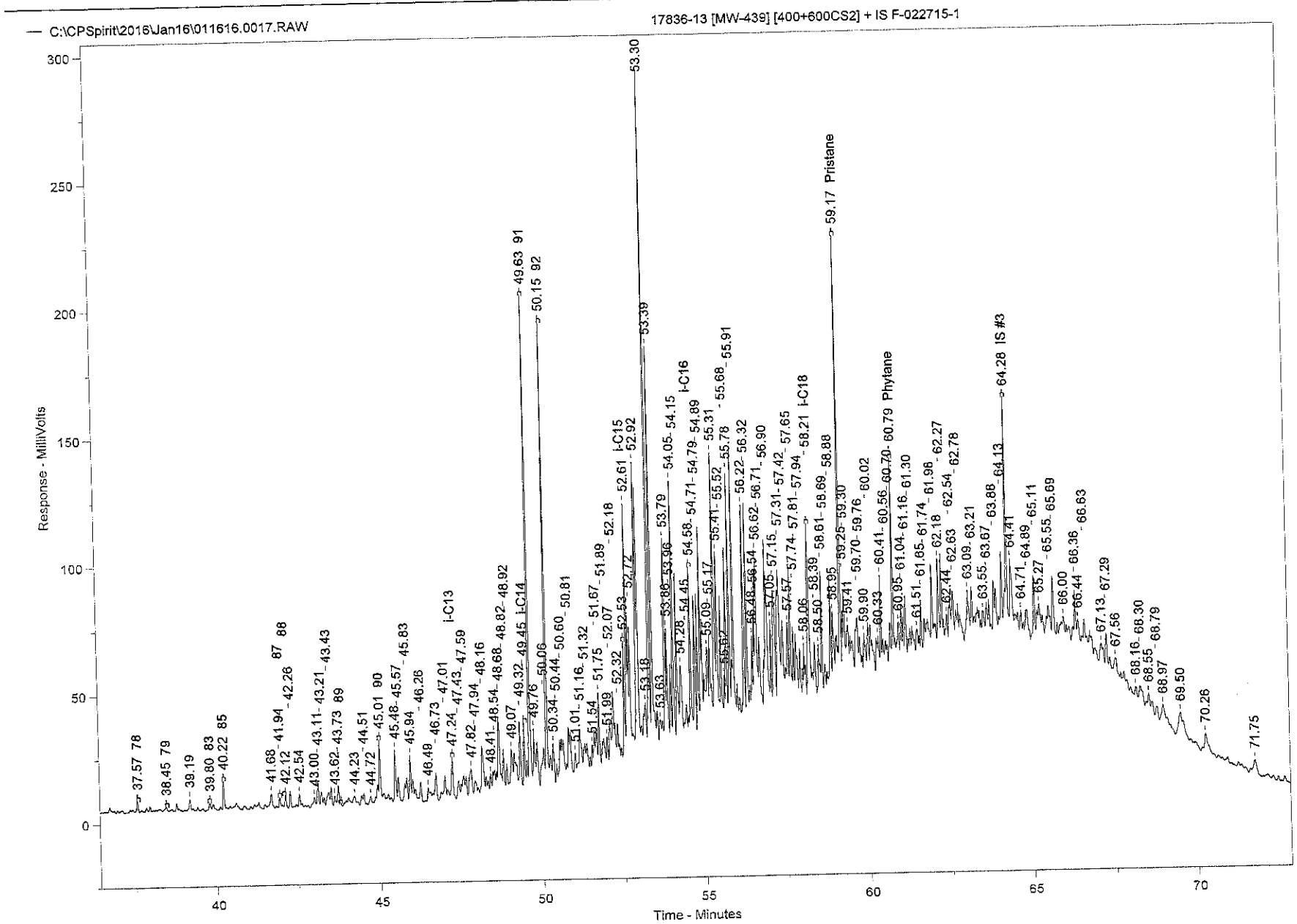
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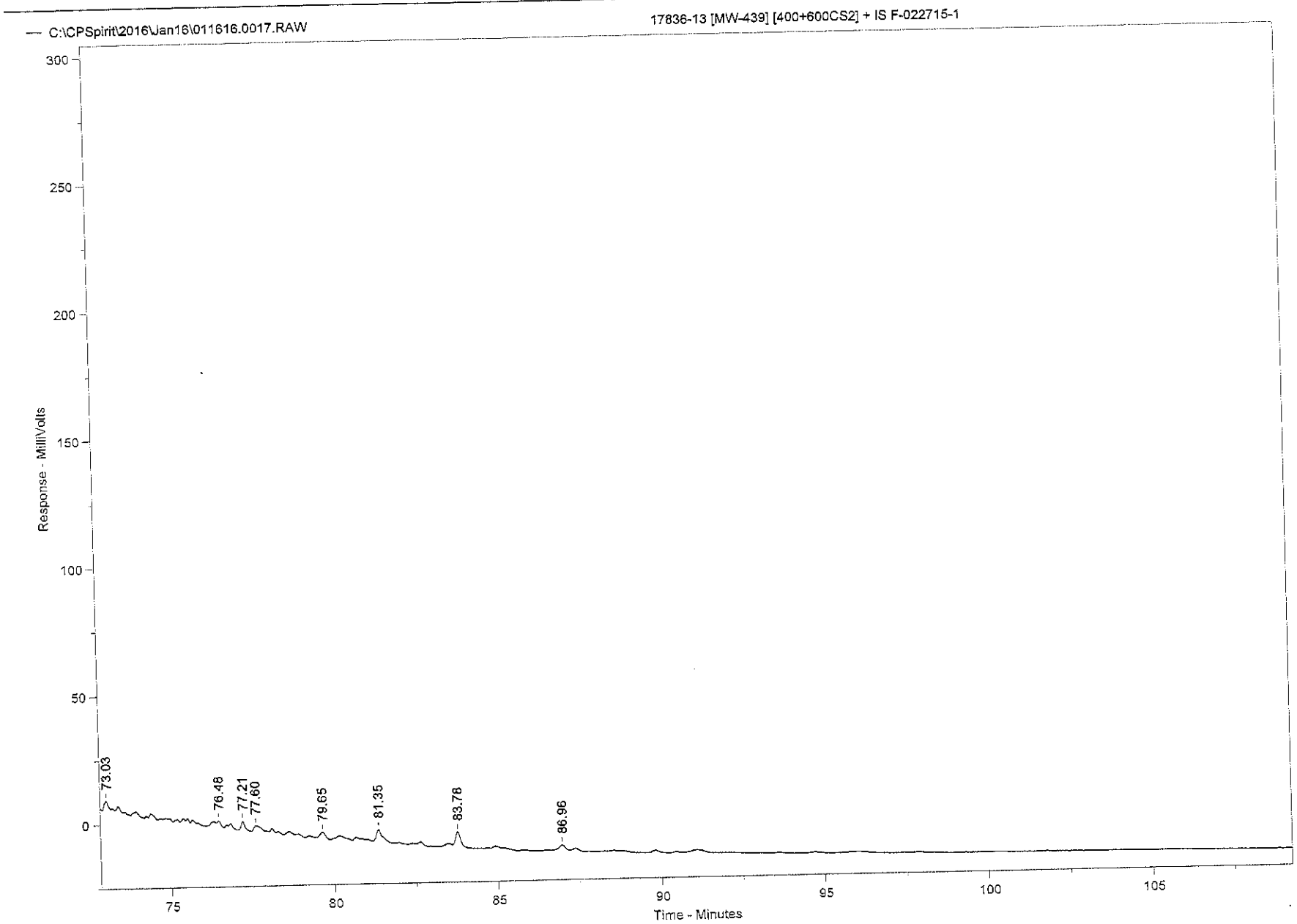
17836-13 [MW-439] [400+600CS2] + IS F-022715-1
Response - MilliVolts
Time - Minutes
Pristane
Phytane
IS #3
i-C13
i-C14
i-C15
i-C16
i-C18



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Sample Name = **17836-13 [MW-439] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0017.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/18/2016 4:21:53 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.02	1.9083	308576.60
IS #1	16.49	1.9497	315270.30
IS #2	30.40	1.7602	284632.30
	33.67	0.0614	9928.93
78	37.57	0.0785	12689.17
79	38.45	0.0494	7986.61
	39.19	0.0803	12980.06
83	39.80	0.0509	8234.70
85	40.22	0.2111	34129.17
	41.68	0.1286	20791.80
87	41.94	0.1011	16349.96
88	42.12	0.0978	15810.60
	42.26	0.1123	18160.79
	42.54	0.0802	12962.53
	43.00	0.1347	21783.28
	43.11	0.2076	33564.02
	43.21	0.1251	20221.51
	43.43	0.1935	31285.75
	43.62	0.0952	15401.06
	43.73	0.1839	29732.69
	44.23	0.1084	17528.74
	44.51	0.1516	24519.55
	44.72	0.0630	10193.79
90	45.01	0.4889	79053.89
	45.48	0.3712	60029.21
	45.57	0.1945	31457.52
	45.83	0.2745	44384.26
	45.94	0.2531	40927.11
	46.26	0.1335	21594.11
	46.49	0.1813	29320.03
	46.73	0.2504	40495.99
	47.01	0.3069	49619.89
i-C13	47.24	0.3895	62978.14
	47.43	0.1682	27195.58
	47.59	0.2192	35441.15
	47.82	0.3513	56804.53
	47.94	0.1368	22124.35
	48.16	0.4825	78025.96
	48.41	0.1071	17311.44
	48.54	0.2410	38970.15
	48.68	0.7062	114195.40
	48.82	0.2181	35262.54
	48.92	0.1280	20693.99
	49.07	0.2103	34011.70
	49.32	0.4185	67667.81
i-C14	49.45	0.3811	61630.00
91	49.63	2.7752	448750.30
	49.76	0.2547	41181.98
	50.06	0.5211	84261.62
92	50.15	2.5624	414344.70
	50.34	0.3138	50742.79
	50.44	0.0782	12637.31
	50.60	0.2287	36973.29
	50.81	0.1168	18890.14
	51.01	0.1136	18371.49

Peak Name	Ret. Time	Area %	Area
	51.16	0.3353	54219.21
	51.32	0.1097	17745.10
	51.54	0.1190	19241.99
	51.67	0.2548	41201.57
	51.75	0.4345	70261.42
	51.89	0.2978	48153.11
	51.99	0.1448	23417.70
	52.07	0.3343	54048.43
	52.18	0.7477	120908.70
	52.32	0.2724	44042.31
i-C15	52.53	0.6815	110204.50
	52.61	2.0446	330619.10
	52.72	0.9575	154823.00
	52.92	3.0155	487600.10
	53.18	0.6042	97701.47
	53.30	3.6155	584620.00
	53.39	2.3902	386495.50
	53.63	0.3806	61543.61
	53.79	1.3833	223672.80
	53.86	0.6620	107041.70
	53.96	0.4795	77530.86
	54.05	1.4205	229687.00
	54.15	1.0195	164850.70
	54.28	0.8533	137975.80
	54.45	0.3274	52946.91
i-C16	54.58	0.9831	158972.70
	54.71	0.8720	141006.50
	54.79	0.7961	128731.30
	54.89	2.0535	332052.30
	55.09	0.7001	113201.90
	55.17	0.7330	118528.40
	55.31	1.8530	299627.50
	55.41	1.0353	167405.70
	55.52	0.6665	107769.10
	55.62	0.1815	29343.22
	55.68	0.8619	139371.00
	55.78	1.2498	202088.50
	55.91	1.5969	258220.00
	56.22	1.1422	184693.30
	56.32	1.0782	174349.40
	56.48	0.4169	67412.93
	56.54	0.4668	75484.44
	56.62	1.4956	241832.40
	56.71	0.5169	83587.56
	56.90	1.8723	302751.20
	57.05	0.4075	65899.16
	57.15	1.2006	194140.40
	57.31	1.7367	280827.70
	57.42	0.7661	123871.70
	57.57	0.5238	84698.47
	57.65	0.8793	142184.30
	57.74	0.3602	58243.10
	57.81	0.5641	91211.95
	57.94	0.3434	55524.67
	58.06	0.5106	82564.27
i-C18	58.21	1.7257	279051.50
	58.39	0.3729	60304.44
	58.50	0.4046	65423.54
	58.61	0.5514	89161.38
	58.69	0.1460	23602.13
	58.88	0.4983	80576.27
	58.95	0.3586	57983.67
Pristane	59.17	2.0893	337832.90
	59.25	0.2448	39584.66
	59.30	0.3706	59931.38
	59.41	0.2787	45061.00
	59.70	0.6080	98319.65

Peak Name	Ret. Time	Area %	Area
	59.76	0.2609	42190.49
	59.90	0.2694	43560.11
	60.02	0.2656	42939.49
	60.33	0.4561	73757.19
	60.41	0.4722	76355.80
	60.56	0.2658	42980.82
	60.70	0.3036	49087.30
Phytane	60.79	1.2895	208511.40
	60.95	0.2646	42785.01
	61.04	0.3436	55559.44
	61.16	0.3424	55359.49
	61.30	0.0837	13530.73
	61.51	0.2423	39177.81
	61.65	0.2325	37602.44
	61.74	0.1130	18279.27
	61.98	0.5608	90686.05
	62.18	0.5068	81950.71
	62.27	0.5509	89086.78
	62.44	0.1859	30059.22
	62.54	0.3349	54154.92
	62.63	0.3590	58045.12
	62.78	0.2456	39710.43
	63.09	0.4689	75823.56
	63.21	0.2520	40754.08
	63.55	0.1457	23556.35
	63.67	0.1239	20037.74
	63.88	0.1910	30886.93
	64.13	0.4045	65401.41
IS #3	64.28	1.5399	248995.40
	64.41	0.8755	141568.10
	64.71	0.1810	29272.02
	64.89	0.3943	63755.67
	65.11	0.4886	79013.30
	65.27	0.6156	99536.41
	65.55	0.6557	106025.20
	65.69	0.5806	93877.30
	66.00	0.4775	77219.29
	66.36	0.4743	76700.63
	66.44	0.2115	34202.91
	66.63	0.0994	16076.48
	67.13	0.2879	46545.79
	67.29	0.2108	34082.31
	67.56	0.1781	28802.61
	68.16	0.0942	15234.64
	68.30	0.2723	44028.62
	68.55	0.0782	12643.19
	68.79	0.1208	19531.80
	68.97	0.1956	31625.81
	69.50	0.1780	28775.92
	70.26	0.2597	41987.54
	71.75	0.1894	30623.58
	73.03	0.1651	26700.29
	76.48	0.2621	42387.57
	77.21	0.1774	28692.71
	77.60	0.2221	35914.94
	79.65	0.1743	28189.08
	81.35	0.3720	60152.04
	83.78	0.3469	56085.82
	86.96	0.1786	28875.23

Total Area = 1.617001E+07 Total Height = 5156603 Total Amount = 0

1/16/2016

ZymaX ID	17836-14
Sample ID	MW-371

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	1.38
Aromatics / Naphthenes	5.12

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	36.82
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	9.74

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	3.82
% Isoparaffinic	26.15
% Aromatic	56.66
% Naphthenic	11.07
% Olefinic	2.29

1/16/2016

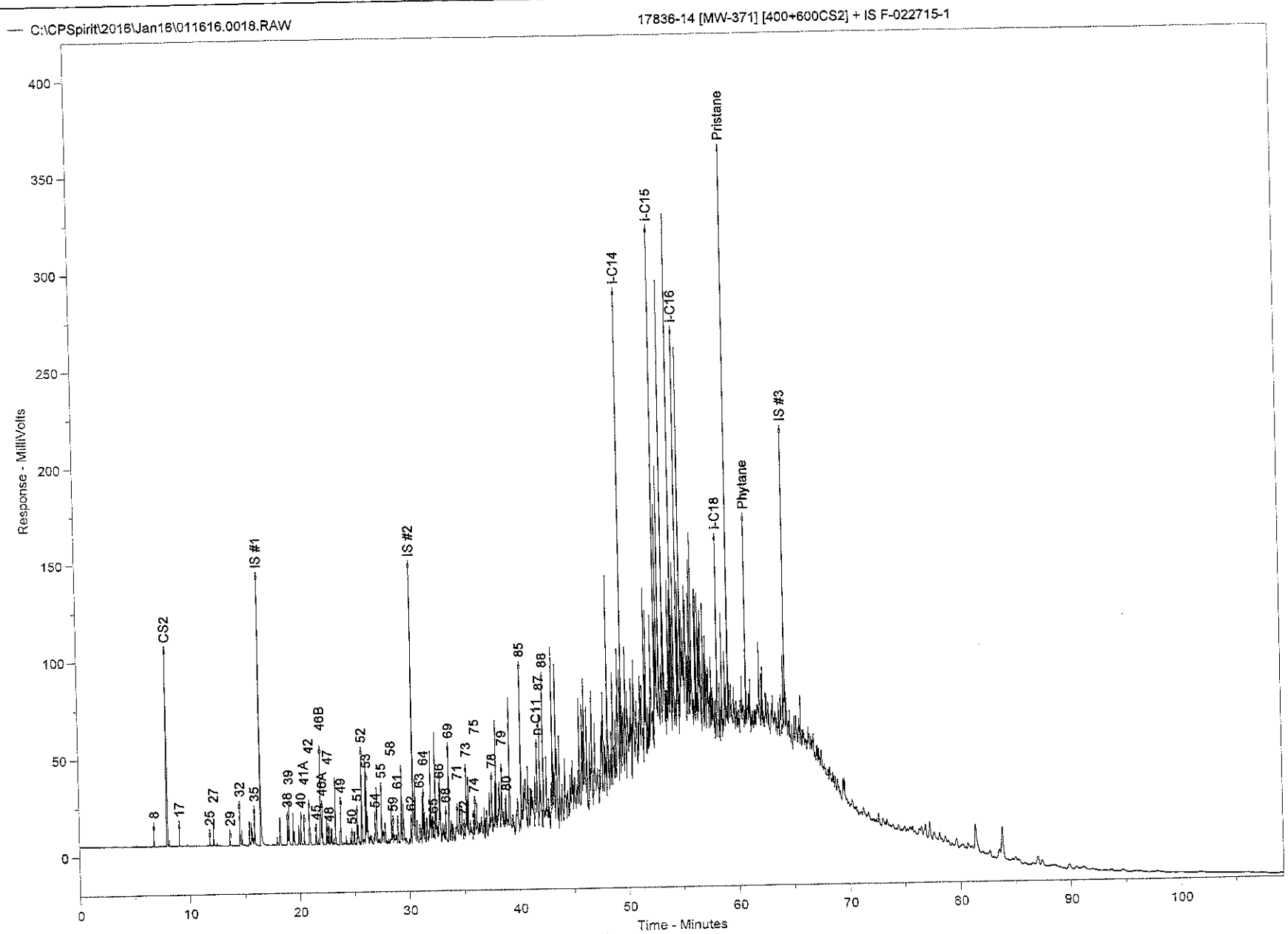
ZymaX ID		17836-14
Sample ID		MW-371
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.34
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.52
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.37
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.68
28	Benzene	0.00
29	5-Methyl-1-hexene	0.41
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	1.77
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	1.47
I.S. #1	à,à,à-Trifluorotoluene	0.00

1/16/2016

ZymaX ID		17836-14
Sample ID		MW-371
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	1.15
39	2,4-Dimethylhexane	2.08
40	2,3,4-Trimethylpentane	1.24
41	Toluene/2,3,3-Trimethylpentane	1.08
42	2,3-Dimethylhexane	2.88
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.97
46A	3-Ethyl-3-methylpentane	1.70
46B	1,4-Dimethylcyclohexane	6.27
47	3-Methylheptane	0.62
48	2,2,5-Trimethylhexane	0.50
49	n-Octane	2.60
50	2,2-Dimethylheptane	0.41
51	2,4-Dimethylheptane	1.35
52	Ethylcyclohexane	4.80
53	2,6-Dimethylheptane	2.15
54	Ethylbenzene	1.64
55	m+p Xylenes	2.42
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	1.23
59	3-Methyloctane	0.91
60	o-Xylene	0.00
61	1-Nonene	1.51
62	n-Nonane	1.22
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.68
64	3,3,5-Trimethylheptane	2.26
65	2,4,5-Trimethylheptane	1.03
66	n-Propylbenzene	3.43
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	1.73
69	1,3,5-Trimethylbenzene	6.59
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-14
Sample ID		MW-371
		Relative Area %
71	1-Methyl-2-ethylbenzene	2.69
72	3-Methylnonane	0.88
73	1,2,4-Trimethylbenzene	3.46
74	Isobutylbenzene	1.33
75	sec-Butylbenzene	3.13
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	2.69
79	1,3-Diethylbenzene	4.80
80	1,4-Diethylbenzene	1.25
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	7.01
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	5.88
88	1,2,3,5-Tetramethylbenzene	6.87
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00



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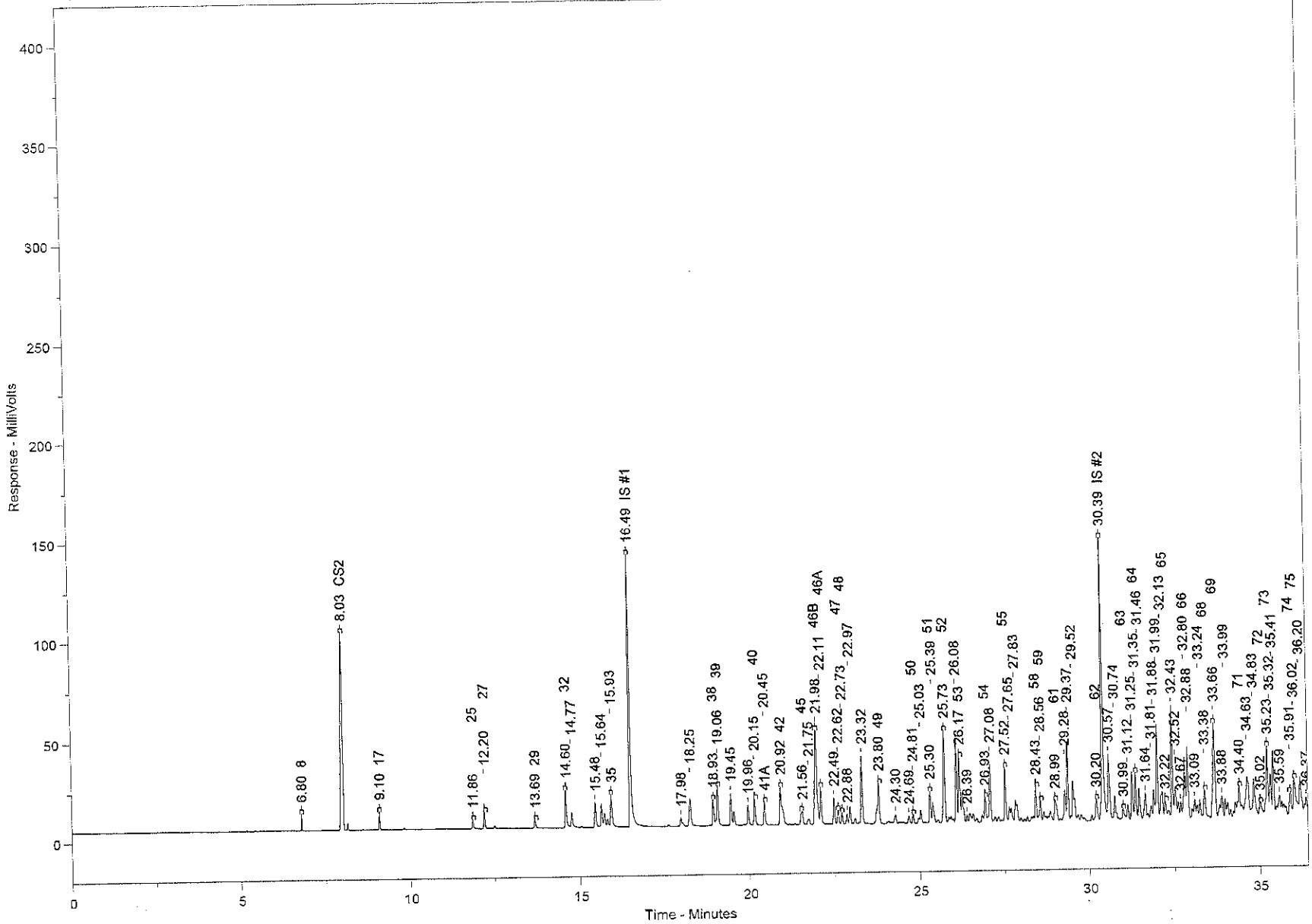
17836-14 [MW-371] [400+600CS2] + IS F-022715-1



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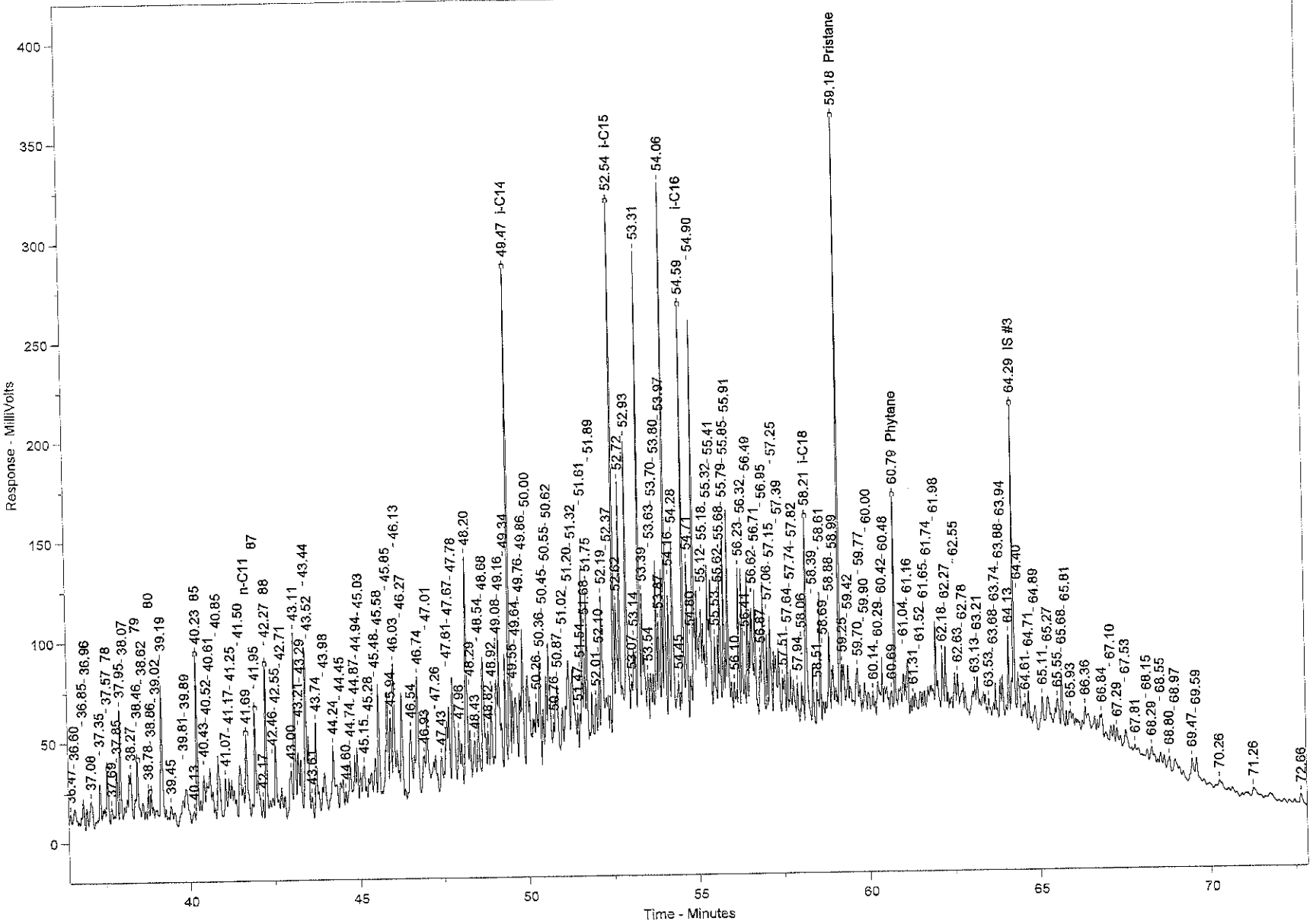
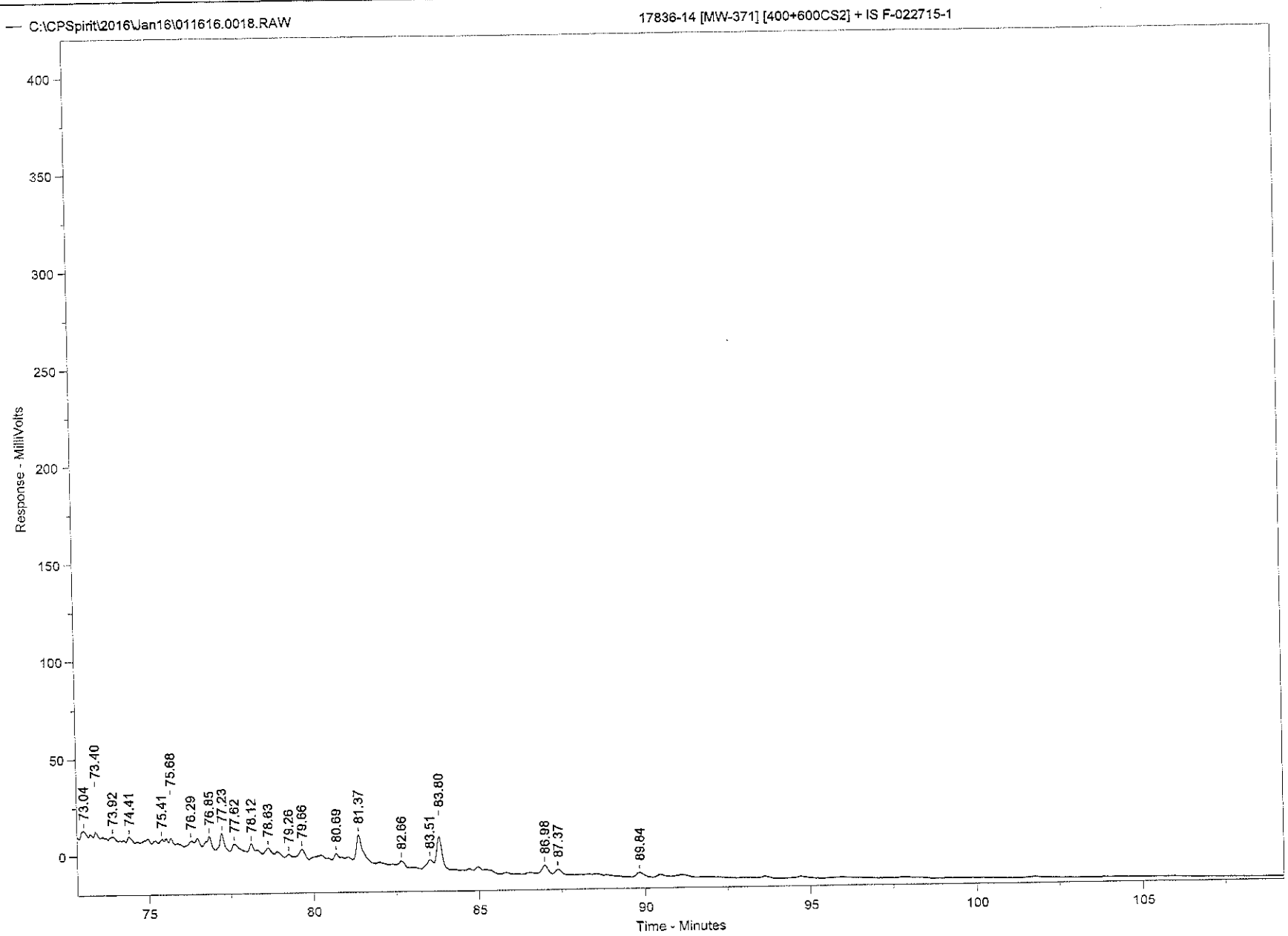
17836-14 [MW-371] [400+600CS2] + IS F-022715-1




C:\CPSpirit\2016\Jan16\011616.0018.RAW
17836-14 [MW-371] [400+600CS2] + IS F-022715-1
Response - MilliVolts
400
350
300
250
200
150
100
50
0
73.04
73.40
73.92
74.41
75.41
75.68
76.29
76.85
77.23
77.62
78.12
78.63
79.26
79.66
80.69
81.37
82.66
83.51
83.80
86.98
87.37
89.84
75
80
85
90
95
100
105
Time - Minutes

Sample Name = **17836-14 [MW-371] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0018.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/18/2016 6:25:28 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
8	6.80	0.0274	11143.31
CS2	8.03	0.9431	383137.80
17	9.10	0.0416	16891.83
25	11.86	0.0298	12114.92
27	12.20	0.0544	22117.68
29	13.69	0.0325	13207.24
32	14.60	0.1413	57397.50
	14.77	0.0644	26180.71
	15.46	0.0877	35632.18
	15.64	0.0629	25560.22
35	15.93	0.1174	47708.32
IS #1	16.49	1.0333	419763.50
	17.98	0.0394	15995.13
	18.25	0.1301	52843.98
38	18.93	0.0917	37251.82
39	19.06	0.1663	67552.04
	19.45	0.0996	40474.49
	19.96	0.0688	27929.73
40	20.15	0.0989	40164.67
41A	20.45	0.0859	34886.90
42	20.92	0.2297	93303.34
45	21.56	0.0778	31585.59
	21.75	0.0276	11231.60
46B	21.98	0.5006	203380.50
46A	22.11	0.1360	55231.87
	22.49	0.0934	37962.12
47	22.62	0.0495	20111.11
48	22.73	0.0400	16240.72
	22.88	0.0328	13334.28
	22.97	0.0585	23778.72
	23.32	0.2298	93337.95
49	23.80	0.2076	84349.46
	24.30	0.0370	15040.55
	24.69	0.0289	11727.50
50	24.81	0.0326	13227.26
	25.03	0.0317	12875.38
51	25.30	0.1076	43718.57
	25.39	0.0909	36934.63
52	25.73	0.3833	155700.60
	26.08	0.2738	111246.80
53	26.17	0.1720	69871.59
	26.39	0.0180	7308.42
54	26.93	0.1308	53124.80
	27.08	0.2155	87556.57
55	27.52	0.1933	78520.30
	27.65	0.0967	39287.55
	27.83	0.1260	51198.91
58	28.43	0.0980	39801.74
59	28.56	0.0729	29621.08
61	28.99	0.1208	49084.14
	29.28	0.1208	49082.84
	29.37	0.2653	107782.80
	29.52	0.1894	76939.29
62	30.20	0.0974	39567.04
IS #2	30.39	1.1199	454942.70

Peak Name	Ret. Time	Area %	Area
	30.57	0.3161	128405.20
	30.74	0.1069	43438.75
63	30.99	0.0546	22164.39
	31.12	0.0556	22589.25
	31.25	0.1824	74101.30
64	31.35	0.1800	73111.63
	31.46	0.1329	53997.95
	31.64	0.1423	57817.31
	31.81	0.0541	21963.12
	31.88	0.1045	42454.61
	31.99	0.3568	144933.40
	32.13	0.1671	67891.60
65	32.22	0.0821	33351.84
	32.43	0.3829	155541.70
	32.52	0.1505	61156.09
	32.67	0.0613	24892.51
66	32.80	0.2740	111320.50
	32.88	0.2714	110239.10
	33.09	0.1076	43697.28
	33.24	0.0752	30551.20
68	33.38	0.1377	55951.63
69	33.66	0.5259	213653.70
	33.88	0.1368	55583.56
	33.99	0.0375	15243.03
71	34.40	0.2147	87202.08
	34.63	0.2877	116866.60
	34.83	0.1956	79468.81
72	35.02	0.0704	28619.07
73	35.23	0.2763	112260.40
	35.32	0.1415	57476.34
	35.41	0.2151	87375.16
	35.59	0.0437	17751.83
74	35.91	0.1058	42970.28
75	36.02	0.2496	101376.90
	36.20	0.2025	82256.37
	36.37	0.0842	34189.96
	36.47	0.0883	35866.11
	36.60	0.2076	84337.59
	36.85	0.1156	46981.08
	36.96	0.0792	32155.08
	37.08	0.1967	79886.39
	37.35	0.1242	50468.45
78	37.57	0.2146	87177.34
	37.69	0.0644	26173.73
	37.85	0.2082	84589.65
	37.95	0.3976	161514.60
	38.07	0.0677	27507.07
	38.27	0.3400	138102.40
79	38.46	0.3828	155487.70
	38.62	0.0866	35200.22
	38.78	0.0972	39504.87
80	38.86	0.0994	40379.58
	39.02	0.0751	30527.11
	39.19	0.6139	249386.60
	39.45	0.0600	24366.67
	39.81	0.1990	80859.48
	39.89	0.3092	125618.30
	40.13	0.0510	20710.13
85	40.23	0.5599	227437.00
	40.43	0.1436	58341.50
	40.52	0.1255	50971.28
	40.61	0.1157	47004.70
	40.85	0.3462	140642.60
	41.07	0.1259	51135.29
	41.17	0.0991	40260.20
	41.25	0.0677	27501.18
	41.50	0.2841	115419.60

Peak Name	Ret. Time	Area %	Area
n-C11	41.69	0.4787	194457.90
87	41.95	0.4691	190577.30
	42.17	0.0495	20094.92
88	42.27	0.5481	222646.80
	42.46	0.0752	30556.43
	42.55	0.3009	122219.80
	42.71	0.0724	29391.52
	43.00	0.3434	139490.10
	43.11	0.7185	291886.90
	43.21	0.3064	124482.70
	43.29	0.2295	93250.40
	43.44	0.8131	330329.80
	43.52	0.2944	119581.80
	43.61	0.0879	35692.90
	43.74	0.4548	184756.00
	43.98	0.3311	134506.30
	44.24	0.5244	213013.00
	44.45	0.0529	21477.88
	44.60	0.0441	17929.07
	44.74	0.2013	81764.92
	44.87	0.1842	74825.45
	44.94	0.1740	70681.95
	45.03	0.0766	31099.76
	45.15	0.1400	56890.51
	45.28	0.0289	11742.45
	45.48	0.1500	60946.91
	45.58	0.4292	174350.30
	45.85	0.5582	226778.20
	45.94	0.3391	137754.40
	46.03	0.5660	229912.50
	46.13	0.2636	107099.70
	46.27	0.4289	174227.70
	46.54	0.3851	156460.70
	46.74	0.7860	319291.60
	46.93	0.2389	97031.27
	47.01	0.4575	185865.40
	47.26	0.3671	149133.50
	47.43	0.2278	92560.47
	47.61	0.3562	144682.50
	47.67	0.3135	127360.80
	47.78	0.7189	292026.80
	47.96	0.2886	117250.60
	48.20	1.0021	407087.30
	48.29	0.2177	88426.48
	48.43	0.2458	99835.47
	48.54	0.3199	129949.40
	48.68	0.7560	307110.60
	48.82	0.1604	65157.37
	48.92	0.3432	139407.90
	49.08	0.5229	212437.50
	49.16	0.7292	296234.90
	49.34	0.4808	195326.40
i-C14	49.47	1.5587	633202.40
	49.55	0.2641	107301.30
	49.64	0.5449	221341.40
	49.76	0.4589	186424.70
	49.86	0.5348	217245.30
	50.00	0.8412	341737.00
	50.26	0.3289	133623.60
	50.36	0.4445	180571.30
	50.45	0.1887	76671.13
	50.55	0.3864	156966.40
	50.62	0.7226	293543.60
	50.76	0.1550	62955.37
	50.87	0.5909	240043.40
	51.02	0.2642	107322.30
	51.20	0.8541	346962.00

Peak Name	Ret. Time	Area %	Area
	51.32	0.7769	315620.80
	51.47	0.1348	54761.29
	51.54	0.1528	62066.38
	51.61	0.5733	232907.50
	51.68	0.3859	156766.20
	51.75	0.5937	241175.40
	51.89	0.2869	116541.60
	52.01	0.2371	96335.56
	52.10	0.3286	133497.50
	52.19	0.8906	361786.70
	52.37	0.3439	139702.00
i-C15	52.54	1.5776	640894.90
	52.62	0.7861	319335.60
	52.72	1.1799	479307.30
	52.93	1.5524	630639.80
	53.07	0.2603	105743.70
	53.14	0.7170	291288.90
	53.31	1.6374	665173.50
	53.39	0.9287	377284.50
	53.54	0.3120	126743.70
	53.63	0.2970	120670.50
	53.70	0.2349	95430.13
	53.80	0.7122	289312.60
	53.87	0.5232	212557.10
	53.97	0.6281	255151.50
	54.06	1.6581	673564.40
	54.16	0.5685	230933.00
	54.28	0.9851	400203.30
	54.45	0.3499	142146.60
i-C16	54.59	1.2768	518689.80
	54.71	0.7153	290580.50
	54.80	0.2924	118782.70
	54.90	2.0107	816834.70
	55.12	0.5673	230473.40
	55.18	0.6556	266318.30
	55.32	0.8575	348344.20
	55.41	0.4916	199695.50
	55.53	0.4344	176456.00
	55.62	0.2474	100498.70
	55.68	0.4757	193253.60
	55.79	0.5629	228662.80
	55.85	0.2329	94598.41
	55.91	0.7070	287205.70
	56.10	0.1496	60781.93
	56.23	0.4664	189450.70
	56.32	0.4811	195423.60
	56.41	0.1497	60823.84
	56.49	0.3831	155623.10
	56.62	0.8225	334118.70
	56.71	0.4074	165486.30
	56.87	0.2335	94865.24
	56.95	0.5166	209861.20
	57.06	0.1777	72180.85
	57.15	0.4149	168536.00
	57.25	0.0826	33542.76
	57.39	0.1389	56415.05
	57.51	0.0486	19732.55
	57.64	0.2214	89943.93
	57.74	0.1254	50957.91
	57.82	0.1687	68541.49
	57.94	0.1298	52710.07
	58.06	0.0575	23361.08
i-C18	58.21	0.8224	334103.00
	58.39	0.1996	81093.91
	58.51	0.1658	67359.71
	58.61	0.3217	130704.20
	58.69	0.1586	64437.31

Peak Name	Ret. Time	Area %	Area
	58.88	0.3734	151680.40
	58.99	0.5148	209138.40
Pristane	59.18	1.6052	652100.10
	59.25	0.3826	155431.10
	59.42	0.4456	181038.50
	59.70	0.3237	131496.70
	59.77	0.1888	76683.12
	59.90	0.1947	79085.34
	60.00	0.1400	56872.31
	60.14	0.1210	49161.34
	60.29	0.2691	109317.00
	60.42	0.1731	70314.15
	60.48	0.3012	122372.00
	60.69	0.1287	52286.61
Phytane	60.79	0.6513	264586.10
	61.04	0.1648	66951.12
	61.16	0.1656	67262.28
	61.31	0.0898	36484.73
	61.52	0.0776	31525.33
	61.65	0.0519	21072.36
	61.74	0.0388	15781.28
	61.98	0.3026	122907.00
	62.18	0.1836	74598.11
	62.27	0.2005	81453.49
	62.55	0.1259	51128.85
	62.63	0.1232	50045.95
	62.78	0.1431	58139.30
	63.13	0.2010	81647.29
	63.21	0.1449	58860.44
	63.53	0.0583	23680.11
	63.68	0.0528	21433.41
	63.74	0.1181	47973.74
	63.88	0.1332	54100.01
	63.94	0.1649	67001.66
	64.13	0.2768	112443.80
IS #3	64.29	1.1074	449882.30
	64.40	0.3250	132013.40
	64.61	0.2122	86214.52
	64.71	0.1791	72767.78
	64.89	0.1548	62890.32
	65.11	0.2022	82141.34
	65.27	0.3039	123468.50
	65.55	0.2561	104038.40
	65.68	0.2010	81663.52
	65.81	0.0361	14667.41
	65.93	0.0607	24647.05
	66.36	0.2760	112119.40
	66.84	0.1674	67986.77
	67.10	0.0459	18654.12
	67.29	0.0516	20945.69
	67.53	0.1194	48489.76
	67.81	0.0202	8210.54
	68.15	0.0368	14954.16
	68.29	0.1095	44492.84
	68.55	0.0383	15564.61
	68.80	0.0711	28883.44
	68.97	0.0668	27135.68
	69.47	0.1536	62383.39
	69.59	0.1352	54906.05
	70.26	0.0624	25357.01
	71.26	0.1083	43979.43
	72.66	0.0677	27493.68
	73.04	0.1163	47226.97
	73.40	0.0903	36678.59
	73.92	0.0711	28900.45
	74.41	0.0652	26480.11
	75.41	0.0350	14227.24

Peak Name	Ret. Time	Area %	Area
	75.68	0.0464	18852.04
	76.29	0.0689	27974.50
	76.85	0.1762	71566.63
	77.23	0.1967	79889.70
	77.62	0.1200	48766.79
	78.12	0.0637	25869.23
	78.63	0.0719	29217.90
	79.26	0.0424	17226.71
	79.66	0.1364	55416.50
	80.69	0.0485	19701.13
	81.37	0.4083	165858.90
	82.66	0.0593	24092.18
	83.51	0.1495	60733.78
	83.80	0.4949	201055.00
	86.98	0.1360	55234.20
	87.37	0.0839	34085.75
	89.84	0.0942	38266.25

Total Area = 4.062363E+07 Total Height = 1.132216E+07 Total Amount = 3

1/16/2016

ZymaX ID	17836-15
Sample ID	MW-326

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.00
Aromatics / Naphthenes	0.00

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.00
% Isoparaffinic	0.00
% Aromatic	0.00
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-15
Sample ID		MW-326
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

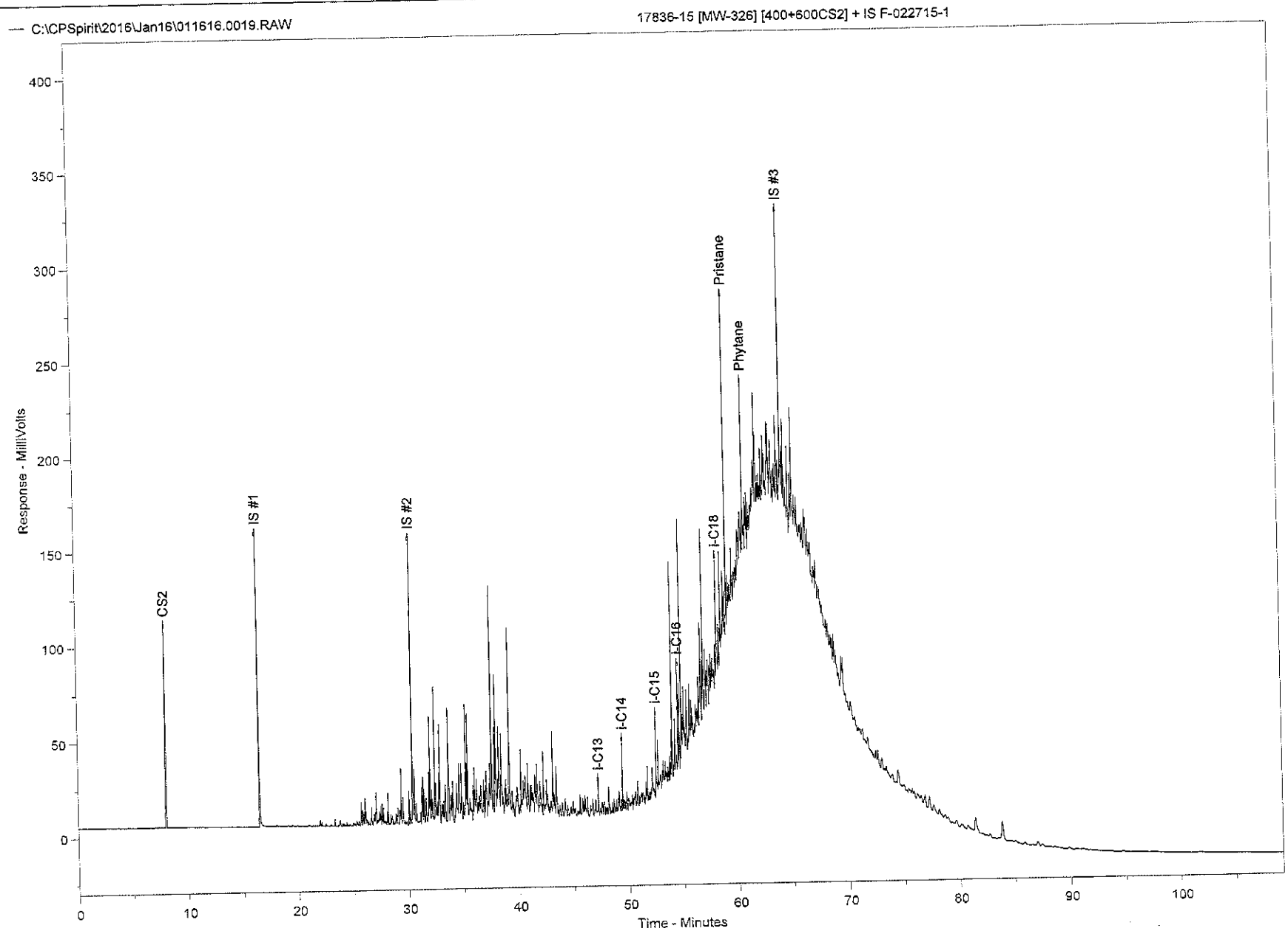
1/16/2016

ZymaX ID		17836-15
Sample ID		MW-326
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	0.00
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-15
Sample ID		MW-326
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	0.00
79	1,3-Diethylbenzene	0.00
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	0.00
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.00
88	1,2,3,5-Tetramethylbenzene	0.00
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report



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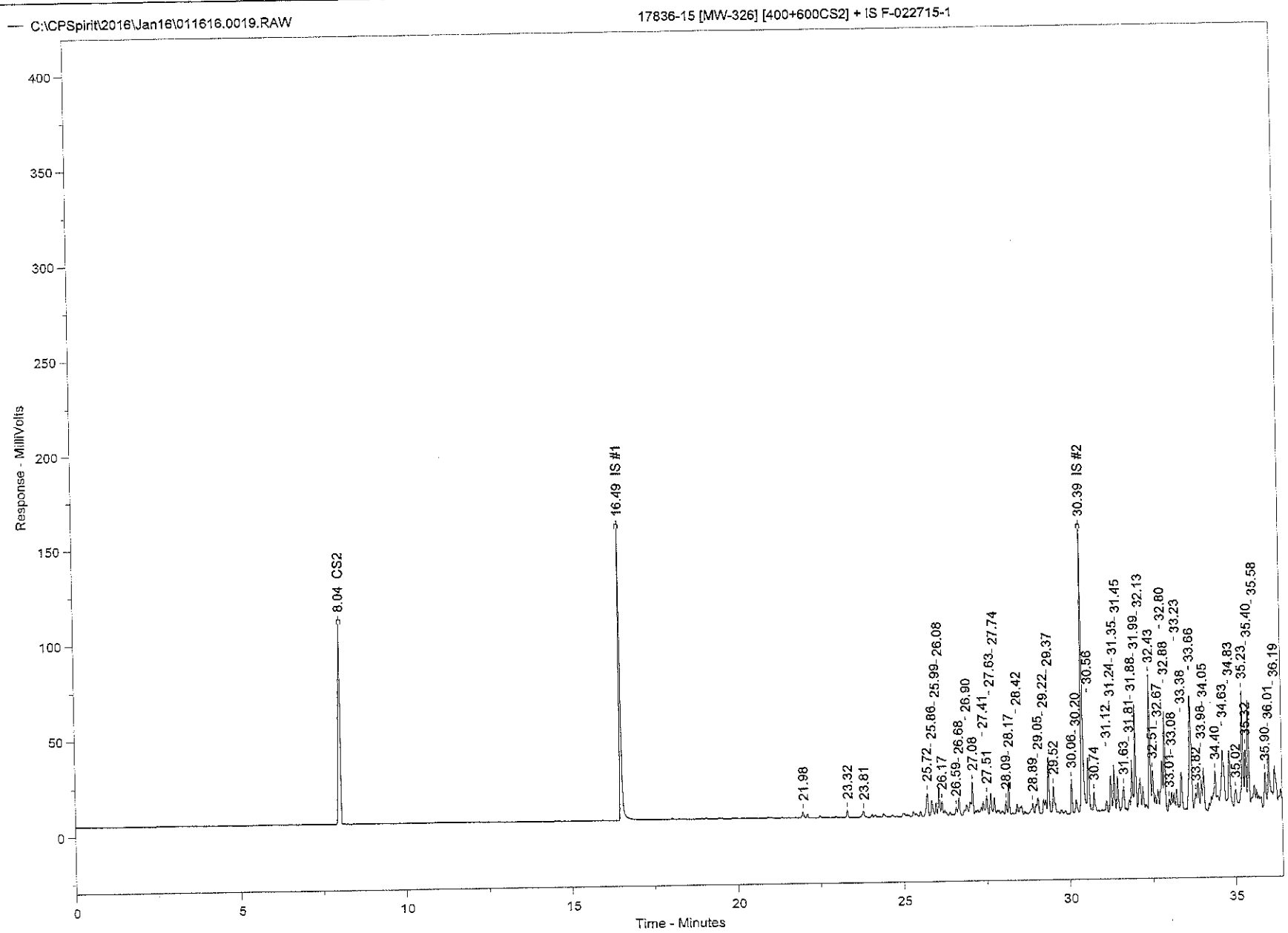
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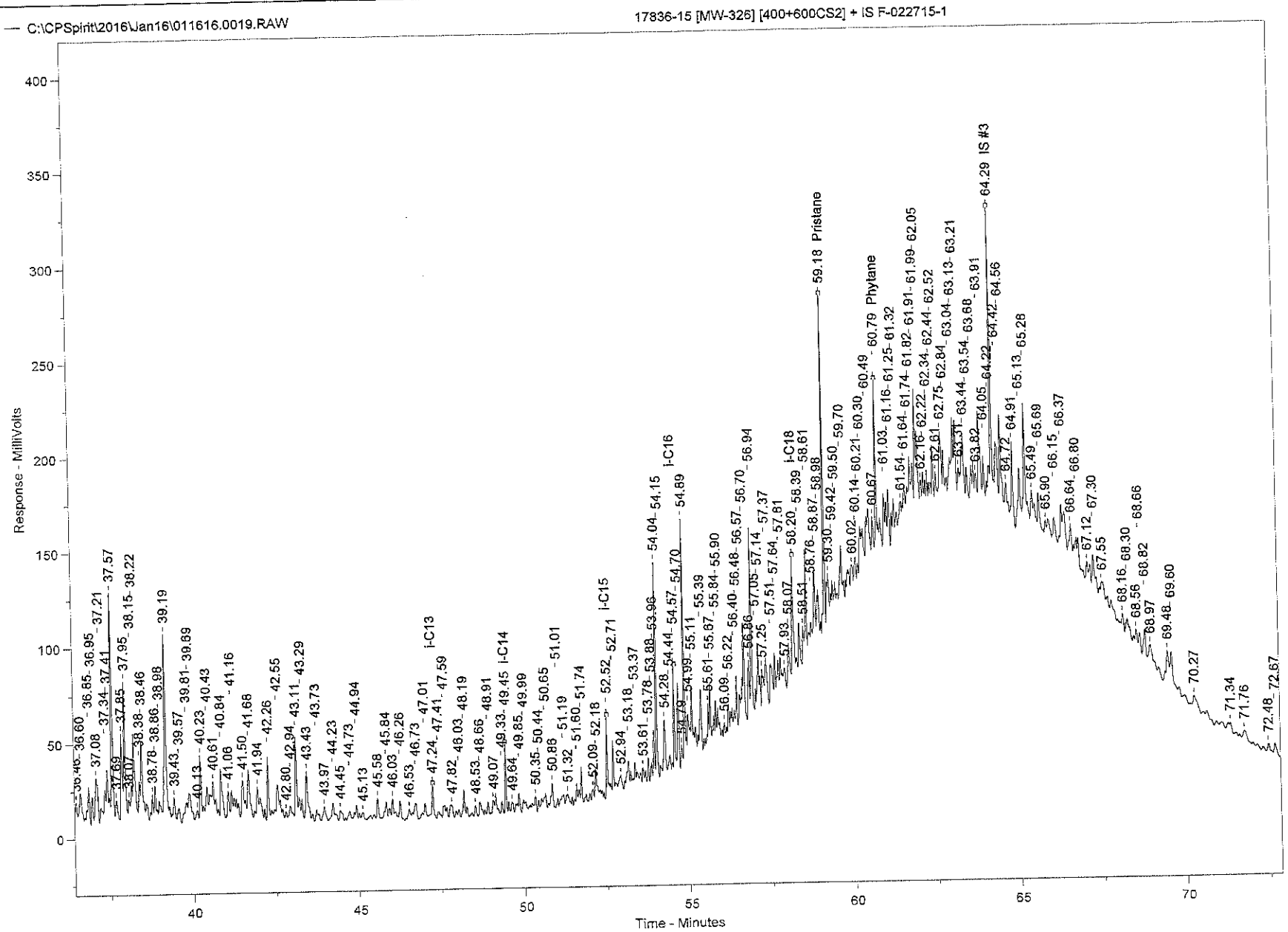
17836-15 [MW-326] [400+600CS2] + IS F-022715-1
Response - MilliVolts
Time - Minutes
8.04 CS2
16.49 IS #1
30.39 IS #2
21.98
23.32
23.81
25.72
25.86
25.99
26.08
26.17
26.59
26.68
26.90
27.08
27.41
27.51
27.63
27.74
28.09
28.17
28.42
28.89
29.05
29.22
29.37
29.52
30.06
30.20
30.56
30.74
31.12
31.24
31.35
31.45
31.63
31.81
31.88
31.99
32.13
32.43
32.51
32.67
32.80
32.88
33.01
33.08
33.23
33.38
33.66
33.82
33.98
34.05
34.40
34.63
34.83
35.02
35.23
35.32
35.40
35.58
35.90
36.01
36.19



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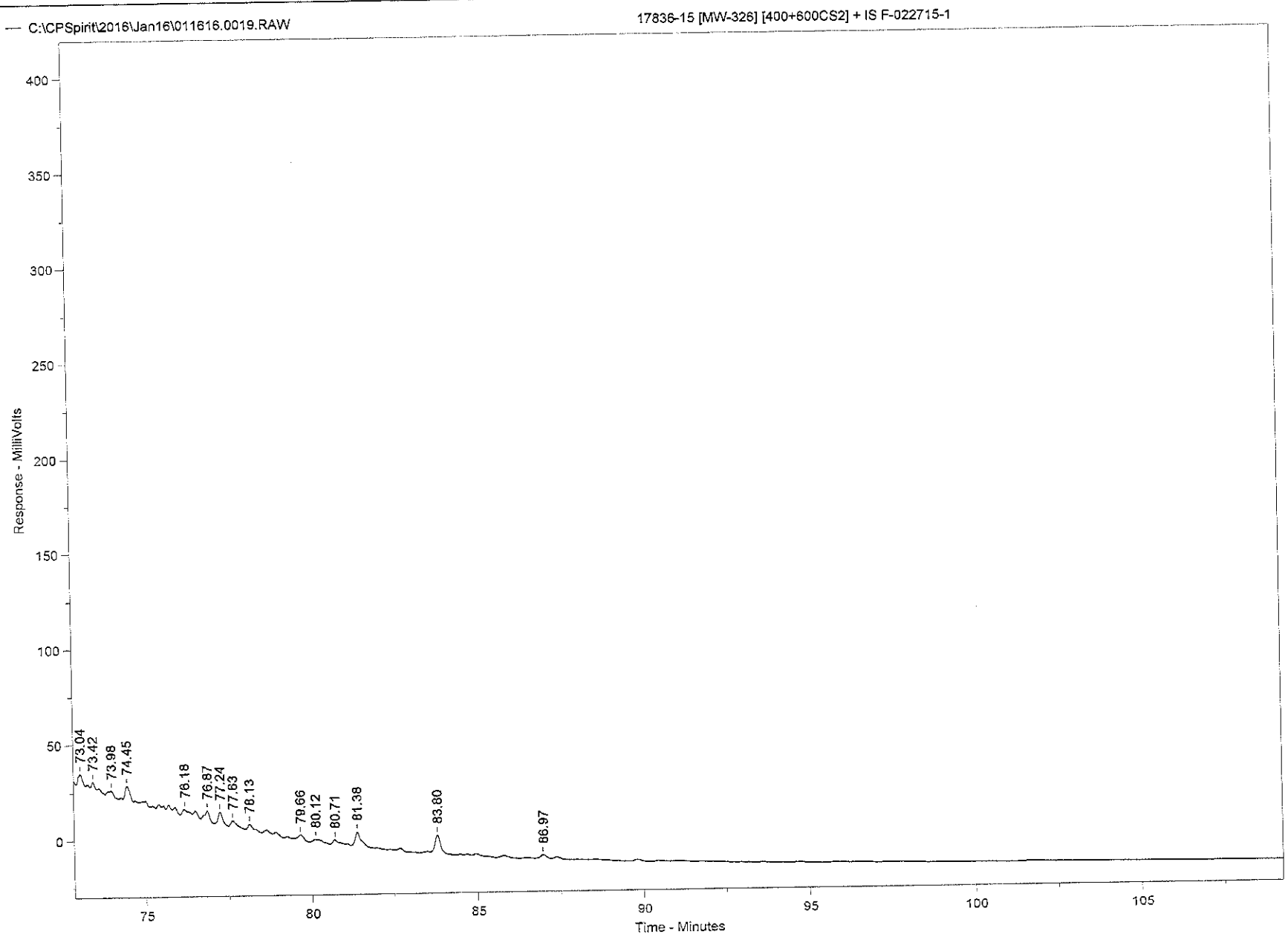

C:\CPSpirit\2016\Jan16\011616.0019.RAW
17836-15 [MW-326] [400+600CS2] + IS F-022715-1
Response - MilliVolts
400
350
300
250
200
150
100
50
0
73.04
73.42
73.98
74.45
76.18
76.87
77.24
77.63
78.13
79.66
80.12
80.71
81.38
83.80
86.97
75
80
85
90
95
100
105
Time - Minutes

Sample Name = **17836-15 [MW-326] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0019.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/18/2016 8:28:55 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.04	1.7472	429082.70
IS #1	16.49	1.9045	467706.60
	21.98	0.0414	10168.18
	23.32	0.0425	10431.36
	23.81	0.0579	14231.17
	25.72	0.1878	46128.95
	25.86	0.1157	28424.66
	25.99	0.0631	15484.70
	26.08	0.1492	36650.84
	26.17	0.0768	18867.47
	26.59	0.0522	12809.02
	26.68	0.1181	29007.75
	26.90	0.1210	29714.24
	27.08	0.2860	70227.10
	27.41	0.0558	13697.68
	27.51	0.1071	26307.62
	27.63	0.1310	32171.02
	27.74	0.0946	23233.13
	28.09	0.0747	18354.61
	28.17	0.1817	44612.32
	28.42	0.0455	11176.28
	28.89	0.0966	23721.04
	29.05	0.1651	40547.79
	29.22	0.0875	21480.60
	29.37	0.3295	80926.03
	29.52	0.2058	50552.15
	30.06	0.1906	46817.41
	30.20	0.1093	26853.68
IS #2	30.39	1.8964	465715.20
	30.56	0.4558	111947.10
	30.74	0.1378	33837.37
	31.12	0.0592	14526.67
	31.24	0.2458	60372.82
	31.35	0.2950	72456.40
	31.45	0.2396	58850.22
	31.63	0.2276	55890.48
	31.81	0.0723	17757.96
	31.88	0.2919	71676.69
	31.99	0.6260	153734.90
	32.13	0.2297	56410.44
	32.43	0.7630	187371.20
	32.51	0.2879	70710.55
	32.67	0.1278	31386.76
	32.80	0.4320	106085.10
	32.88	0.6272	154018.20
	33.01	0.0769	18887.74
	33.08	0.1232	30257.74
	33.23	0.1638	40233.20
	33.38	0.3046	74802.46
	33.66	1.1622	285401.50
	33.82	0.1633	40105.29
	33.98	0.1941	47659.86
	34.05	0.2688	66023.34
	34.40	0.1561	38332.72
	34.63	0.5905	145019.30

Peak Name	Ret. Time	Area %	Area
	34.83	0.4408	108261.10
	35.02	0.1626	39925.89
	35.23	0.7612	186926.80
	35.32	0.3444	84584.90
	35.40	0.6149	150996.00
	35.58	0.0835	20507.79
	35.90	0.2692	66114.29
	36.01	0.5675	139370.60
	36.19	0.4398	107996.50
	36.46	0.2258	55450.73
	36.60	0.4551	111772.30
	36.85	0.3618	88858.09
	36.95	0.1982	48684.37
	37.08	0.5969	146578.70
	37.21	0.2104	51675.64
	37.34	0.2923	71786.18
	37.41	0.5876	144313.80
	37.57	1.6222	398369.40
	37.69	0.2721	66828.26
	37.85	0.7323	179828.20
	37.95	1.0108	248232.10
	38.07	0.2037	50014.73
	38.15	0.2939	72181.10
	38.22	0.8955	219912.80
	38.38	0.3061	75181.12
	38.46	0.7451	182979.50
	38.78	0.2861	70254.39
	38.86	0.3411	83779.09
	38.98	0.3151	77373.13
	39.19	1.5842	389048.60
	39.43	0.2536	62287.16
	39.57	0.1594	39148.87
	39.81	0.2805	68891.87
	39.89	0.3868	94997.83
	40.13	0.0722	17737.30
	40.23	0.3967	97433.09
	40.43	0.1930	47387.32
	40.61	0.1451	35636.15
	40.84	0.4250	104378.10
	41.06	0.1476	36237.50
	41.16	0.0964	23663.30
	41.50	0.4697	115341.50
	41.68	0.4917	120760.60
	41.94	0.1205	29583.25
	42.26	0.3821	93836.55
	42.55	0.2926	71856.86
	42.80	0.0360	8837.57
	42.94	0.1502	36888.48
	43.11	0.5715	140360.30
	43.29	0.1183	29049.46
	43.43	0.4508	110696.30
	43.73	0.1370	33638.57
	43.97	0.1752	43022.40
	44.23	0.1868	45869.09
	44.45	0.1276	31342.48
	44.73	0.0997	24481.26
	44.94	0.0996	24456.66
	45.13	0.0830	20392.50
	45.58	0.1453	35671.16
	45.84	0.1275	31313.33
	46.03	0.0905	22231.43
	46.26	0.1252	30737.63
	46.53	0.0944	23171.38
	46.73	0.1804	44307.09
	47.01	0.1990	48874.25
	47.24	0.2693	66124.48
i-C13	47.41	0.0852	20916.52

Peak Name	Ret. Time	Area %	Area
	47.59	0.1355	33270.32
	47.82	0.1722	42293.34
	48.03	0.0993	24387.21
	48.19	0.1640	40264.45
	48.53	0.0709	17418.87
	48.66	0.1498	36798.93
	48.91	0.0780	19144.38
	49.07	0.0605	14846.24
	49.33	0.0822	20175.18
i-C14	49.45	0.3668	90071.76
	49.64	0.1108	27200.29
	49.85	0.1294	31773.63
	49.99	0.2059	50558.81
	50.35	0.1290	31686.05
	50.44	0.0650	15952.68
	50.65	0.3060	75144.29
	50.86	0.2386	58602.57
	51.01	0.0603	14805.66
	51.19	0.1876	46064.68
	51.32	0.1636	40173.66
	51.60	0.1088	26729.18
	51.74	0.1766	43367.34
	52.09	0.0665	16322.15
	52.18	0.1931	47413.96
i-C15	52.52	0.5678	139445.40
	52.71	0.3785	92949.45
	52.94	0.2069	50807.39
	53.18	0.2343	57533.50
	53.37	0.0715	17554.35
	53.61	0.0848	20827.30
	53.78	0.1109	27244.53
	53.88	0.1182	29037.19
	53.96	0.2855	70114.97
	54.04	1.0220	250980.50
	54.15	0.0850	20875.81
	54.28	0.4636	113845.20
	54.44	0.1725	42372.61
i-C16	54.57	0.5112	125552.90
	54.70	0.5586	137188.60
	54.79	0.1538	37768.96
	54.89	1.2131	297922.20
	54.99	0.5535	135929.90
	55.11	0.5084	124849.60
	55.39	0.6137	150720.00
	55.61	0.2527	62055.70
	55.67	0.3910	96029.71
	55.84	0.1886	46317.43
	55.90	0.2926	71851.24
	56.09	0.0738	18123.76
	56.22	0.2619	64324.64
	56.40	0.1215	29826.31
	56.48	0.2459	60378.01
	56.57	0.2876	70637.46
	56.70	0.7430	182477.30
	56.86	0.4291	105371.30
	56.94	1.0416	255806.60
	57.05	0.1003	24630.46
	57.14	0.5831	143193.20
	57.25	0.3359	82493.22
	57.37	0.4652	114239.60
	57.51	0.4307	105769.80
	57.64	0.3212	78880.80
	57.81	0.3149	77345.48
	57.93	0.1902	46700.97
	58.07	0.3416	83899.74
i-C18	58.20	0.9922	243667.20
	58.39	0.3226	79218.60

Peak Name	Ret. Time	Area %	Area
	58.51	0.2080	51070.95
	58.61	0.5991	147135.70
	58.76	0.3669	90107.80
	58.87	0.5578	136983.10
	58.98	0.4584	112572.20
Pristane	59.18	1.6523	405764.30
	59.30	0.5431	133384.20
	59.42	0.3350	82263.13
	59.50	0.2110	51818.46
	59.70	0.6129	150520.50
	60.02	0.1607	39477.03
	60.14	0.1568	38512.50
	60.21	0.0539	13232.42
	60.30	0.6028	148047.20
	60.49	0.1099	26990.63
	60.67	0.2267	55675.57
Phytane	60.79	0.9521	233822.10
	61.03	0.3581	87940.71
	61.16	0.3149	77330.54
	61.25	0.1297	31848.16
	61.32	0.1941	47672.16
	61.54	0.2777	68203.99
	61.64	0.3115	76496.74
	61.74	0.3496	85848.30
	61.82	0.4507	110675.40
	61.91	0.5511	135346.50
	61.99	0.7524	184778.40
	62.05	0.7556	185564.20
	62.16	0.3301	81074.84
	62.22	0.3745	91971.95
	62.34	0.2923	71785.23
	62.44	0.3201	78599.11
	62.52	0.5770	141712.20
	62.61	0.4890	120093.10
	62.75	1.1814	290118.00
	62.84	0.5628	138207.00
	63.04	0.7390	181484.70
	63.13	0.9766	239821.70
	63.21	0.9240	226917.00
	63.31	0.6723	165095.40
	63.44	1.1301	277536.10
	63.54	0.6038	148274.20
	63.68	0.5506	135208.20
	63.82	0.5474	134422.20
	63.91	1.2239	300566.80
	64.05	0.6461	158669.00
	64.22	0.5713	140288.40
IS #3	64.29	2.0471	502729.50
	64.42	1.0651	261556.10
	64.56	1.1805	289903.80
	64.72	0.5920	145386.80
	64.91	0.6874	168804.10
	65.13	0.6219	152716.30
	65.28	1.0458	256826.10
	65.49	0.1362	33436.31
	65.69	0.2185	53657.39
	65.90	0.0531	13029.66
	66.15	0.2082	51118.55
	66.37	0.1200	29462.80
	66.64	0.2290	56247.21
	66.80	0.0556	13651.53
	67.12	0.1382	33948.87
	67.30	0.3791	93089.84
	67.55	0.1374	33733.31
	68.16	0.0902	22162.87
	68.30	0.2426	59572.64
	68.56	0.1347	33076.37

Peak Name	Ret. Time	Area %	Area
	68.66	0.1494	36683.10
	68.82	0.2469	60622.45
	68.97	0.3005	73805.20
	69.48	0.4220	103646.40
	69.60	0.3398	83436.30
	70.27	0.1879	46154.12
	71.34	0.1373	33728.26
	71.76	0.1390	34147.41
	72.48	0.1080	26510.93
	72.67	0.1817	44615.94
	73.04	0.2098	51534.94
	73.42	0.0752	18479.08
	73.98	0.1456	35755.55
	74.45	0.2871	70505.88
	76.18	0.2149	52772.43
	76.87	0.2592	63657.34
	77.24	0.2533	62217.03
	77.63	0.1821	44715.10
	78.13	0.1450	35617.45
	79.66	0.1284	31541.41
	80.12	0.1400	34385.21
	80.71	0.1740	42735.01
	81.38	0.4033	99047.95
	83.80	0.4258	104562.60
	86.97	0.0925	22716.72

Total Area = 2.455805E+07 Total Height = 6541674 Total Amount = 0

1/16/2016

ZymaX ID	17836-16
Sample ID	MW-170

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.00
Aromatics / Naphthenes	0.00

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.00
% Isoparaffinic	0.00
% Aromatic	0.00
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-16
Sample ID		MW-170
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

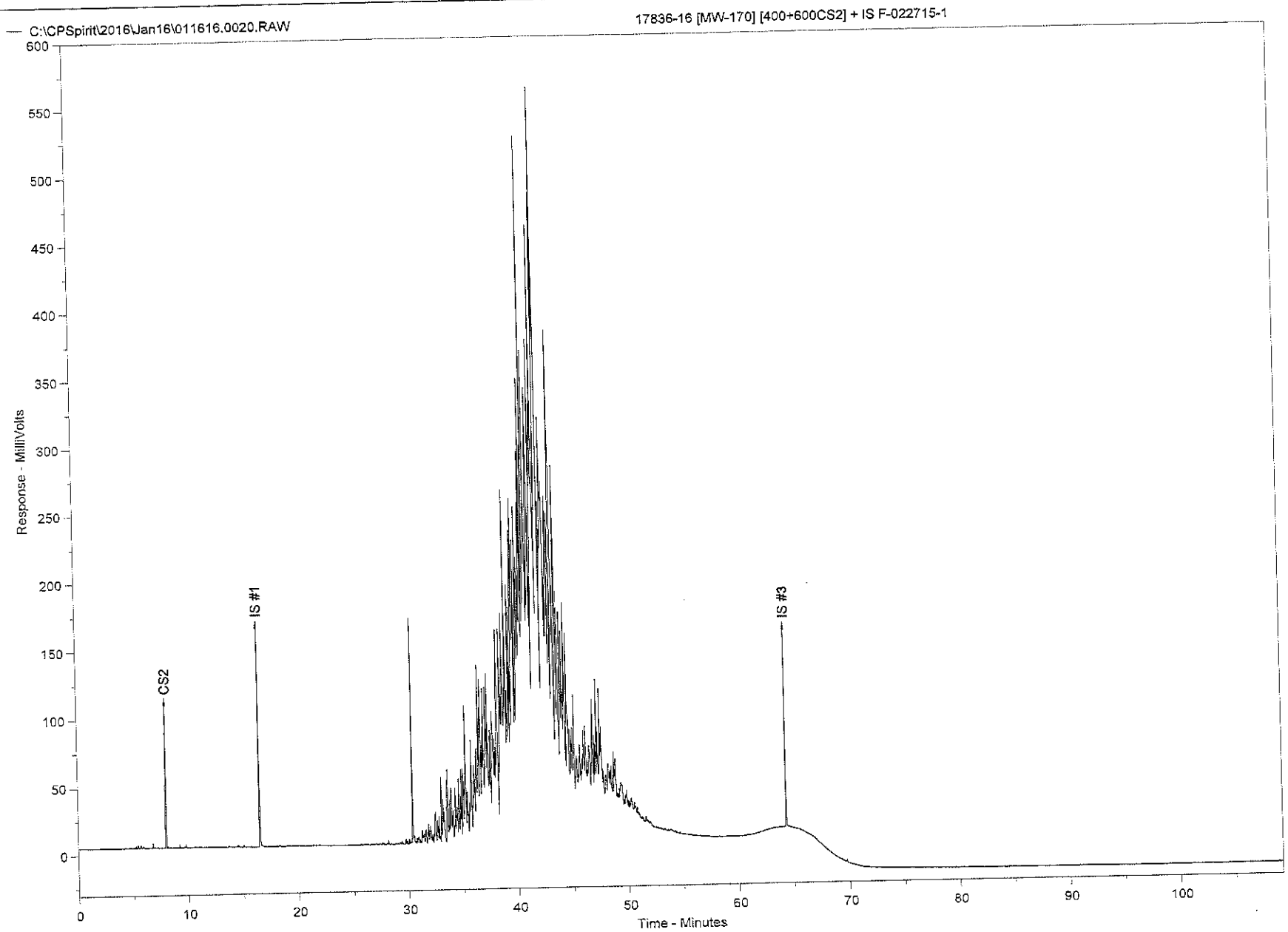
1/16/2016

ZymaX ID		17836-16
Sample ID		MW-170
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	0.00
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-16
Sample ID		MW-170
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	0.00
79	1,3-Diethylbenzene	0.00
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	0.00
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.00
88	1,2,3,5-Tetramethylbenzene	0.00
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report



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Sample Name = **17836-16 [MW-170] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0020.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/18/2016 10:34:37 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.04	0.5631	437352.30
IS #1	16.49	0.6497	504642.30
	29.75	0.0123	9549.36
	30.07	0.0133	10333.12
	30.40	0.5806	450914.20
	30.79	0.0138	10732.90
	31.26	0.0584	45348.39
	31.59	0.0674	52314.14
	31.78	0.0346	26860.19
	32.02	0.1093	84902.89
	32.20	0.0313	24317.51
	32.34	0.0178	13828.84
	32.43	0.0254	19705.56
	32.68	0.0853	66226.74
	32.80	0.0723	56174.95
	33.01	0.1873	145510.00
	33.16	0.1393	108207.40
	33.25	0.1770	137457.20
	33.60	0.4077	316688.00
	33.78	0.0711	55227.20
	33.87	0.0373	28972.93
	34.03	0.0212	16431.31
	34.29	0.1623	126084.50
	34.41	0.0325	25256.71
	34.61	0.1773	137720.80
	34.79	0.1636	127069.10
	34.86	0.1684	130783.00
	35.00	0.3401	264173.00
	35.13	0.1136	88265.95
	35.25	0.6395	496677.20
	35.41	0.2348	182359.50
	35.59	0.0757	58774.17
	35.79	0.4918	382000.90
	36.02	0.5701	442826.60
	36.20	0.1961	152344.00
	36.25	0.2734	212374.30
	36.44	0.7729	600288.40
	36.59	0.6029	468233.60
	36.65	0.4461	346511.00
	36.77	0.3631	281995.40
	36.84	0.2940	228363.50
	36.92	0.5796	450164.80
	37.06	0.2334	181249.20
	37.13	0.4964	385570.50
	37.28	0.7227	561299.40
	37.53	0.4186	325145.50
	37.74	1.1243	873258.00
	37.95	0.3526	273881.30
	38.05	0.2487	193153.30
	38.19	1.3771	1069559.00
	38.36	0.1581	122815.80
	38.46	1.1078	860454.50
	38.58	0.3894	302450.30
	38.64	0.3474	269817.40
	38.71	1.0703	831263.60

Peak Name	Ret. Time	Area %	Area
	38.89	0.8753	679824.50
	39.00	1.4192	1102291.00
	39.11	0.6797	527896.50
	39.28	1.1906	924719.80
	39.40	0.7711	598879.30
	39.47	0.5054	392546.50
	39.61	1.9396	1506480.00
	39.72	1.7758	1379269.00
	39.87	1.0386	806702.70
	40.06	2.0036	1556156.00
	40.19	1.5595	1211215.00
	40.32	1.4484	1124985.00
	40.41	1.2476	968978.30
	40.49	1.3718	1065480.00
	40.59	1.6635	1292007.00
	40.72	1.9915	1546744.00
	40.82	3.4611	2688196.00
	40.98	2.1184	1645318.00
	41.07	1.1676	906831.90
	41.20	1.8013	1399045.00
	41.26	1.6169	1255856.00
	41.34	0.9042	702246.80
	41.43	0.7562	587313.10
	41.51	1.7980	1396483.00
	41.65	2.8900	2244614.00
	41.75	2.8124	2184368.00
	41.83	0.9635	748356.20
	41.92	1.3826	1073848.00
	42.03	3.3057	2567512.00
	42.12	4.1944	3257744.00
	42.29	1.0745	834532.90
	42.39	1.3483	1047197.00
	42.46	4.3382	3369414.00
	42.73	1.1196	869579.30
	42.88	2.4139	1874867.00
	42.99	0.8953	695333.00
	43.06	1.2016	933236.10
	43.24	3.7012	2874655.00
	43.38	0.7840	608919.40
	43.58	2.2254	1728457.00
	43.72	1.4920	1158851.00
	43.97	1.3003	1009933.00
	44.11	0.7882	612157.70
	44.25	0.4098	318257.00
	44.34	0.8953	695356.90
	44.52	0.9609	746311.40
	44.85	0.2377	184613.30
	44.95	0.1640	127396.70
	45.01	0.1943	150926.40
	45.16	0.4165	323492.00
	45.37	0.2381	184953.60
	45.62	0.1097	85239.77
	45.88	0.0987	76683.69
	46.01	0.1433	111314.80
	46.16	0.2399	186305.40
	46.42	0.0375	29097.71
	46.50	0.0518	40254.68
	46.82	0.5373	417294.60
	46.97	0.1307	101527.10
	47.05	0.2088	162160.90
	47.18	0.3996	310380.10
	47.27	0.2225	172791.50
	47.46	0.5237	406777.00
	47.60	0.3489	271002.70
	47.78	0.0857	66542.84
	47.99	0.0877	68151.66
	48.22	0.2692	209050.00

Peak Name	Ret. Time	Area %	Area
	48.49	0.0939	72943.24
	48.63	0.0628	48762.00
	48.72	0.1365	106021.30
	48.86	0.2625	203912.20
	49.20	0.0373	28945.53
	49.34	0.2316	179917.00
	49.71	0.0150	11621.54
	49.86	0.0310	24060.69
	50.28	0.0370	28733.57
	50.57	0.0177	13719.54
	51.58	0.0233	18094.34
IS #3	64.28	0.5837	453366.90

Total Area = 7.766891E+07 Total Height = 1.483667E+07 Total Amount = 0

1/16/2016

ZymaX ID	17836-17
Sample ID	RW-15

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.00
Aromatics / Naphthenes	0.00

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.00
% Isoparaffinic	0.00
% Aromatic	0.00
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-17
Sample ID		RW-15
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

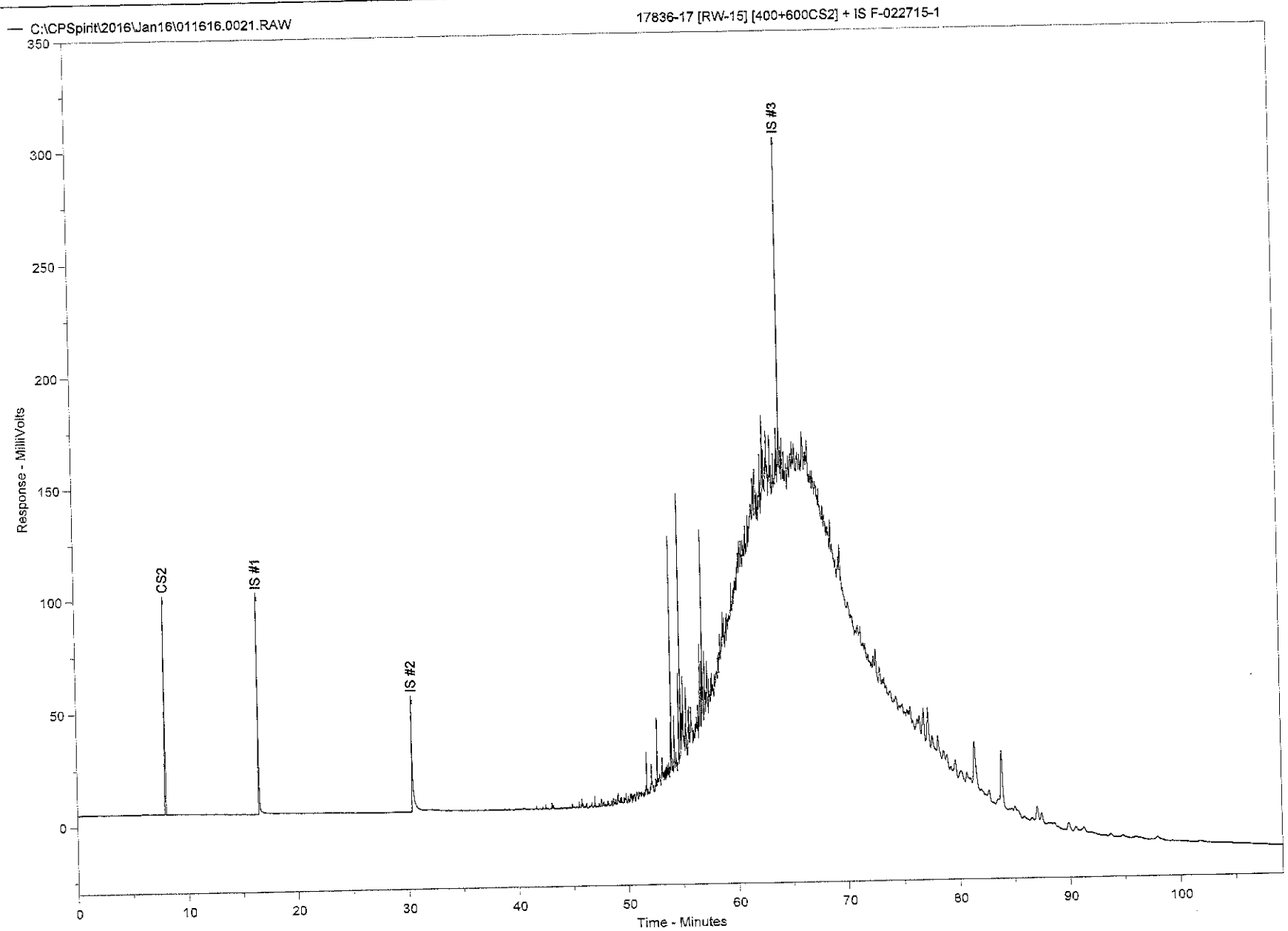
1/16/2016

ZymaX ID		17836-17
Sample ID		RW-15
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	0.00
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-17
Sample ID		RW-15
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	0.00
79	1,3-Diethylbenzene	0.00
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	0.00
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.00
88	1,2,3,5-Tetramethylbenzene	0.00
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report



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Heading 1 =
Heading 2 =

Acquisition Port = DP#

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Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/18/2016 12:40:04 PM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.03	3.4100	340730.70
IS #1	16.50	3.1284	312595.80
IS #2	30.41	3.4282	342550.30
	43.11	0.0774	7735.01
	45.58	0.0851	8504.37
	45.84	0.1148	11471.26
	47.01	0.1749	17476.59
	47.60	0.1999	19978.86
	48.54	0.1085	10844.03
	48.69	0.1383	13823.88
	49.15	0.2097	20951.66
	50.26	0.0610	6099.15
	50.85	0.2080	20779.64
	51.74	0.3804	38011.25
	52.10	0.1438	14371.98
	52.18	0.5356	53517.56
	52.55	0.1017	10165.32
	52.72	0.5889	58844.93
	53.17	0.4172	41682.48
	53.43	0.1118	11166.47
	53.52	0.1485	14834.64
	53.61	0.2044	20421.04
	53.79	0.1636	16342.94
	53.95	0.6300	62951.16
	54.04	2.1418	214007.80
	54.29	0.5967	59624.65
	54.44	0.1994	19923.77
	54.71	1.1183	111743.60
	54.89	2.4634	246141.30
	55.02	0.9633	96257.53
	55.11	0.9360	93524.07
	55.39	1.2089	120789.60
	55.61	0.4426	44228.20
	55.67	0.3540	35372.77
	55.84	0.6684	66782.64
	56.10	0.2968	29653.68
	56.29	0.3538	35351.05
	56.47	0.3578	35747.27
	56.57	0.3411	34087.29
	56.70	1.5499	154869.50
	56.83	1.1477	114682.10
	56.94	2.3709	236899.30
	57.14	0.9092	90845.45
	57.37	1.3285	132741.90
	57.52	0.5270	52658.56
	57.75	0.2374	23719.94
	58.05	0.3162	31596.49
	58.26	0.5533	55288.51
	58.39	0.3207	32047.42
	58.60	0.2369	23670.47
	58.76	0.1786	17842.29
	58.88	1.0376	103676.20
	59.18	0.4570	45664.65
	59.26	0.4065	40613.37
	59.70	0.4785	47814.25

Peak Name	Ret. Time	Area %	Area
	59.88	0.2484	24815.88
	59.94	0.1261	12598.67
	60.04	0.2298	22957.23
	60.38	0.9114	91071.59
	60.50	0.9702	96942.29
	60.67	0.5738	57337.77
	60.84	0.1996	19948.27
	61.02	0.1774	17724.26
	61.32	0.4796	47921.74
	61.40	0.2481	24789.26
	61.64	1.3746	137346.40
	61.82	0.5974	59693.62
	61.92	0.5889	58842.23
	62.00	0.2072	20700.42
	62.15	0.2234	22321.79
	62.23	0.3107	31050.18
	62.34	0.4235	42320.20
	62.46	0.4393	43897.39
	62.52	0.6184	61792.01
	62.61	0.2266	22646.87
	62.76	1.5693	156802.20
	62.84	0.4694	46898.09
	63.04	0.4787	47831.75
	63.14	0.4983	49788.63
	63.31	0.3701	36985.47
	63.44	0.5875	58704.00
	63.68	0.1917	19159.26
	63.75	0.3232	32289.44
	63.97	0.4581	45776.51
	64.05	0.7521	75152.79
	64.21	0.5478	54735.20
IS #3	64.29	3.8826	387955.80
	64.45	0.7389	73828.60
	64.57	1.0156	101480.30
	64.72	0.5108	51039.65
	64.92	0.7236	72299.93
	65.13	0.9502	94947.80
	65.36	1.6719	167052.20
	65.50	0.9664	96567.95
	65.69	1.1660	116502.30
	65.97	1.9703	196874.30
	66.15	0.9949	99413.64
	66.42	2.3552	235329.90
	66.65	1.1917	119078.10
	66.86	0.9580	95721.33
	67.18	0.4883	48789.21
	67.31	0.2317	23155.68
	67.55	0.2666	26643.44
	67.82	0.4232	42288.52
	68.16	0.2095	20936.48
	68.30	0.2259	22572.67
	68.49	0.0747	7468.82
	68.83	0.5981	59761.48
	68.96	0.5744	57390.15
	69.49	0.6830	68240.84
	69.62	0.6346	63405.72
	70.29	0.3830	38269.30
	71.13	0.2793	27906.46
	71.79	0.2505	25033.98
	72.51	0.4473	44699.23
	72.70	0.8432	84251.52
	73.03	0.6148	61433.47
	74.47	0.3943	39398.90
	75.43	0.2251	22489.47
	75.73	0.4719	47157.27
	76.34	0.5663	56586.52
	76.53	0.6777	67718.34

Peak Name	Ret. Time	Area %	Area
	76.89	1.4120	141085.10
	77.28	1.5968	159552.50
	77.65	0.8733	87262.46
	78.16	0.9804	97965.41
	78.66	0.4096	40928.77
	79.70	0.6966	69601.38
	80.74	1.2275	122652.80
	81.42	3.5013	349846.70
	82.72	0.5624	56195.33
	83.87	2.7991	279687.70
	85.02	0.6570	65649.68
	87.05	0.8437	84300.48
	87.43	0.5522	55173.28
	89.88	0.5393	53890.36

Total Area = 9992038 Total Height = 2289296 Total Amount = 0

1/16/2016

ZymaX ID	17836-18
Sample ID	MW-324

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	1.36
Aromatics / Naphthenes	2.02

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	1.34

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.00
% Isoparaffinic	13.84
% Aromatic	57.59
% Naphthenic	28.57
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-18
Sample ID		MW-324
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	9.19
I.S. #1	à,à,à-Trifluorotoluene	0.00

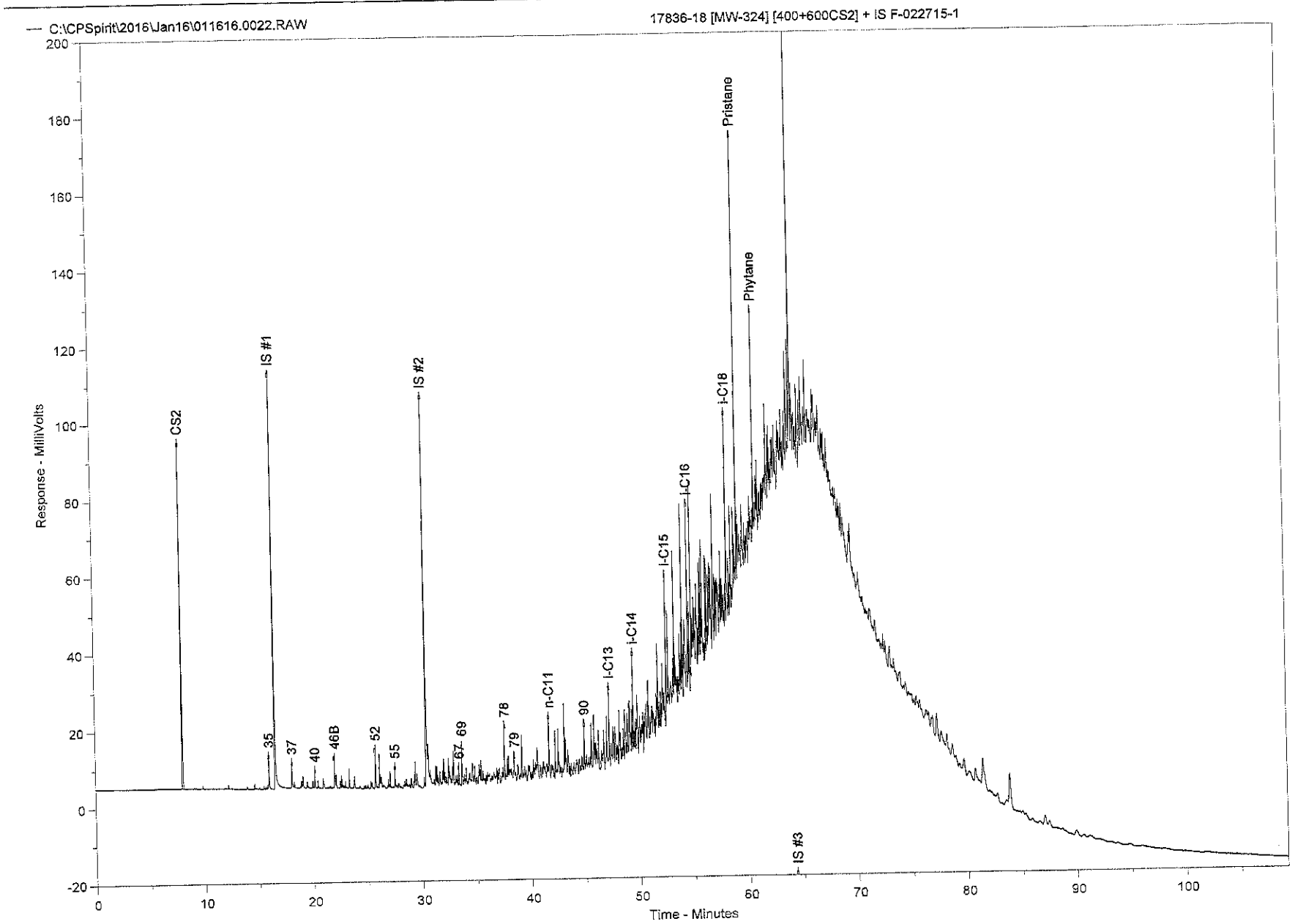
1/16/2016

ZymaX ID		17836-18
Sample ID		MW-324
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	6.87
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	4.65
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	9.13
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	12.57
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	5.50
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	4.88
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	13.75
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-18
Sample ID		MW-324
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	16.81
79	1,3-Diethylbenzene	4.53
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	0.00
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.00
88	1,2,3,5-Tetramethylbenzene	0.00
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	12.12
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report



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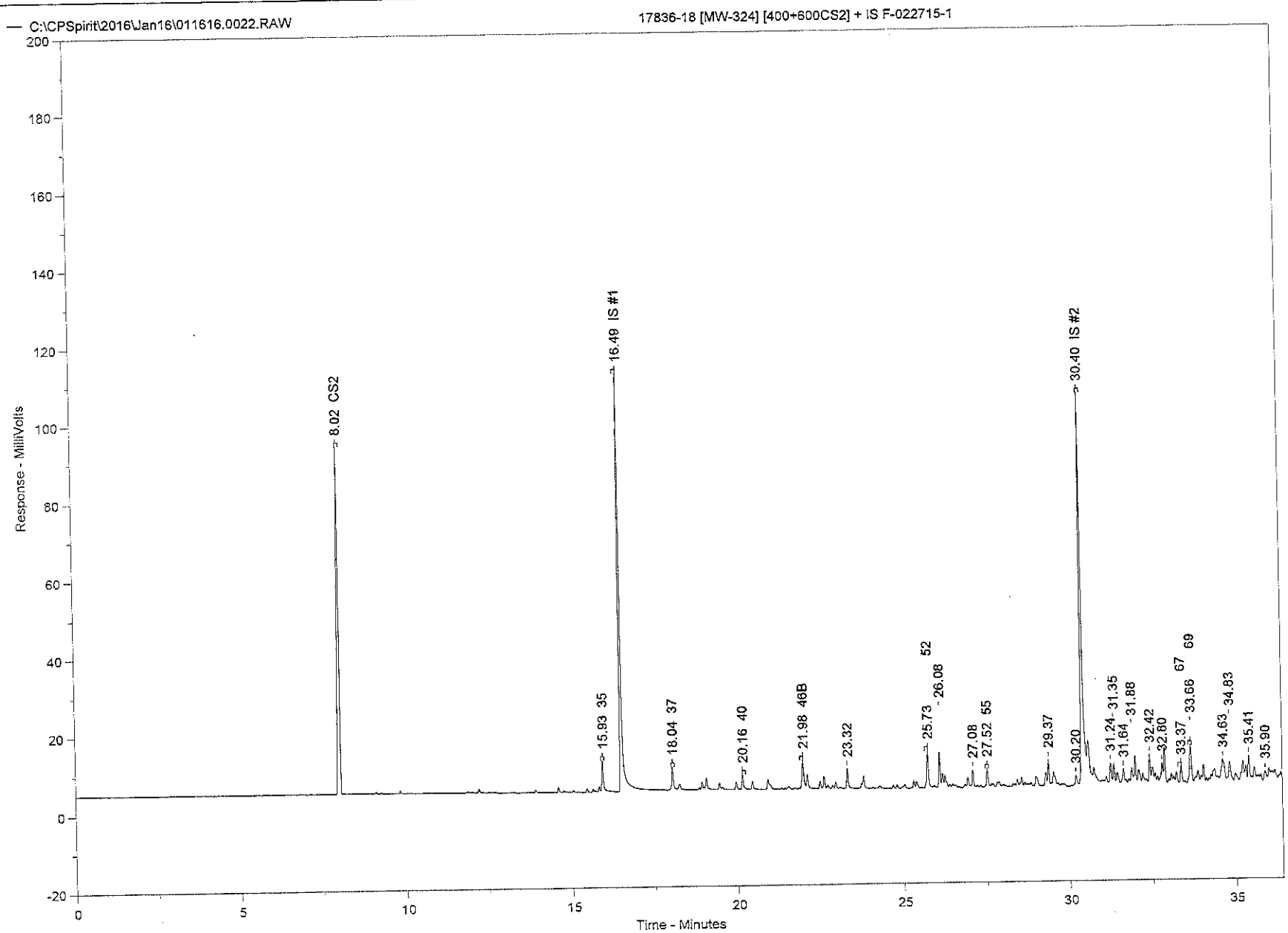
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Response - MilliVolts
Time - Minutes
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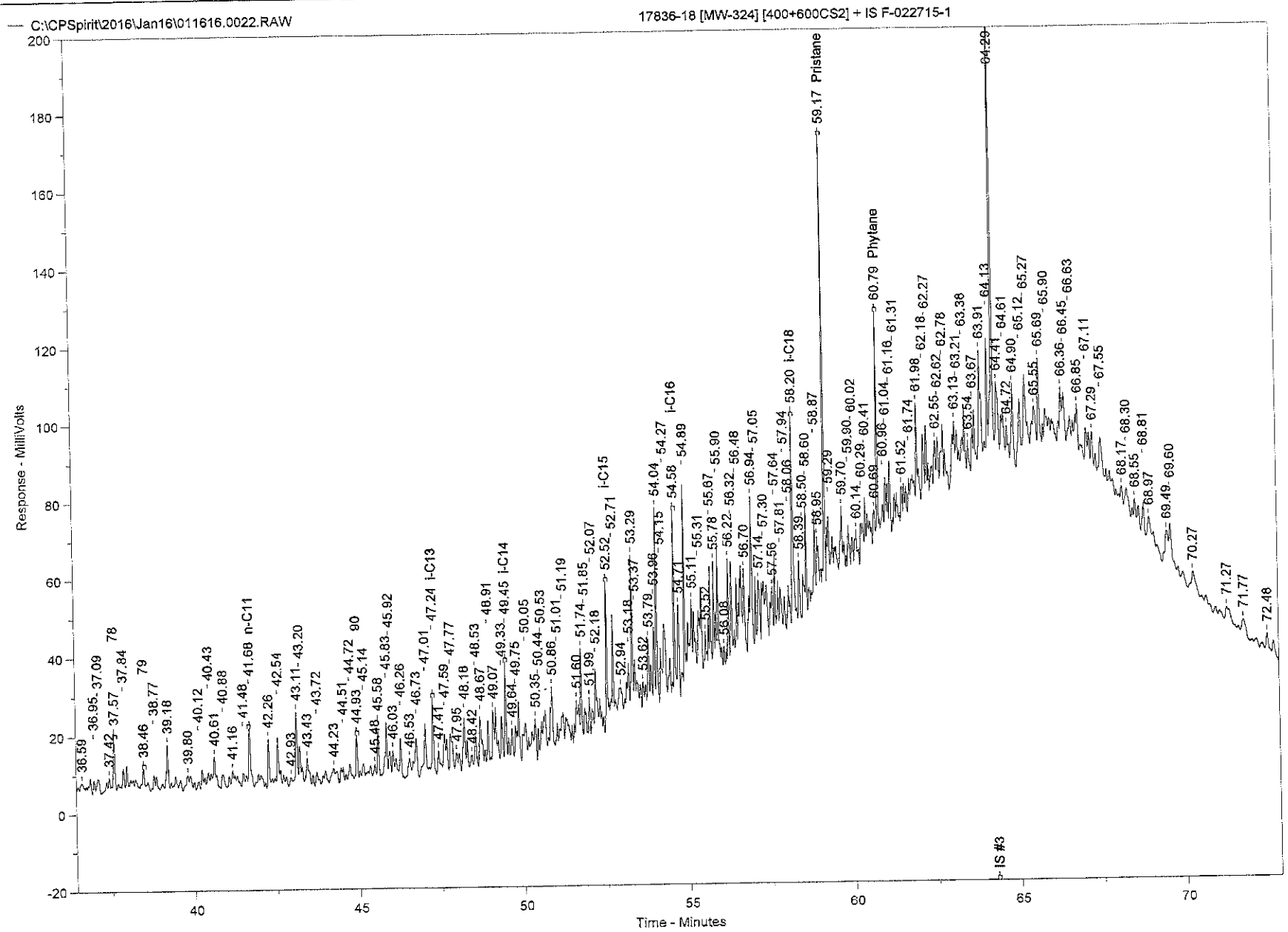
15.93 35
16.49 IS #1
18.04 37
20.16 40
21.98 46B
23.32
25.73 52
26.08
27.08
27.52 55
29.37
30.20
30.40 IS #2
31.24
31.35
31.64
31.88
32.42
32.80
33.37
33.66 67
69
34.63
34.83
35.41
35.90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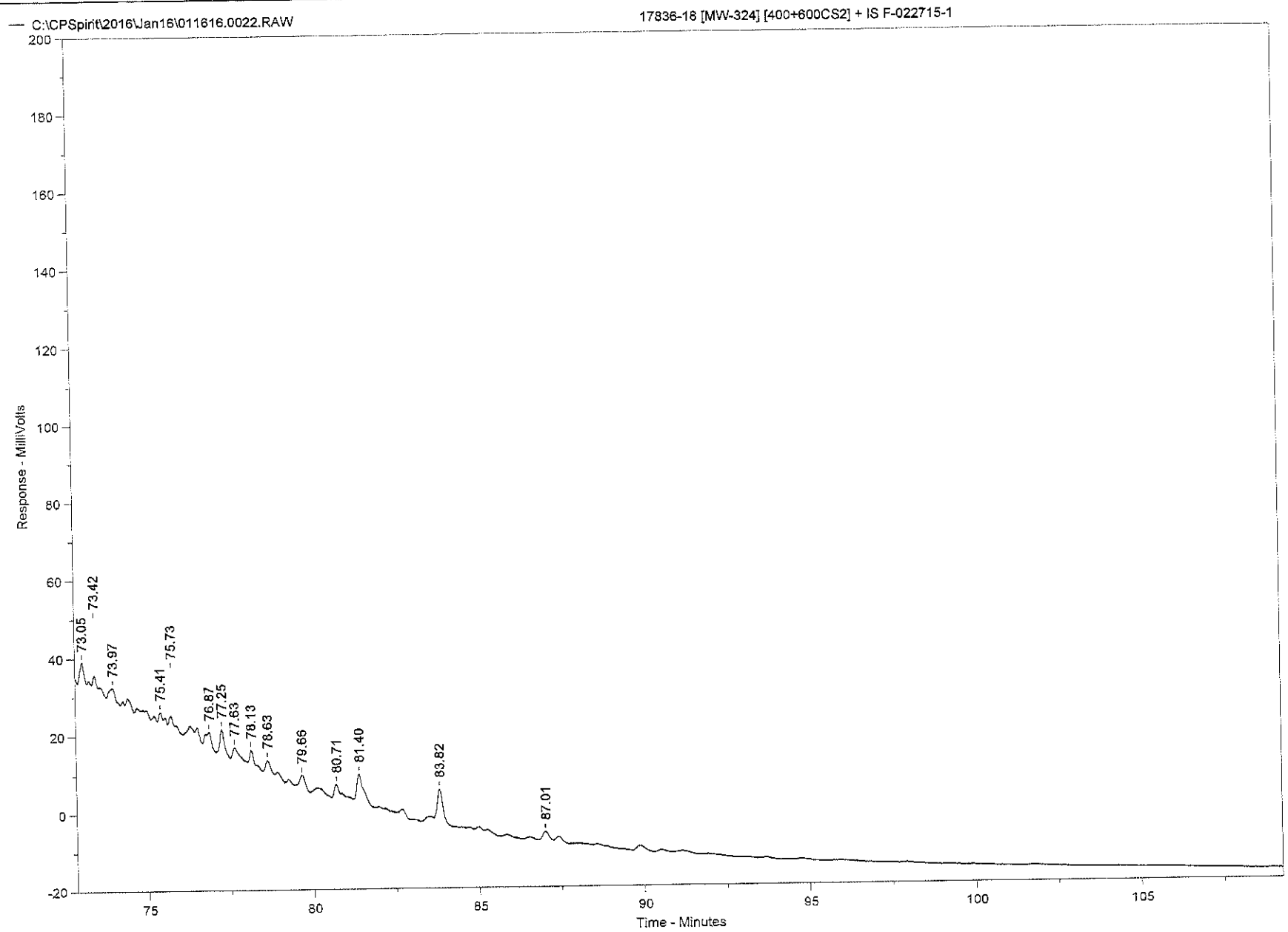
17836-18 [MW-324] [400+600CS2] + IS F-022715-1
Response - MilliVolts
Time - Minutes
Pristane
Phytane
i-C16
i-C18
i-C15
i-C14
i-C13
n-C11
IS #3


C:\CPSpirit\2016\Jan16\011616.0022.RAW
17836-18 [MW-324] [400+600CS2] + IS F-022715-1
Response - MilliVolts
Time - Minutes
200
180
160
140
120
100
80
60
40
20
0
-20
75
80
85
90
95
100
105
73.05
73.42
73.97
75.41
75.73
76.87
77.25
77.63
78.13
78.63
79.66
80.71
81.40
83.82
87.01

Sample Name = **17836-18 [MW-324] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0022.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/18/2016 2:45:51 PM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.02	3.2121	322632.40
35	15.93	0.2471	24821.00
IS #1	16.49	3.5668	358265.40
37	18.04	0.1847	18552.52
40	20.16	0.1249	12549.06
46B	21.98	0.2454	24647.19
	23.32	0.1618	16249.27
52	25.73	0.3379	33942.91
	26.08	0.2206	22156.50
	27.08	0.1163	11677.05
55	27.52	0.1478	14846.73
	29.37	0.2854	28664.67
	30.20	0.0899	9030.72
IS #2	30.40	3.2555	326995.00
	31.24	0.1511	15172.55
	31.35	0.1306	13117.89
	31.64	0.1420	14260.07
	31.88	0.0695	6977.21
	32.42	0.1478	14850.26
	32.80	0.0723	7257.51
67	33.37	0.1311	13168.85
69	33.66	0.3696	37122.73
	34.63	0.3026	30389.73
	34.83	0.2014	20224.53
	35.41	0.1602	16095.83
	35.90	0.0768	7714.21
	36.59	0.1104	11085.67
	36.95	0.1098	11032.97
	37.09	0.2239	22490.53
	37.42	0.2563	25745.88
78	37.57	0.4519	45394.65
	37.84	0.1444	14505.42
79	38.46	0.1218	12231.33
	38.77	0.2071	20804.99
	39.18	0.3814	38306.95
	39.80	0.3501	35160.56
	40.12	0.0782	7856.63
	40.43	0.1286	12915.70
	40.61	0.3640	36563.46
	40.88	0.2115	21240.40
	41.16	0.2791	28030.55
	41.48	0.1573	15802.18
n-C11	41.68	0.6220	62473.66
	42.26	0.3417	34323.28
	42.54	0.4412	44315.00
	42.93	0.1259	12646.62
	43.11	0.6621	66506.14
	43.20	0.3497	35127.70
	43.43	0.3886	39033.75
	43.72	0.1719	17264.96
	44.23	0.1243	12486.79
	44.51	0.2302	23121.87
	44.72	0.1750	17577.93
90	44.93	0.3258	32722.46
	45.14	0.1132	11367.27

Peak Name	Ret. Time	Area %	Area
	45.48	0.1040	10449.12
	45.58	0.3543	35589.11
	45.83	0.5092	51141.10
	45.92	0.2055	20639.09
	46.03	0.1305	13112.30
	46.26	0.2931	29438.72
	46.53	0.2355	23650.22
	46.73	0.4451	44710.40
	47.01	0.7433	74659.84
i-C13	47.24	0.6800	68298.71
	47.41	0.2903	29155.23
	47.59	0.3950	39670.67
	47.77	0.4927	49486.98
	47.95	0.1068	10726.13
	48.18	0.5592	56168.09
	48.42	0.1458	14641.87
	48.53	0.3135	31491.14
	48.67	0.6004	60310.48
	48.91	0.2727	27390.45
	49.07	0.2795	28072.04
	49.33	0.3512	35275.59
i-C14	49.45	0.6205	62321.59
	49.64	0.2486	24966.53
	49.75	0.1547	15534.06
	50.05	0.6936	69664.95
	50.35	0.3856	38733.23
	50.44	0.1508	15144.35
	50.53	0.0930	9336.63
	50.86	0.5926	59524.55
	51.01	0.1234	12394.91
	51.19	0.3294	33082.18
	51.60	0.1034	10384.12
	51.74	0.4633	46537.03
	51.85	0.2556	25669.12
	51.99	0.2102	21116.61
	52.07	0.2013	20220.75
	52.18	0.4960	49816.05
i-C15	52.52	1.0000	100448.30
	52.71	0.5131	51536.64
	52.94	0.3688	37040.04
	53.18	0.3599	36147.14
	53.29	0.7740	77747.83
	53.37	0.1660	16673.56
	53.62	0.2020	20287.94
	53.79	0.4955	49770.65
	53.96	0.5341	53650.47
	54.04	1.1843	118956.50
	54.15	0.4575	45955.17
	54.27	0.8834	88730.98
i-C16	54.58	1.0142	101873.90
	54.71	0.7158	71896.52
	54.89	1.3023	130805.10
	55.11	0.3432	34467.66
	55.31	0.2782	27947.47
	55.52	0.2395	24053.12
	55.67	0.5514	55379.87
	55.78	0.5371	53952.23
	55.90	0.6876	69064.45
	56.08	0.1049	10538.01
	56.22	0.5752	57776.88
	56.32	0.5523	55478.39
	56.48	0.3008	30214.20
	56.70	0.3750	37661.80
	56.94	1.6658	167316.80
	57.05	0.3582	35981.87
	57.14	0.8061	80964.05
	57.30	1.0077	101215.90

Peak Name	Ret. Time	Area %	Area
	57.56	0.6951	69821.89
	57.64	0.6000	60262.20
	57.81	0.4649	46693.35
	57.94	0.2417	24281.60
	58.06	0.3729	37455.61
i-C18	58.20	1.7945	180251.20
	58.39	0.4198	42162.96
	58.50	0.4248	42665.17
	58.60	0.5492	55161.26
	58.87	0.5548	55728.29
	58.95	0.7256	72882.42
Pristane	59.17	2.4070	241764.60
	59.29	0.1730	17377.69
	59.70	0.4628	46487.86
	59.90	0.3380	33954.89
	60.02	0.2331	23415.57
	60.14	0.2341	23516.99
	60.29	0.5032	50543.18
	60.41	0.2013	20216.95
	60.69	0.3250	32640.18
Phytane	60.79	1.4331	143946.50
	60.96	0.3742	37588.05
	61.04	0.4994	50165.96
	61.16	0.4524	45441.04
	61.31	0.1735	17429.74
	61.52	0.2292	23023.49
	61.74	0.1212	12176.23
	61.98	0.4406	44251.31
	62.18	0.5044	50665.76
	62.27	0.3303	33175.25
	62.55	0.3671	36876.67
	62.62	0.3655	36716.49
	62.78	0.5236	52593.75
	63.13	0.9788	98319.65
	63.21	0.5419	54426.32
	63.38	0.4941	49626.70
	63.54	0.2656	26682.88
	63.67	0.2027	20358.64
	63.91	1.2435	124901.20
	64.13	0.7905	79399.49
IS #3	64.29	4.2432	426206.00
	64.41	1.2165	122188.40
	64.61	0.9440	94818.96
	64.72	0.4716	47365.57
	64.90	0.8836	88756.46
	65.12	0.8487	85244.42
	65.27	1.3860	139211.50
	65.55	0.8878	89169.77
	65.69	0.7758	77926.29
	65.90	0.2398	24084.06
	66.36	0.6484	65129.26
	66.45	0.6355	63831.68
	66.63	0.4394	44131.52
	66.85	0.3672	36883.10
	67.11	0.3001	30147.95
	67.29	0.3138	31518.98
	67.55	0.4781	48025.86
	68.17	0.1286	12912.98
	68.30	0.3609	36254.50
	68.55	0.1322	13281.67
	68.81	0.3118	31313.63
	68.97	0.2458	24691.87
	69.49	0.3944	39619.68
	69.60	0.4740	47614.29
	70.27	0.3648	36643.47
	71.27	0.4647	46678.89
	71.77	0.3434	34490.43

Peak Name	Ret. Time	Area %	Area
	72.48	0.1848	18557.90
	73.05	0.5373	53965.60
	73.42	0.5017	50390.14
	73.97	0.4100	41185.79
	75.41	0.1251	12564.37
	75.73	0.1598	16047.46
	76.87	0.4161	41790.71
	77.25	0.5523	55472.07
	77.63	0.5017	50395.38
	78.13	0.4195	42138.20
	78.63	0.2983	29958.29
	79.66	0.3335	33498.64
	80.71	0.2323	23335.32
	81.40	0.9914	99577.46
	83.82	0.9263	93044.59
	87.01	0.2760	27721.17

Total Area = 1.004441E+07 Total Height = 2819437 Total Amount = 0

REPORT OF ANALYTICAL RESULTS

Client: Jennifer DeBoer Stantec 1060 Andrew Drive, Suite 140 West Chester, PA 19380	Lab Number: 17836 Collected: 12/21/2015 Received: 12/24/2015 Matrix: Product
Project: Evergreen, Marcus Hook AOI 1 Project Number: 213402493 Collected by: Colin Dubinski	Sample Description: See Below Analyzed: 1/22/2016 Method: ASTM D1217

SPECIFIC GRAVITY

LAB NUMBER	SAMPLE DESCRIPTION	SPECIFIC GRAVITY
17836-1	MW-231	0.930
17836-2	MW-19	0.920
17836-3	P-3	0.914
17836-4	MW-33	0.930
17836-5	MW-285	0.868
17836-6	MW-491	0.866

REPORT OF ANALYTICAL RESULTS

Client: Jennifer DeBoer Stantec 1060 Andrew Drive, Suite 140 West Chester, PA 19380	**Lab Number:** 17836 **Collected:** 12/21/2015 **Received:** 12/24/2015 **Matrix:** Product
Project: Evergreen, Marcus Hook AOI 1 **Project Number:** 213402493 **Collected by:** Colin Dubinski	**Sample Description:** See Below **Analyzed:** 1/22/2016 **Method:** ASTM D1217

SPECIFIC GRAVITY

LAB NUMBER	SAMPLE DESCRIPTION	SPECIFIC GRAVITY
17836-7	MW-492	0.858
17836-8	RW-26	0.840
17836-9	RW-31	0.910
17836-10	RW-29	0.856
17836-11	RW-169	0.916
17836-12	MW-188	0.936

REPORT OF ANALYTICAL RESULTS

Client: Jennifer DeBoer Stantec 1060 Andrew Drive, Suite 140 West Chester, PA 19380	Lab Number: 17836 Collected: 12/21/2015 Received: 12/24/2015 Matrix: Product
Project: Evergreen, Marcus Hook AOI 1 Project Number: 213402493 Collected by: Colin Dubinski	Sample Description: See Below Analyzed: 1/22/2016 Method: ASTM D1217

SPECIFIC GRAVITY

LAB NUMBER	SAMPLE DESCRIPTION	SPECIFIC GRAVITY
17836-13	MW-439	0.922
17836-14	MW-371	0.908
17836-15	MW-326	0.910
17836-16	MW-170	0.870
17836-17	RW-15	0.932
17836-18	MW-324	0.934

Pace Analytical Energy Services
FINAL REPORT
This report and the data within has completed QA/QC review
Contact: Taryn Mancine
Ph: 412-826-5245 Fax:
Email: taryn.mancine@pacelabs.com

Fuels & Lubrication Lab
1801 Route 51 South
Building 9
Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836001	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-1
Result *wt. %*	2.01

Tracking #	403308-1
Work Order	17836001
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

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Jefferson Hills, PA 15025
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Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836002	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-2
Result *wt. %*	0.172

Tracking #	403308-2
Work Order	17836002
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

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Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836003	PO# 17836		

D0808

Test Code: D0808 / Method: D808

Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-3
Result *wt. %*	0.019

Comments

This sample contained a significant amount of water, which is not suitable for XRF analysis.
With oil present, the sample was prepped by bombing and then run on the Ion Chromatograph using method D808. Even with the bomb prep, the combustion was not as good as it should have been, therefore the result is questionable.

Tracking #	403308-3
Work Order	17836003
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

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Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836004	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-4
Result *wt. %*	0.284

Tracking #	403308-4
Work Order	17836004
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

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Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836005	PO# 17836		

D0808

Test Code: D0808 / Method: D808

Sample Date		01/04/2016
Result Date		01/04/2016
Tracking #		403308-5
Result	*wt. %*	<0.003

Comments

This sample contained a significant amount of water, which is not suitable for XRF analysis.
With oil present, the sample was prepped by bombing and then run on the Ion Chromatograph using method D808. Even with the bomb prep, the combustion was not as good as it should have been, therefore the result is questionable.

Tracking #	403308-5
Work Order	17836005
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

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Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836006	PO# 17836		

Sulfur by WD-XRF

Test Code: D2622 / Method: D2622/D4927

Sample Date		01/04/2016
Result Date		01/04/2016
Tracking #		403308-6
Result	*wt. %*	0.299

Tracking #	403308-6
Work Order	17836006
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

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Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836007	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-7
Result *wt. %*	0.227

Tracking #	403308-7
Work Order	17836007
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

Pace Analytical Energy Services
FINAL REPORT
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Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836008	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-8
Result *wt. %*	0.202

Tracking #	403308-8
Work Order	17836008
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

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Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836009	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-9
Result *wt. %*	0.314

Tracking #	403308-9
Work Order	17836009
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

Pace Analytical Energy Services
FINAL REPORT
This report and the data within has completed QA/QC review
Contact: Taryn Mancine
Ph: 412-826-5245 Fax:
Email: taryn.mancine@pacelabs.com

Fuels & Lubrication Lab
1801 Route 51 South
Building 9
Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360010	PO# 17836		

Sulfur by WD-XRF

Test Code: D2622 / Method: D2622/D4927

Sample Date		01/04/2016
Result Date		01/04/2016
Tracking #		403308-10
Result	*wt. %*	0.287

Tracking #	403308-10
Work Order	178360010
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

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Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360011	PO# 17836		

D0808

Test Code: D0808 / Method: D808

Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-11
Result *wt. %*	0.0063

Comments

This sample contained a significant amount of water, which is not suitable for XRF analysis.
With oil present, the sample was prepped by bombing and then run on the Ion Chromatograph using method D808. Even with the bomb prep, the combustion was not as good as it should have been, therefore the result is questionable.

Tracking #	403308-11
Work Order	178360011
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

Pace Analytical Energy Services
FINAL REPORT
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Contact: Taryn Mancine
Ph: 412-826-5245 Fax:
Email: taryn.mancine@pacelabs.com

Fuels & Lubrication Lab
1801 Route 51 South
Building 9
Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360012	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-12
Result *wt. %*	0.536

Tracking #	403308-12
Work Order	178360012
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

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FINAL REPORT
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Contact: Taryn Mancine
Ph: 412-826-5245 Fax:
Email: taryn.mancine@pacelabs.com

Fuels & Lubrication Lab
1801 Route 51 South
Building 9
Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360013	PO# 17836		

Sulfur by WD-XRF

Test Code: D2622 / Method: D2622/D4927

Sample Date		01/04/2016
Result Date		01/04/2016
Tracking #		403308-13
Result	*wt. %*	0.193

Tracking #	403308-13
Work Order	178360013
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

Pace Analytical Energy Services
FINAL REPORT
This report and the data within has completed QA/QC review
Contact: Taryn Mancine
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Building 9
Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360014	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-14
Result *wt. %*	0.234

Tracking #	403308-14
Work Order	178360014
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

Pace Analytical Energy Services
FINAL REPORT
This report and the data within has completed QA/QC review
Contact: Taryn Mancine
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1801 Route 51 South
Building 9
Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360015	PO# 17836		

Sulfur by WD-XRF

Test Code: D2622 / Method: D2622/D4927

Sample Date		01/04/2016
Result Date		01/04/2016
Tracking #		403308-15
Result	*wt. %*	0.234

Tracking #	403308-15
Work Order	178360015
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

Pace Analytical Energy Services
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Contact: Taryn Mancine
Ph: 412-826-5245 Fax:
Email: taryn.mancine@pacelabs.com

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Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360016	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-16
Result *wt. %*	0.0224

Tracking #	403308-16
Work Order	178360016
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

Pace Analytical Energy Services
FINAL REPORT
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Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360017	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-17
Result *wt. %*	0.212

Tracking #	403308-17
Work Order	178360017
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

Pace Analytical Energy Services
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Contact: Taryn Mancine
Ph: 412-826-5245 Fax:
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Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360018	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-18
Result *wt. %*	0.539

Tracking #	403308-18
Work Order	178360018
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

3.4 Groundwater Analytical Results

On March 29 and April 1, 2002 groundwater samples were collected and submitted for laboratory analysis from ten of the twelve new monitoring wells. The results are displayed on **Table 3 – Marcus Hook Groundwater Analytical Data**. These samples were analyzed for dissolved phase, PADEP-regulated lube oil parameters pyrene, fluorene, phenanthrene, anthracene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene and benzo(g,h,i)perylene, naphthalene and benzene. Considering that many other petroleum products are being processed or stored nearby; that the tanks within the LSCE have previously hosted other petroleum products; and because earlier soil sample results contained elevated benzene values, the groundwater samples were also analyzed for additional gasoline constituents toluene, ethylbenzene, total xylenes, cumene and MTBE.

As displayed in Table 3, the groundwater analytical results show elevated concentrations of gasoline constituents and rather low concentrations of lube oil constituents. Benzene was reported present in groundwater samples from wells MWs-170, 171, 172, 175 and 181, at concentrations ranging from 5.7 µg/l in MW-172 to a high value of 750 µg/l in MW-175. The first three wells, MWs 170, 171 and 172 are on the northern boundary of the LSCE while MW-175 is near the Delaware River. Wells MWs-170 and 172, do not have measurable NAPL levels.

MTBE was found in all wells except MW-176. Reported MTBE concentrations ranged from a high value of 1400 µg/l in MW-175 to less than 10 ug/l in MWs 171, 172 and 174. MW-173 is located on the eastern side of the complex and contains little or no NAPL, while the other wells are in the western or central zone, and have significant NAPL accumulations.

A limited number of lube oil PAH parameters were reported above the analytical limits of detection in groundwater samples. Table 3 presents the reported concentration of all groundwater analytes, including the lube oil parameters.

3.5 NAPL Analysis

NAPL samples were collected from wells MWs-33, 171, 175, 177, 178, 180 and 181 and submitted to the Sunoco Laboratory for simulated distillation (SIMDIS) analysis. Listed below are the descriptions provided by the laboratory:

MW-33:	Looks like a premium motor oil blend (PMOB) with about 30% gasoline range material.
MW-171:	Is a PMOB or a blend of two or three narrower cuts of lubes.
MW-175:	Looks like a slap of several lubes or additives (this material was significantly different from the other samples).
MW-177	Is a PMOB or a blend of two or three narrower cuts of lubes.

MW-178 Is a PMOB or a blend of two or three narrower cuts of lubes.

MW-180 Is a PMOB or a blend of two or three narrower cuts of lubes.

MW-181 Is a PMOB with about 10% gasoline range material.

While the SIMDIS analysis is a bit qualitative, it does show some agreement with soil and groundwater data. MW-170 which returned relatively high values for gasoline parameters is close to MW-181; and SB-2 which is in the same general area that recorded the highest benzene values in soils. However, the groundwater sample from MW-175 returned the highest values for gasoline parameters, yet gasoline was not mentioned in the Sunoco analysis. Similarly MW-172 and MW-173 which are close to MW-33, had relatively low levels of gasoline constituents in their respective groundwater samples.

4.0) FACTORS LIMITING THE MIGRATION OF OIL

Routine inspection of the Delaware River adjacent to the LSCE and the bulkhead at the riverfront demonstrate that oil from the LSCE is not entering the River. The absence of oil leaching into the River is probably due to a combination of factors which include:

- Internal drainage of the LSCE storage tank areas by a series of subsurface sewer lines;
- Removal of NAPL from the sewers draining the area via an oil recovery operation in the southern end of the 60" sewer line which transects the LSCE storage tank area; and
- The construction of the bulkhead which acts as a limited permeability barrier. The internal drainage of the LSCE storage tank area is old and complex. Several refinery drawings, dating back to 1960 were reviewed to determine where sewer lines exist in the area. A plot of the identified sewer lines is presented as Figure VIII. As depicted on this plot and the source refinery drawings, the sewer lines in this area are composed of terra cota (T.C.), ranging from 4" to 15" diameter. Terra cota pipe joints typically consist of bell ends that may or may not have been cemented together upon installation. Regardless of the method of joint sealing at the time of installation, due to the age of these sewer lines, more than forty years, the joints and probably much of the pipe itself, would now be open to infiltration. Infiltration of shallow groundwater and oil into the sewer lines in the area would create localized low areas or troughs in the water table above and around the sewer lines. Oil floating on the water table would migrate into the low areas above the sewer lines and when the oil thickness became sufficient, the oil would migrate into the sewer lines which would then act as a "French drain" or trench like recovery network.

Evidence of the internal drainage of the area is found on both the Water Table Elevation plots, Figures II, through V and on the Apparent Product Thickness Plots,

FILE COPY

ATTACHMENT 1

Sun Company, Inc. (R&M)
Marcus Hook Refinery
Comprehensive Remedial Plan

GROUNDWATER INVESTIGATION ADDENDUM
Area 3: West of Green Street
Groundwater & Environmental Services, Inc.
December 27, 1995

TABLE 1
NAPL ANALYTICAL DATA SUMMARY
SUN COMPANY INC. (R&M)
MARCUS HOOK REFINERY
AREA 3 : AREA WEST OF GREEN STREET

Collection Point	API Gravity (deg API)	Specific Gravity	Viscosity (SUS)
MW-18	21.00	0.93	146.30
MW-19	21.90	0.92	166.30
MW-20	18.30	0.94	580.80
MW-23	25.00	0.90	70.13
MW-25	31.90	0.87	36.86
MW-98	29.80	0.88	39.46
MW-99	35.40	0.85	35.48
MW-103	25.00	0.90	66.93
MW-107	23.50	0.91	22.67
MW-123	25.80	0.90	10.20
MW-124	25.60	0.90	10.90

SUS = Kinematic viscosity expressed as Saybolt Universal Seconds @ 100° F

10:43:02 **** Sample Results Report **** 08/03/95

AMPLE DATE : 25-JUL-95
AMPLE ID : 200267530
BATCH NUMBER:
SER SAMPLEID: SPCL MW# 107
AMPLE TYPE : ENSPCL ON REQUEST
AG DATE : 07/25/95 1419
MATERIAL : ENVIRONMENTAL SPECIAL SPECIAL
ONDITION: APPROVED
SSOCIATED ID:
COMMENT :

OMPONENT	RESULT	UNIT	SPEC	LOW	HIGH
KINEMATIC VISCOSITY @ 100F	22.67	cSt	N/A		
ENSITY @ 15C	.9304	kg/m3	N/A		
PI GRAVITY	23.5	deg API	N/A		

MONITORING WELL ANALYSIS

DATE	TIME	COMP	GRAB	SAMPLE LOCATION	API GRAVITY	SPECFIC GRAVITY	DENSITY	VISCOSITY
12/15/94	13:00		X	MW – 18	21	0.9278	0.927	146.3
12/15/94	13:05		X	MW – 19	21.9	0.9223	0.9215	166.3
12/15/94	13:20		X	MW – 20	18.3	0.9448	0.9439	580.8
12/15/94	13:25		X	MW – 23	25	0.9044	0.9036	70.13
12/15/94	13:30		X	MW – 25	31.9	0.8658	0.865	36.86
12/15/94	13:45		X	MW – 98	29.8	0.877	0.8762	39.46
12/15/94	14:05		X	MW – 99	35.4	0.848	0.8472	35.48
12/15/94	14:15		X	MW – 103	25	0.9041	0.9033	66.93

API Gravity:

Specific Gravity:

Density:

Viscosity: All samples were run at 100 F.

RECEIVED
MAR 21 1995
J. S. BRACKIN

TABLE 1
NAPL ANALYTICAL DATA SUMMARY
SUN COMPANY INC. (R&M)
MARCUS HOOK REFINERY
AREA 5 : MIDDLE CREEK

Collection Point	API Gravity (deg API)	Specific Gravity	Viscosity (SUS)
MW-46	24.40	0.91	76.80
MW-110	45.50	0.80	1.27
MW-111	47.20	0.79	1.01
MW-112	23.30	0.91	100.70

SUS = Kinematic viscosity expressed as Saybolt Universal Seconds @ 100° F

Lancaster Laboratories
2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

Prepared for:

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

August 26, 2011

Project: SUN: Marcus Hook Refinery

Submittal Date: 08/02/2011
Group Number: 1259500
PO Number: MARCUS HOOK REFINERY
State of Sample Origin: PA

Client Sample Description	Lancaster Labs (LLI) #
RW-148_07152011 Grab Product	6362662
MW-197_07152011 Grab Product	6362663
MW-25_07152011 Grab Product	6362664
MW-266_07152011 Grab Product	6362665
MW-289_07152011 Grab Product	6362666
MW-88_07152011 Grab Product	6362667
MW-171_07152011 Grab Product	6362668
MW-180_07152011 Grab Product	6362669
MW-177_07152011 Grab Product	6362670
MW-213_07152011 Grab Product	6362671
MW-132_07152011 Grab Product	6362672
MW-130_07152011 Grab Product	6362673
MW-54_07152011 Grab Product	6362674
MW-83_07152011 Grab Product	6362675
MW-98_07152011 Grab Product	6362676
MW-257_07152011 Grab Product	6362677
MW-222_07152011 Grab Product	6362678

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO	LLI	Attn: EDD Group
ELECTRONIC COPY TO	Aquaterra Tech	Attn: Loretta Belfiglio
ELECTRONIC	SUN: Aquaterra Tech.	Attn: Tiffani Doerr

Lancaster Laboratories

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

COPY TO		
ELECTRONIC	Langan	Attn: Dennis Webster
COPY TO		
ELECTRONIC	Langan	Attn: Kristen Ward
COPY TO		

Questions? Contact your Client Services Representative
Loran A Carter at (717) 656-2300 Ext. 1375

Respectfully Submitted,

Sarah M. Snyder
Senior Specialist

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: RW-148_07152011 Grab Product
Marcus Hook Refinery
COC: 265348 RW-148_07152011

LLI Sample # G5 6362662
LLI Group # 1259500
Account # 10132

Project Name: SUN: Marcus Hook Refinery

Collected: 07/15/2011 08:30 by SS

Submitted: 08/02/2011 16:20
Reported: 08/26/2011 12:26

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

RW148

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**SW-846 8015B modified**		**see below**	**see below**	
02535	Quantitative GC Fingerprint	n.a.	< 1.0	1.0	1
Wet Chemistry	**SM20 2710 F**				
01443	Specific Gravity	n.a.	0.85	0.020	1
	Due to limited sample volume, a QC duplicate was not analyzed for specific gravity.				

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/12

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02535	Quantitative GC Fingerprint	SW-846 8015B modified	1	112200002A	08/09/2011 12:44	Robert Brown	1
01443	Specific Gravity	SM20 2710 F	1	11222144301A	08/10/2011 20:30	Daniel S Smith	1

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: MW-197_07152011 Grab Product
Marcus Hook Refinery
COC: 265348 MW-197_07152011

LLI Sample # G5 6362663
LLI Group # 1259500
Account # 10132

Project Name: SUN: Marcus Hook Refinery

Collected: 07/15/2011 09:00 by SS

Submitted: 08/02/2011 16:20
Reported: 08/26/2011 12:26

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

MW197

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**SW-846 8015B modified**		**see below**	**see below**	
02535	Quantitative GC Fingerprint	n.a.	< 1.0	1.0	1
Wet Chemistry	**SM20 2710 F**				
01443	Specific Gravity	n.a.	0.85	0.020	1
	Due to limited sample volume, a QC duplicate was not analyzed for specific gravity.				

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/12

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02535	Quantitative GC Fingerprint	SW-846 8015B modified	1	112200002A	08/09/2011 13:29	Robert Brown	1
01443	Specific Gravity	SM20 2710 F	1	11222144301A	08/10/2011 20:30	Daniel S Smith	1

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: MW-25_07152011 Grab Product
Marcus Hook Refinery
COC: 265348 MW-25_07152011

LLI Sample # G5 6362664
LLI Group # 1259500
Account # 10132

Project Name: SUN: Marcus Hook Refinery

Collected: 07/15/2011 09:30 by SS

Submitted: 08/02/2011 16:20
Reported: 08/26/2011 12:26

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

MW-25

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**SW-846 8015B modified**		**see below**	**see below**	
02535	Quantitative GC Fingerprint	n.a.	< 1.0	1.0	1
Wet Chemistry	**SM20 2710 F**				
01443	Specific Gravity	n.a.	0.84	0.020	1
	Due to limited sample volume, a QC duplicate was not analyzed for specific gravity.				

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/12

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02535	Quantitative GC Fingerprint	SW-846 8015B modified	1	112200002A	08/09/2011 14:14	Robert Brown	1
01443	Specific Gravity	SM20 2710 F	1	11222144301A	08/10/2011 20:30	Daniel S Smith	1

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: MW-266_07152011 Grab Product
Marcus Hook Refinery
COC: 265348 MW-266_07152011

LLI Sample # G5 6362665
LLI Group # 1259500
Account # 10132

Project Name: SUN: Marcus Hook Refinery

Collected: 07/15/2011 09:45 by SS

Submitted: 08/02/2011 16:20
Reported: 08/26/2011 12:26

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

MW266

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**SW-846 8015B modified**		**see below**	**see below**	
02535	Quantitative GC Fingerprint	n.a.	< 1.0	1.0	1
Wet Chemistry	**SM20 2710 F**				
01443	Specific Gravity	n.a.	0.87	0.020	1
	Due to limited sample volume, a QC duplicate was not analyzed for specific gravity.				

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/12

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02535	Quantitative GC Fingerprint	SW-846 8015B modified	1	112200002A	08/09/2011 14:59	Robert Brown	1
01443	Specific Gravity	SM20 2710 F	1	11222144301A	08/10/2011 20:30	Daniel S Smith	1

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: MW-289_07152011 Grab Product
Marcus Hook Refinery
COC: 265348 MW-289_07152011

LLI Sample # G5 6362666
LLI Group # 1259500
Account # 10132

Project Name: SUN: Marcus Hook Refinery

Collected: 07/15/2011 10:00 by SS

Submitted: 08/02/2011 16:20
Reported: 08/26/2011 12:26

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

MW289

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**SW-846 8015B modified**		**see below**	**see below**	
02535	Quantitative GC Fingerprint	n.a.	< 1.0	1.0	1
Wet Chemistry	**SM20 2710 F**				
01443	Specific Gravity	n.a.	0.85	0.020	1
	Due to limited sample volume, a QC duplicate was not analyzed for specific gravity.				

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/12

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02535	Quantitative GC Fingerprint	SW-846 8015B modified	1	112200002A	08/09/2011 15:44	Robert Brown	1
01443	Specific Gravity	SM20 2710 F	1	11222144301A	08/10/2011 20:30	Daniel S Smith	1

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: MW-88_07152011 Grab Product
Marcus Hook Refinery
COC: 265348 MW-88_07152011

LLI Sample # G5 6362667
LLI Group # 1259500
Account # 10132

Project Name: SUN: Marcus Hook Refinery

Collected: 07/15/2011 10:15 by SS

Submitted: 08/02/2011 16:20
Reported: 08/26/2011 12:26

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

MW-88

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**SW-846 8015B modified**		**see below**	**see below**	
02535	Quantitative GC Fingerprint	n.a.	< 1.0	1.0	1
Wet Chemistry	**SM20 2710 F**				
01443	Specific Gravity	n.a.	0.90	0.020	1
	Due to limited sample volume, a QC duplicate was not analyzed for specific gravity.				

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/12

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02535	Quantitative GC Fingerprint	SW-846 8015B modified	1	112200002A	08/09/2011 16:29	Robert Brown	1
01443	Specific Gravity	SM20 2710 F	1	11222144301A	08/10/2011 20:30	Daniel S Smith	1

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: MW-171_07152011 Grab Product
Marcus Hook Refinery
COC: 265348 MW-171_07152011

LLI Sample # G5 6362668
LLI Group # 1259500
Account # 10132

Project Name: SUN: Marcus Hook Refinery

Collected: 07/15/2011 10:30 by SS

Submitted: 08/02/2011 16:20
Reported: 08/26/2011 12:26

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

MW171

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**SW-846 8015B modified**		**see below**	**see below**	
02535	Quantitative GC Fingerprint	n.a.	< 1.0	1.0	1
Wet Chemistry	**SM20 2710 F**				
01443	Specific Gravity Due to limited sample volume, a QC duplicate was not analyzed for specific gravity.	n.a.	0.86	0.020	1

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/12

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02535	Quantitative GC Fingerprint	SW-846 8015B modified	1	112200002A	08/09/2011 17:14	Robert Brown	1
01443	Specific Gravity	SM20 2710 F	2	11224144301A	08/12/2011 02:35	Daniel S Smith	1

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: MW-180_07152011 Grab Product
Marcus Hook Refinery
COC: 265348 MW-180_07152011

LLI Sample # G5 6362669
LLI Group # 1259500
Account # 10132

Project Name: SUN: Marcus Hook Refinery

Collected: 07/15/2011 11:05 by SS

Submitted: 08/02/2011 16:20
Reported: 08/26/2011 12:26

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

MW180

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**SW-846 8015B modified**		**see below**	**see below**	
02535	Quantitative GC Fingerprint	n.a.	< 1.0	1.0	1
Wet Chemistry	**SM20 2710 F**				
01443	Specific Gravity	n.a.	0.88	0.020	1
	Due to limited sample volume, a QC duplicate was not analyzed for specific gravity.				

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/12

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02535	Quantitative GC Fingerprint	SW-846 8015B modified	1	112200002A	08/09/2011 17:59	Robert Brown	1
01443	Specific Gravity	SM20 2710 F	1	11222144301A	08/10/2011 20:30	Daniel S Smith	1

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: MW-177_07152011 Grab Product
Marcus Hook Refinery
COC: 265348 MW-177_07152011

LLI Sample # G5 6362670
LLI Group # 1259500
Account # 10132

Project Name: SUN: Marcus Hook Refinery

Collected: 07/15/2011 10:45 by SS

Submitted: 08/02/2011 16:20
Reported: 08/26/2011 12:26

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

MW177

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**SW-846 8015B modified**		**see below**	**see below**	
02535	Quantitative GC Fingerprint	n.a.	< 1.0	1.0	1
Wet Chemistry	**SM20 2710 F**				
01443	Specific Gravity	n.a.	0.89	0.020	1
	Due to limited sample volume, a QC duplicate was not analyzed for specific gravity.				

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/12

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02535	Quantitative GC Fingerprint	SW-846 8015B modified	1	112200002A	08/09/2011 18:43	Robert Brown	1
01443	Specific Gravity	SM20 2710 F	1	11222144301A	08/10/2011 20:30	Daniel S Smith	1

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: MW-213_07152011 Grab Product
Marcus Hook Refinery
COC: 265348 MW-213_07152011

LLI Sample # G5 6362671
LLI Group # 1259500
Account # 10132

Project Name: SUN: Marcus Hook Refinery

Collected: 07/15/2011 11:15 by SS

Submitted: 08/02/2011 16:20
Reported: 08/26/2011 12:26

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

MW213

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**SW-846 8015B modified**		**see below**	**see below**	
02535	Quantitative GC Fingerprint	n.a.	< 1.0	1.0	1
Wet Chemistry	**SM20 2710 F**				
01443	Specific Gravity	n.a.	0.90	0.020	1
	Due to limited sample volume, a QC duplicate was not analyzed for specific gravity.				

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/12

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02535	Quantitative GC Fingerprint	SW-846 8015B modified	1	112200002A	08/09/2011 20:57	Robert Brown	1
01443	Specific Gravity	SM20 2710 F	1	11222144301A	08/10/2011 20:30	Daniel S Smith	1

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: **MW-132_07152011 Grab Product**
Marcus Hook Refinery
COC: 265348 MW-132_07152011

LLI Sample # G5 6362672
LLI Group # 1259500
Account # 10132

Project Name: SUN: Marcus Hook Refinery

Collected: 07/15/2011 11:30 by SS

Submitted: 08/02/2011 16:20
Reported: 08/26/2011 12:26

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

MW132

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**SW-846 8015B modified**		**see below**	**see below**	
02535	Quantitative GC Fingerprint	n.a.	< 1.0	1.0	1
Wet Chemistry	**SM20 2710 F**				
01443	Specific Gravity	n.a.	0.91	0.020	1
	Due to limited sample volume, a QC duplicate was not analyzed for specific gravity.				

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/12

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02535	Quantitative GC Fingerprint	SW-846 8015B modified	1	112200002A	08/09/2011 21:42	Robert Brown	1
01443	Specific Gravity	SM20 2710 F	1	11222144302A	08/10/2011 21:45	Daniel S Smith	1

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: MW-130_07152011 Grab Product
Marcus Hook Refinery
COC: 265348 MW-130_07152011

LLI Sample # G5 6362673
LLI Group # 1259500
Account # 10132

Project Name: SUN: Marcus Hook Refinery

Collected: 07/15/2011 11:45 by SS

Submitted: 08/02/2011 16:20
Reported: 08/26/2011 12:26

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

MW130

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**SW-846 8015B modified**		**see below**	**see below**	
02535	Quantitative GC Fingerprint	n.a.	< 1.0	1.0	1
Wet Chemistry	**SM20 2710 F**				
01443	Specific Gravity	n.a.	0.92	0.020	1
	Due to limited sample volume, a QC duplicate was not analyzed for specific gravity.				

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/12

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02535	Quantitative GC Fingerprint	SW-846 8015B modified	1	112200002A	08/09/2011 22:27	Robert Brown	1
01443	Specific Gravity	SM20 2710 F	1	11222144302A	08/10/2011 21:45	Daniel S Smith	1

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: MW-54_07152011 Grab Product
Marcus Hook Refinery
COC: 265348 MW-54_07152011

LLI Sample # G5 6362674
LLI Group # 1259500
Account # 10132

Project Name: SUN: Marcus Hook Refinery

Collected: 07/15/2011 12:20 by SS

Submitted: 08/02/2011 16:20
Reported: 08/26/2011 12:26

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

MW-54

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**SW-846 8015B modified**		**see below**	**see below**	
02535	Quantitative GC Fingerprint	n.a.	< 1.0	1.0	1
Wet Chemistry	**SM20 2710 F**				
01443	Specific Gravity	n.a.	0.90	0.020	1
	Due to limited sample volume, a QC duplicate was not analyzed for specific gravity.				

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/12

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02535	Quantitative GC Fingerprint	SW-846 8015B modified	1	112200002A	08/09/2011 23:11	Robert Brown	1
01443	Specific Gravity	SM20 2710 F	1	11222144302A	08/10/2011 21:45	Daniel S Smith	1

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: MW-83_07152011 Grab Product
Marcus Hook Refinery
COC: 265348 MW-83_07152011

LLI Sample # G5 6362675
LLI Group # 1259500
Account # 10132

Project Name: SUN: Marcus Hook Refinery

Collected: 07/15/2011 12:45 by SS

Submitted: 08/02/2011 16:20
Reported: 08/26/2011 12:26

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

MW-83

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**SW-846 8015B modified**		**see below**	**see below**	
02535	Quantitative GC Fingerprint	n.a.	< 1.0	1.0	1
Wet Chemistry	**SM20 2710 F**				
01443	Specific Gravity	n.a.	0.85	0.020	1
	Due to limited sample volume, a QC duplicate was not analyzed for specific gravity.				

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/12

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02535	Quantitative GC Fingerprint	SW-846 8015B modified	1	112200002A	08/09/2011 23:56	Robert Brown	1
01443	Specific Gravity	SM20 2710 F	1	11222144302A	08/10/2011 21:45	Daniel S Smith	1

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: MW-98_07152011 Grab Product
Marcus Hook Refinery
COC: 265348 MW-98_07152011

LLI Sample # G5 6362676
LLI Group # 1259500
Account # 10132

Project Name: SUN: Marcus Hook Refinery

Collected: 07/15/2011 13:05 by SS

Submitted: 08/02/2011 16:20
Reported: 08/26/2011 12:26

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

MW-98

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**SW-846 8015B modified**		**see below**	**see below**	
02535	Quantitative GC Fingerprint	n.a.	< 1.0	1.0	1
Wet Chemistry	**SM20 2710 F**				
01443	Specific Gravity	n.a.	0.87	0.020	1
	Due to limited sample volume, a QC duplicate was not analyzed for specific gravity.				

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/12

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02535	Quantitative GC Fingerprint	SW-846 8015B modified	1	112200002A	08/10/2011 00:40	Robert Brown	1
01443	Specific Gravity	SM20 2710 F	1	11222144302A	08/10/2011 21:45	Daniel S Smith	1

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: MW-257_07152011 Grab Product
Marcus Hook Refinery
COC: 265348 MW-257_07152011

LLI Sample # G5 6362677
LLI Group # 1259500
Account # 10132

Project Name: SUN: Marcus Hook Refinery

Collected: 07/15/2011 13:30 by SS

Submitted: 08/02/2011 16:20
Reported: 08/26/2011 12:26

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

MW257

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**SW-846 8015B modified**		**see below**	**see below**	
02535	Quantitative GC Fingerprint	n.a.	< 1.0	1.0	1
Wet Chemistry	**SM20 2710 F**				
01443	Specific Gravity	n.a.	0.91	0.020	1
	Due to limited sample volume, a QC duplicate was not analyzed for specific gravity.				

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/12

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02535	Quantitative GC Fingerprint	SW-846 8015B modified	1	112200002A	08/10/2011 01:25	Robert Brown	1
01443	Specific Gravity	SM20 2710 F	1	11222144302A	08/10/2011 21:45	Daniel S Smith	1

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Sample Description: MW-222_07152011 Grab Product
Marcus Hook Refinery
COC: 265348 MW-222_07152011

LLI Sample # G5 6362678
LLI Group # 1259500
Account # 10132

Project Name: SUN: Marcus Hook Refinery

Collected: 07/15/2011 13:50 by SS

Submitted: 08/02/2011 16:20
Reported: 08/26/2011 12:26

SUN: Aquaterra Tech.
PO Box 744
West Chester PA 19381

MW222

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons	**SW-846 8015B modified**		**see below**	**see below**	
02535	Quantitative GC Fingerprint	n.a.	< 1.0	1.0	1
Wet Chemistry	**SM20 2710 F**				
01443	Specific Gravity	n.a.	0.91	0.020	1
	Due to limited sample volume, a QC duplicate was not analyzed for specific gravity.				

General Sample Comments

PA DEP Lab Certification ID 36-00037, Expiration Date: 1/31/12

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
02535	Quantitative GC Fingerprint	SW-846 8015B modified	1	112200002A	08/10/2011 02:10	Robert Brown	1
01443	Specific Gravity	SM20 2710 F	1	11222144302A	08/10/2011 21:45	Daniel S Smith	1

Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

Quality Control Summary

Client Name: SUN: Aquaterra Tech. Group Number: 1259500
Reported: 08/26/11 at 12:26 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 112200002A	Sample number(s): 6362662-6362678							
Quantitative GC Fingerprint	< 1.0	1.0	see below					

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: Quantitative GC Fingerprint
Batch number: 112200002A

	Chlorobenzene	Orthoterphenyl
6362662	93	106
6362663	93	104
6362664	105	103
6362665	93	99
6362666	96	97
6362667	111	100
6362668	81	86
6362669	86	82
6362670	86	93
6362671	88	95
6362672	88	99
6362673	89	81
6362674	88	106
6362675	91	102
6362676	98	115
6362677	84	97
6362678	87	99
Blank	87	91
Limits:	67-119	42-178

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

Analysis Request/ Environmental Services Chain of Custody

Lancaster Laboratories

For Lancaster Laboratories use only

Acct. # 10132 Group# 1259500 Sample # 6362662-78

COC # 265348

Please print. Instructions on reverse side correspond with circled numbers.

1

Client: SUN / AQUATERRA Acct. #:

Project Name/#: MARCUS HOOK REF PWSID #:

Project Manager: T. DOERR P.O.#:

Sampler: S. SYKES / N. STROIK Quote #:

Name of state where samples were collected: PA

For Lab Use Only

FSC:

SCR#:

Preservation Codes

H=HCl T=Thiosulfate

N=HNO_3 B=NaOH

S=H_2SO_4 O=Other

2 **3** **4** **5** **6**

Sample Identification	Date Collected	Time Collected	Grab	Composite	Soil	Water (Potable ☐ NPDES ☐ Check if Applicable)	Other	Total # of Containers	Product Density Analysis	GC Fingerprint Analysis	Qualitative Analysis (Interpretation of Product Types) *						Remarks
RW-148-07152011	7/15/11	0830	X				X	1									* Include brief description of LNAPL types to be consistent with other LNAPL types in sample group.
MW-197-07152011	7/15/11	0900	X				X	1									
MW-25-07152011	7/15/11	0930	X				X	1									
MW-266-07152011	7/15/11	0945	X				X	1									
MW-289-07152011	7/15/11	1000	X				X	1									
MW-88-07152011	7/15/11	1015	X				X	1									
MW-171-07152011	7/15/11	1030	X				X	1									temp 1.6°C
MW-180-07152011	7/15/11	1105	X				X	1									
MW-177-07152011	7/15/11	1045	X				X	1									
MW-213-07152011	7/15/11	1115	X				X	1									

Temperature of samples upon receipt (if requested)

7 **Turnaround Time Requested** (TAT) (please circle): Normal Rush

(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)

Date results are needed:

Rush results requested by (please circle): Phone Fax E-mail

Phone #: Fax #:

E-mail address:

8 **Data Package Options** (please circle if required)

Type I (validation/NJ Reg) TX TRRP-13

Type II (Tier II) MA MCP CT RCP

Type III (Reduced NJ)

Type IV (CLP SOW)

Type VI (Raw Data Only)

SDG Complete? Yes No

Site-specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate volume.)

Internal COC Required? Yes / No

9

Relinquished by:	Date	Time	Received by:	Date	Time
[signature] / AQT	7/15/11	1600	Sample Fridge	7/15/11	1600
[signature] / AQT	8/2/11	930	[signature]	8/2/11	930
[signature]	8/2/11	1620			
			[signature]	8/2/11	1620

Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 (717) 656-2300 Fax: (717) 656-6766

Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

Issued by Dept. 6042 Management 2102.05

Analysis Request/ Environmental Services Chain of Custody

Lancaster Laboratories

For Lancaster Laboratories use only

Acct. # 10132 Group# 1259500 Sample # 6362662-78 **COC #** 265349

Please print. Instructions on reverse side correspond with circled numbers.

For Lab Use Only
FSC:
SCR#:

(1)
Client: SUN / AQUATERRA Acct. #:
Project Name/#: MARCUS HOOK REF PWSID #:
Project Manager: T. DOERR P.O.#:
Sampler: S. SYKES / N. STROIK Quote #:
Name of state where samples were collected: PA

(5) Analyses Requested — Preservation Codes

Preservation Codes: H=HCl, T=Thiosulfate, N=HNO_3, B=NaOH, S=H_2SO_4, O=Other

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	Matrix: Soil	Matrix: Water (☐ Potable ☐ NPDES Check if Applicable)	Matrix: Other	(4) Total # of Containers	Product Density Analysis	GC Fingerprint Analysis	Qualitative Analysis (Interpretation of Product Types) ☆						Remarks (6) Temperature of samples upon receipt (if requested)
1 MW-132-07152011	7/15/11	1130	X				X	1									☆ Include brief description
MW-130-07152011	7/15/11	1145	X				X	1									of LNAPL types to
MW-54-07152011	7/15/11	1220	X				X	1									be consistent with
MW-83-07152011	7/15/11	1245	X				X	1									other LNAPL types in
MW-98-07152011	7/15/11	1305	X				X	1									sample group.
MW-257-07152011	7/15/11	1330	X				X	1									
MW-222-07152011	7/15/11	1350	X				X	1									temp 1.6°C

(7) **Turnaround Time Requested** (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) **Data Package Options** (please circle if required)
Type I (validation/NJ Reg) TX TRRP-13
Type II (Tier II) MA MCP CT RCP
Type III (Reduced NJ)
Type IV (CLP SOW)
Type VI (Raw Data Only)
SDG Complete? Yes No
Site-specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal COC Required? Yes / No

(9)

Relinquished by:	Date	Time	Received by:	Date	Time
[signature] /AGT	7/15/11	1600	Sample Fridge	7/15/11	1600
[signature] /AGT	8/2/11	930	[signature]	8/2/11	930
[signature] 8/2/11	8/2/11	1620			
			[signature]	8/2/11	1620

Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 (717) 656-2300 Fax: (717) 656-6766
Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

Issued by Dept. 6042 Management
2102.05

SUN: Aquaterra Tech. Marcus Hook Refinery

Interpretation of Product Types, Proportions, and Weathering

LL Sample Number	Sample Code	Specific Gravity	LL LNAPL Type(s)	Range; Proportion (%)	Range; Proportion (%)	Range; Proportion (%)	Weathering	Quite Similar To
6362662	RW148	0.85	Diesel	Gasoline; 18%	Diesel; 50%	Heavy Residual; <1%	Slight	6362675
6362663	MW197	0.85	Gasoline	Gasoline; 27%	Diesel; 19%	Heavy Residual; <1%	Slight	None
6362664	MW-25	0.84	Gasoline/Diesel	Gasoline; 19%	Diesel; 34%	Heavy Residual; <1%	Extreme	All "Gasoline/Diesel"
6362665	MW266	0.87	Gasoline/Diesel	Gasoline; 11%	Diesel; 35%	Heavy Residual; 10%	Extreme	All "Gasoline/Diesel"
6362666	MW289	0.85	Gasoline/Diesel	Gasoline; 15%	Diesel; 31%	Heavy Residual; 8%	Extreme	All "Gasoline/Diesel"
6362667	MW-88	0.90	Residual	Gasoline; 6%	Diesel; 26%	Heavy Residual; 28%	Extreme	6362673
6362668	MW171	0.86	Lube/Residual	Gasoline; 2%	Diesel; 52%	Heavy Residual; 15%	Extreme	6362669
6362669	MW180	0.88	Lube/Residual	Gasoline; <1%	Diesel; 37%	Heavy Residual; 25%	Extreme	6362668
6362670	MW177	0.89	Lube	Gasoline; <1%	Diesel; 14%	Heavy Residual; 41%	Slight	6362672
6362671	MW213	0.90	Residual	Gasoline; <1%	Diesel; 43%	Heavy Residual; 18%	Extreme	6362677-78
6362672	MW132	0.91	Lube	Gasoline; <1%	Diesel; 11%	Heavy Residual; 44%	Slight	6362670
6362673	MW130	0.92	Residual	Gasoline; <1%	Diesel; 29%	Heavy Residual; 23%	Extreme	6362667
6362674	MW-54	0.90	Lube (early)	Gasoline; <1%	Diesel; 55%	Heavy Residual; 1%	N/A	None
6362675	MW-83	0.85	Diesel	Gasoline; 17%	Diesel; 58%	Heavy Residual; 1%	Slight	6362662
6362676	MW-98	0.87	Gasoline/Diesel	Gasoline; 15%	Diesel; 38%	Heavy Residual; 3%	Slight	All "Gasoline/Diesel"
6362677	MW257	0.91	Residual	Gasoline; <1%	Diesel; 53%	Heavy Residual; 15%	Extreme	6362671; 6362678
6362678	MW222	0.91	Lube/Residual	Gasoline; <1%	Diesel; 42%	Heavy Residual; 20%	Extreme	6362671; 6362677

Notes:

Gasoline: C8-C12

Diesel: >C12-C28

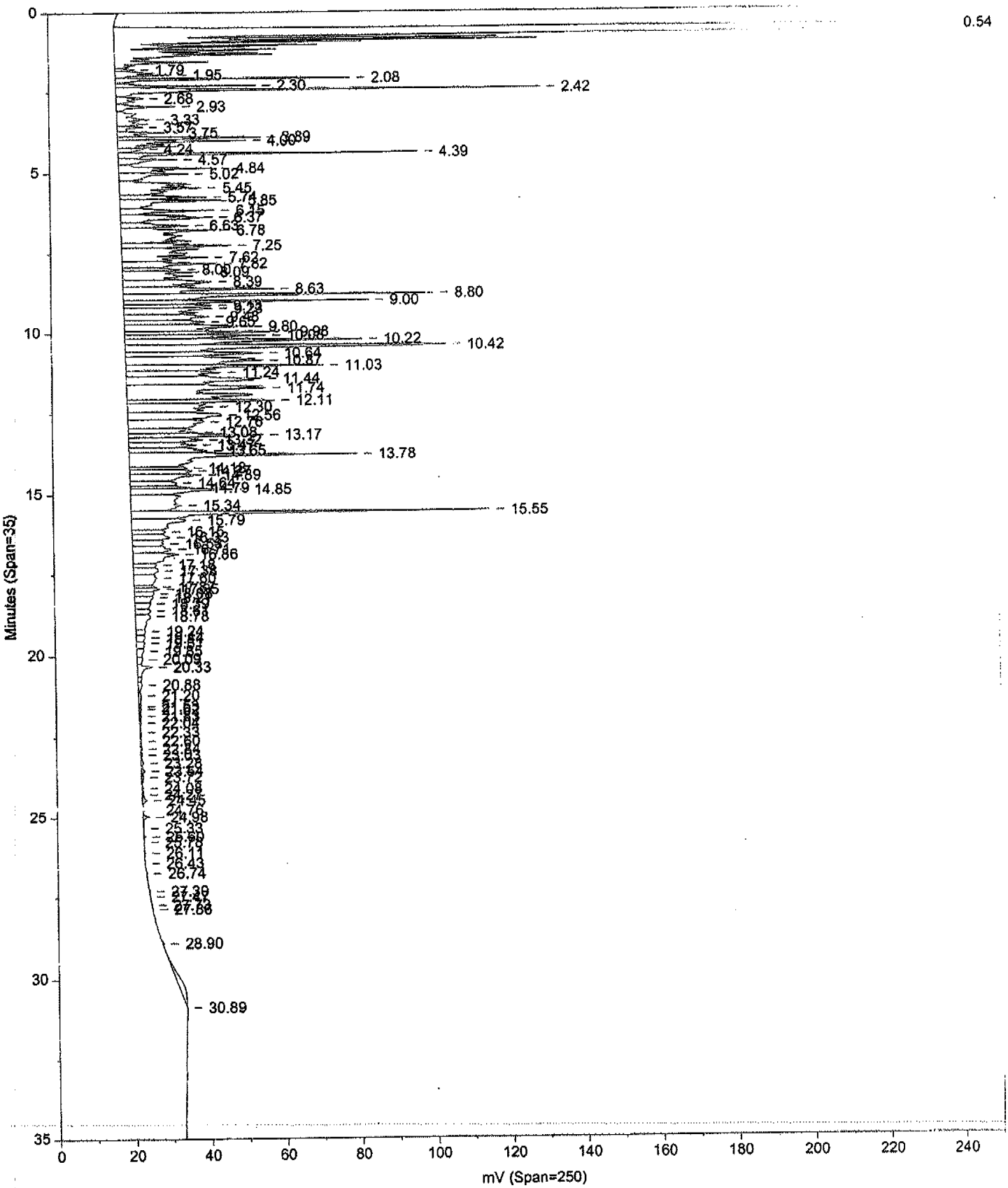
Heavy Residual: >C28-C40

Calculated TPH values represent total mass in C8-C40 normal hydrocarbon range; some product mass elutes prior to C8 and after C40.

TPH GC/FID; METHOD 8015B

6362662DF10 ABRW148 T 112200002A 02535

C:\CPWIN\DATA1\R220.20R



Instrument ID:CP25--H6611B
Volume Inj. per Column: 1
Oven Parameters: 40C 2 MIN; 10C/MIN to 320C; HOLD 5MIN
Sample Amount: 0.112

Injected on: 8/9/2011 12:44:47 PM
GC Column: ZB-5 30M x 0.32mm x 0.25um; INJ 300C; FID 320C
Dilution Factor: 100

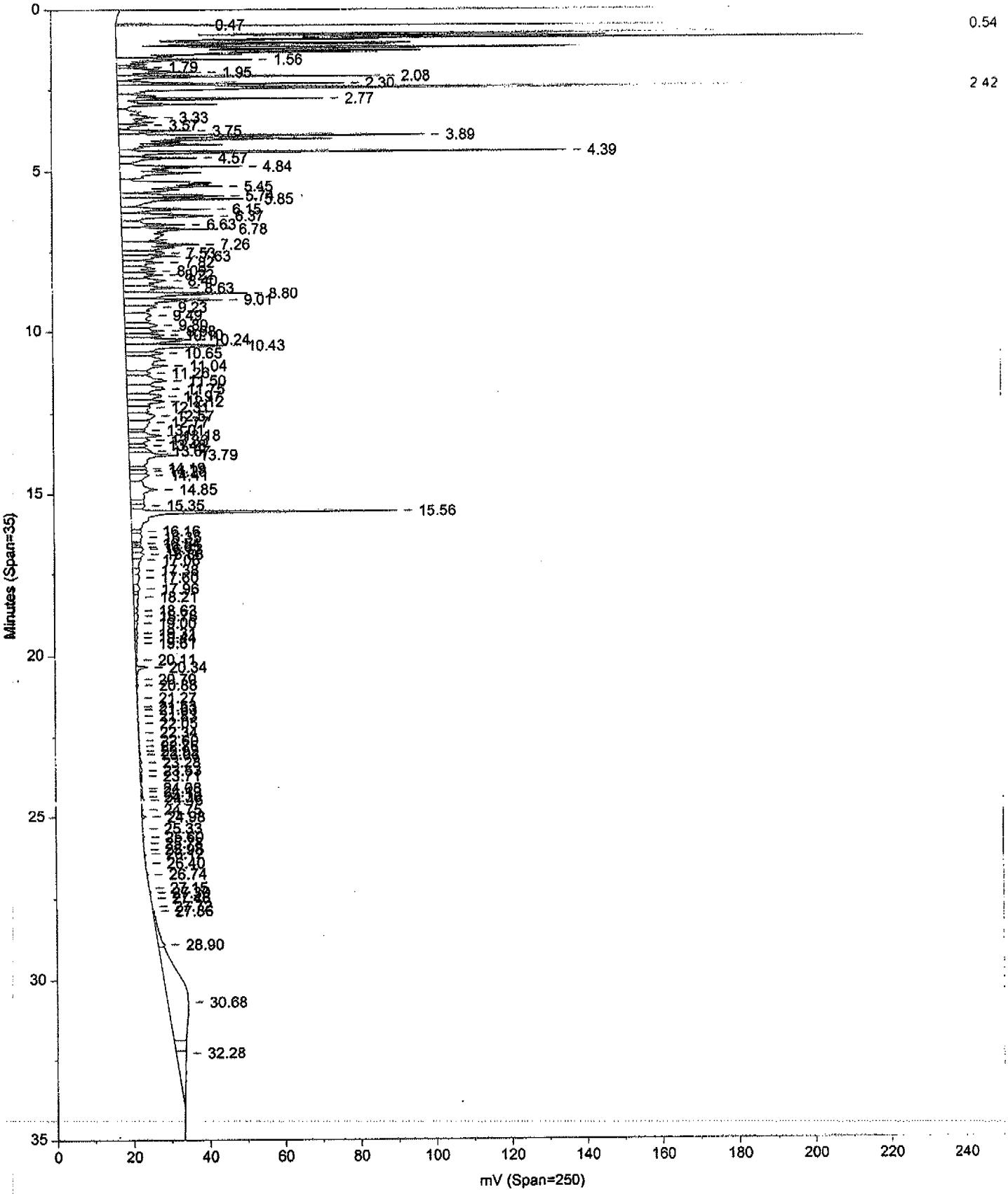
C:\CPWIN\DATA1\R220.20R

Printed on 8/9/2011 1:52:26 PM

TPH GC/FID; METHOD 8015B

6362663DF10 ABMW197 T 112200002A 02535

C:\CPWIN\DATA1\R220.21R



Instrument ID:CP25--H6611B

Injected on: 8/9/2011 1:29:35 PM

Volume Inj. per Column: 1

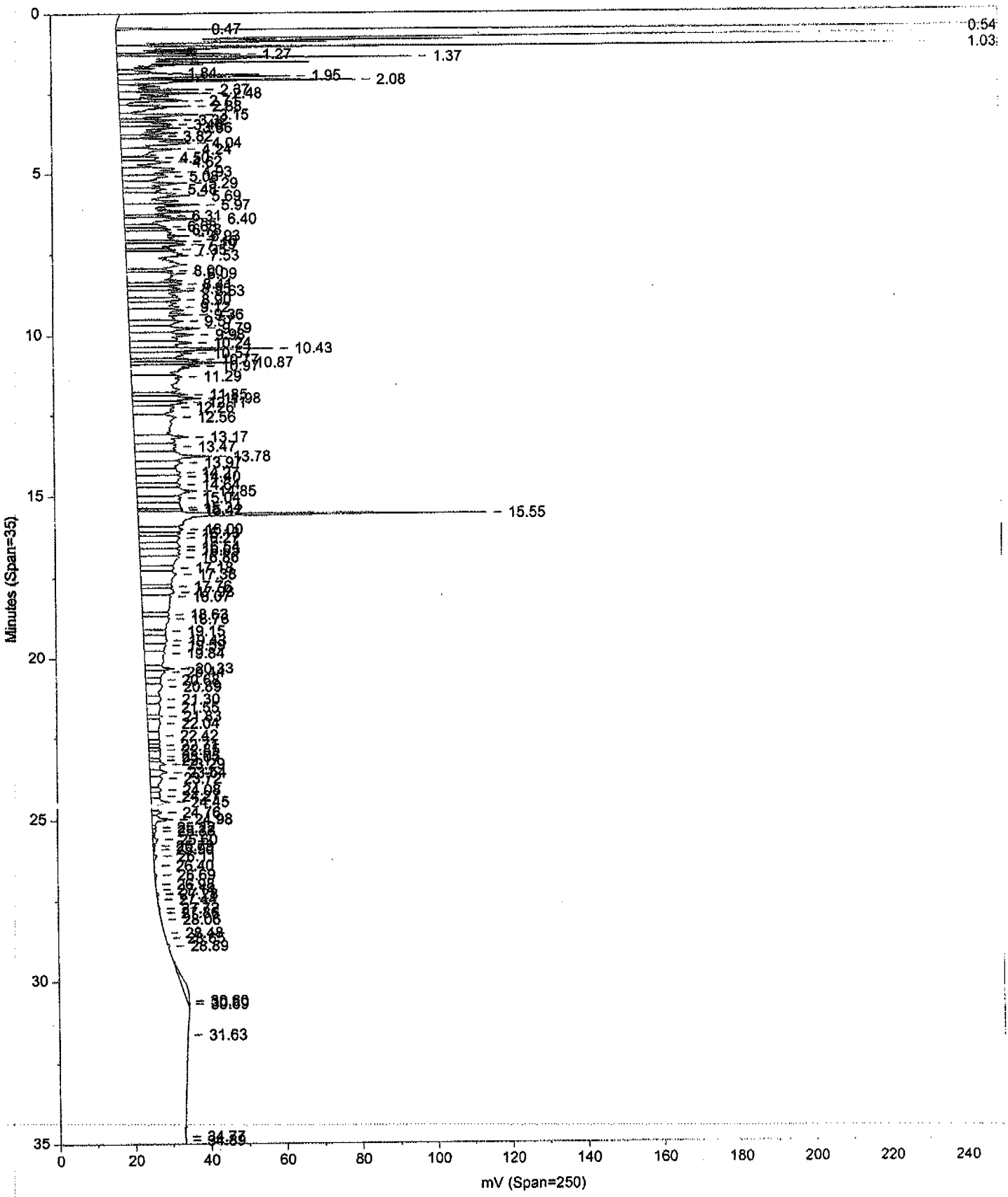
GC Column: ZB-5 30M x 0.32mm x 0.25um; INJ 300C; FID 320C

Oven Parameters: 40C 2 MIN; 10C/MIN to 320C; HOLD 5MIN

Sample Amount: 0.092

Dilution Factor: 100

TPH GC/FID; METHOD 8015B
6362664DF10 ABMW-25 T 112200002A 02535
C:\CPWIN\DATA1\R220.22R



Instrument ID:CP25--H6611B
Volume Inj. per Column: 1
Oven Parameters: 40C 2 MIN; 10C/MIN to 320C; HOLD 5MIN
Sample Amount: 0.1111

Injected on: 8/9/2011 2:14:49 PM
GC Column: ZB-5 30M x 0.32mm x 0.25um; INJ 300C; FID 320C
Dilution Factor: 100

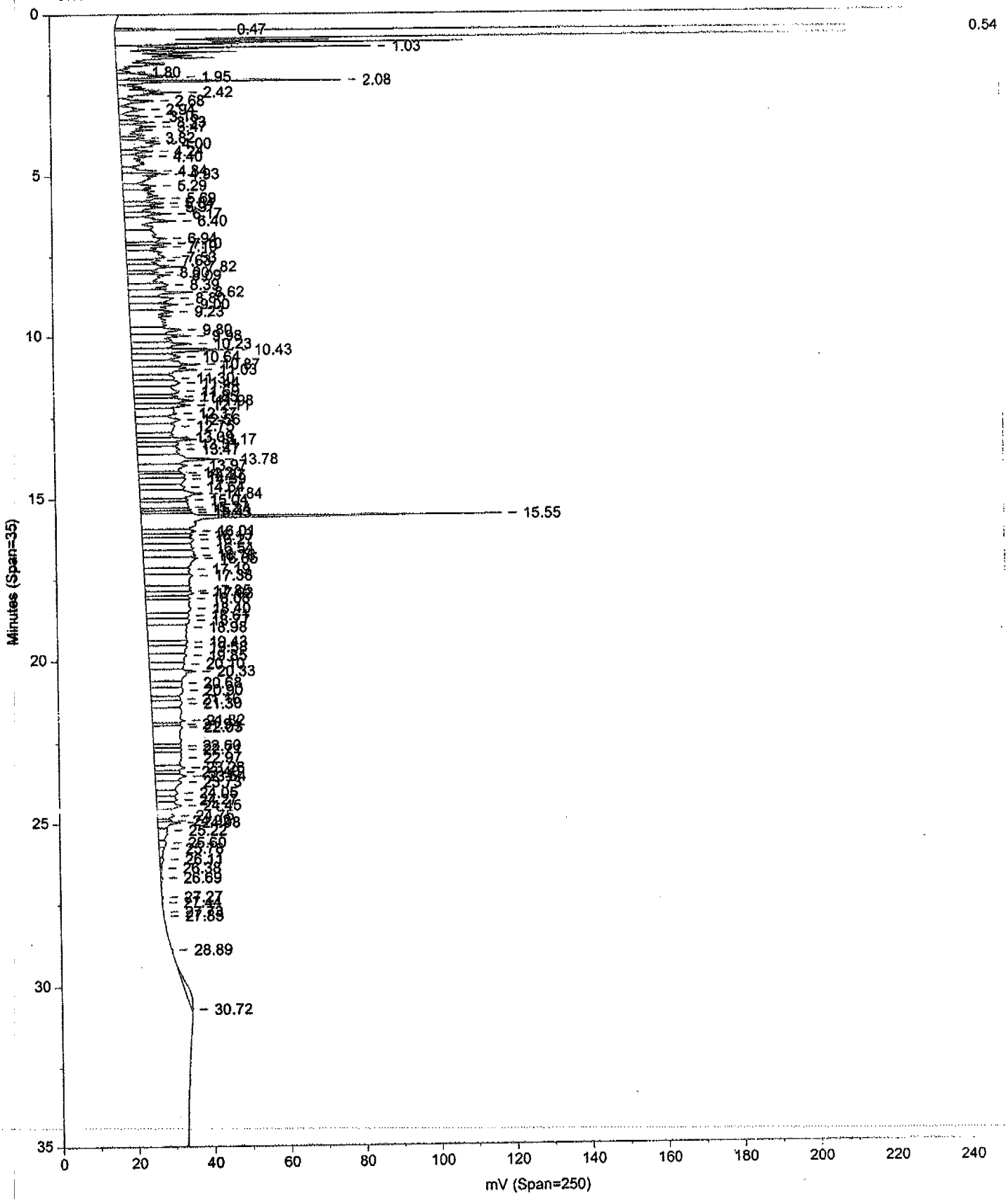
C:\CPWIN\DATA1\R220.22R

Printed on 8/9/2011 2:50:00 PM

TPH GC/FID; METHOD 8015B

6362665DF10 ABMW266 T 112200002A 02535

C:\CPWIN\DATA1\R220.23R



Instrument ID:CP25--H6611B

Volume Inj. per Column: 1

Oven Parameters: 40C 2 MIN; 10C/MIN to 320C; HOLD 5MIN

Sample Amount: 0.1137

Injected on: 8/9/2011 2:59:43 PM

GC Column: ZB-5 30M x 0.32mm x 0.25um; INJ 300C; FID 320C

Dilution Factor: 100

TPH GC/FID; METHOD 8015B

6362666DF10 ABMW289 T 112200002A 02535

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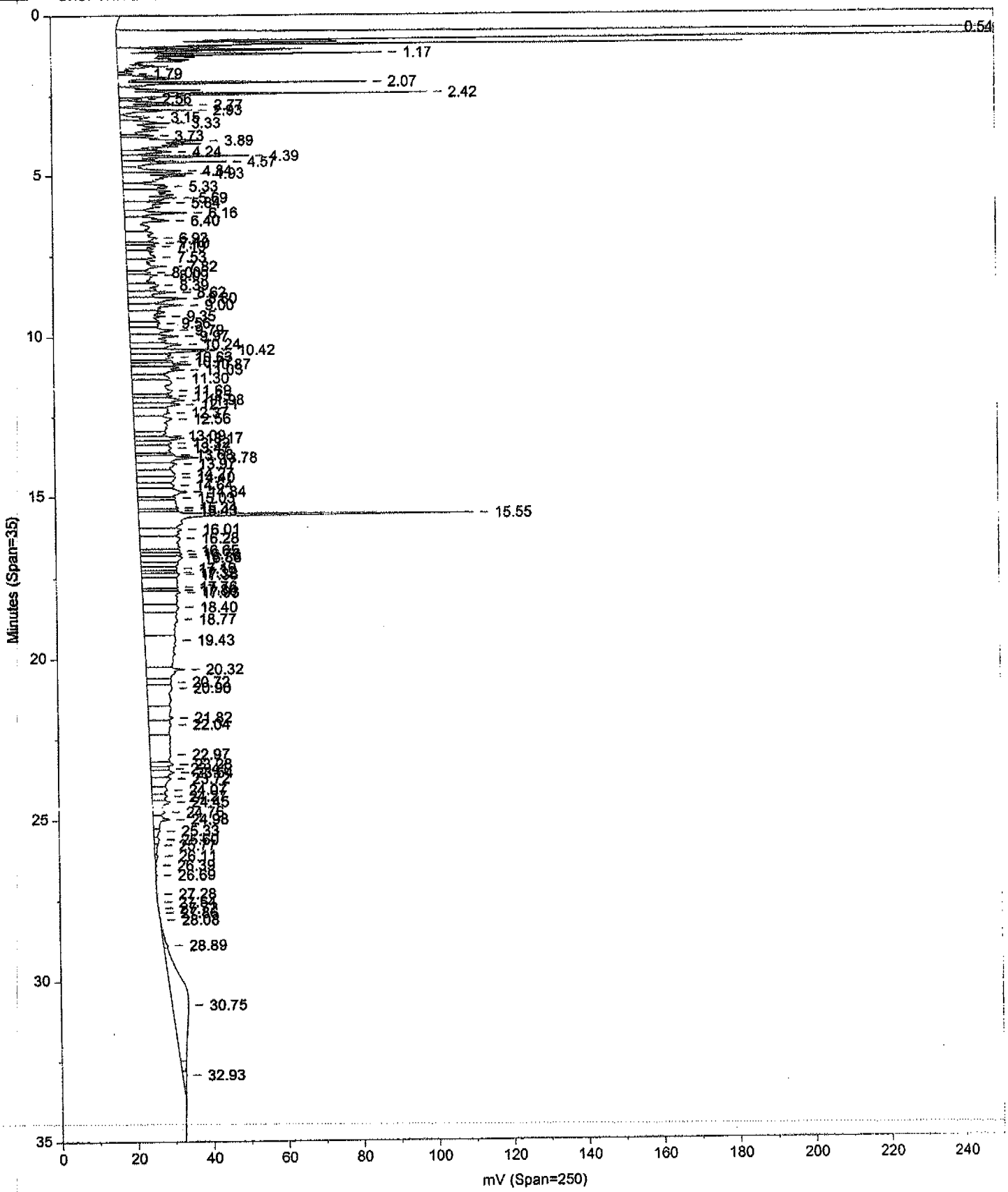


Instrument ID:CP25--H6611B

Injected on: 8/9/2011 3:44:37 PM

Volume Inj. per Column: 1

GC Column: ZB-5 30M x 0.32mm x 0.25um; INJ 300C; FID 320C

Oven Parameters: 40C 2 MIN; 10C/MIN to 320C; HOLD 5MIN

Sample Amount: 0.1069

Dilution Factor: 100

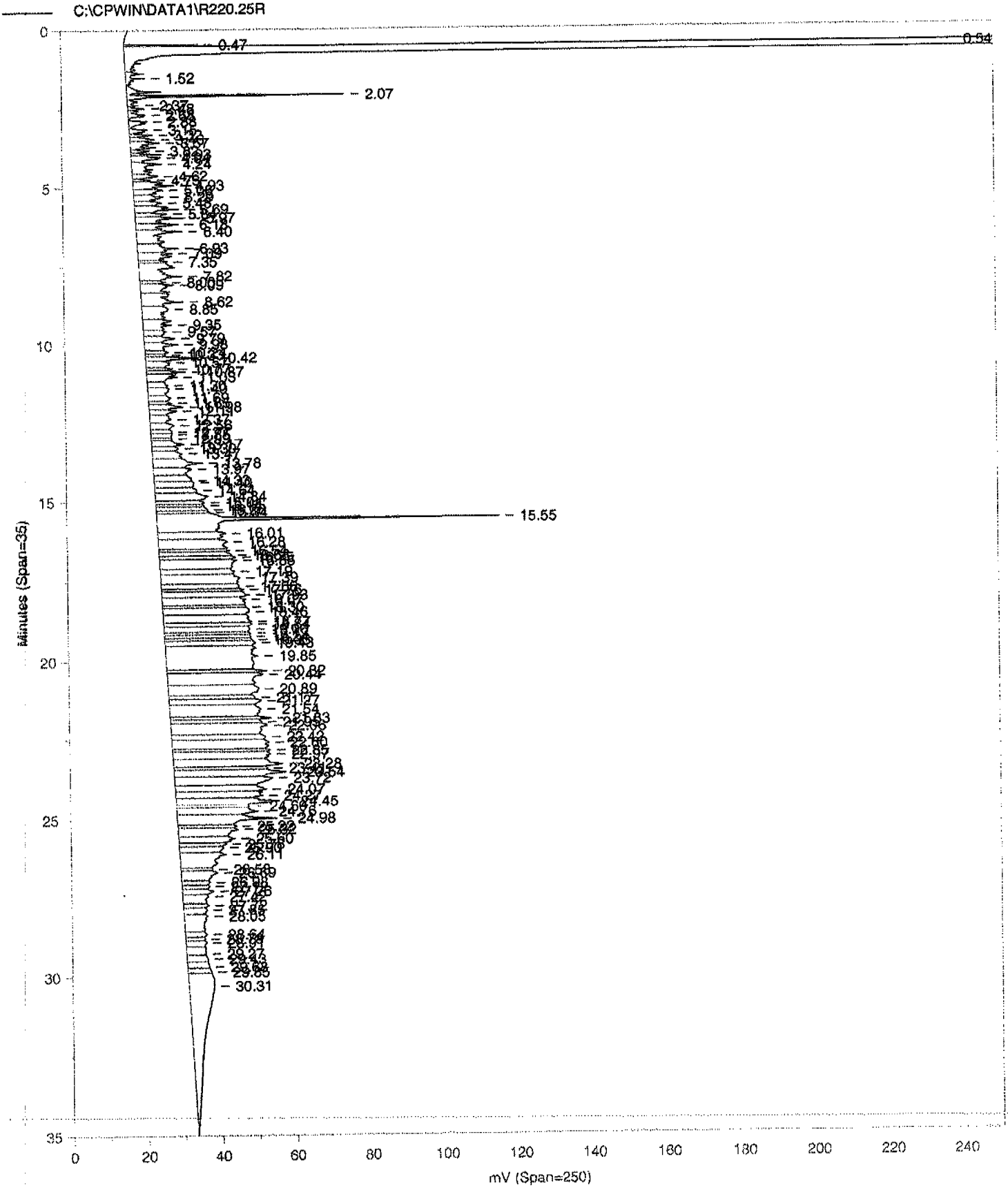
C:\CPWIN\DATA1\R220.24R

Printed on 8/9/2011 4:19:48 PM

TPH GC/FID; METHOD 8015B

6362667DF10 ABMW-88 T 112200002A 02535

C:\CPWIN\DATA1\R220.25R



Instrument ID:CP25--H6611B

Injected on: 8/9/2011 4:29:25 PM

Volume Inj. per Column: 1

GC Column: ZB-5 30M x 0.32mm x 0.25um; INJ 300C; FID 320C

Oven Parameters: 40C 2 MIN; 10C/MIN to 320C; HOLD 5MIN

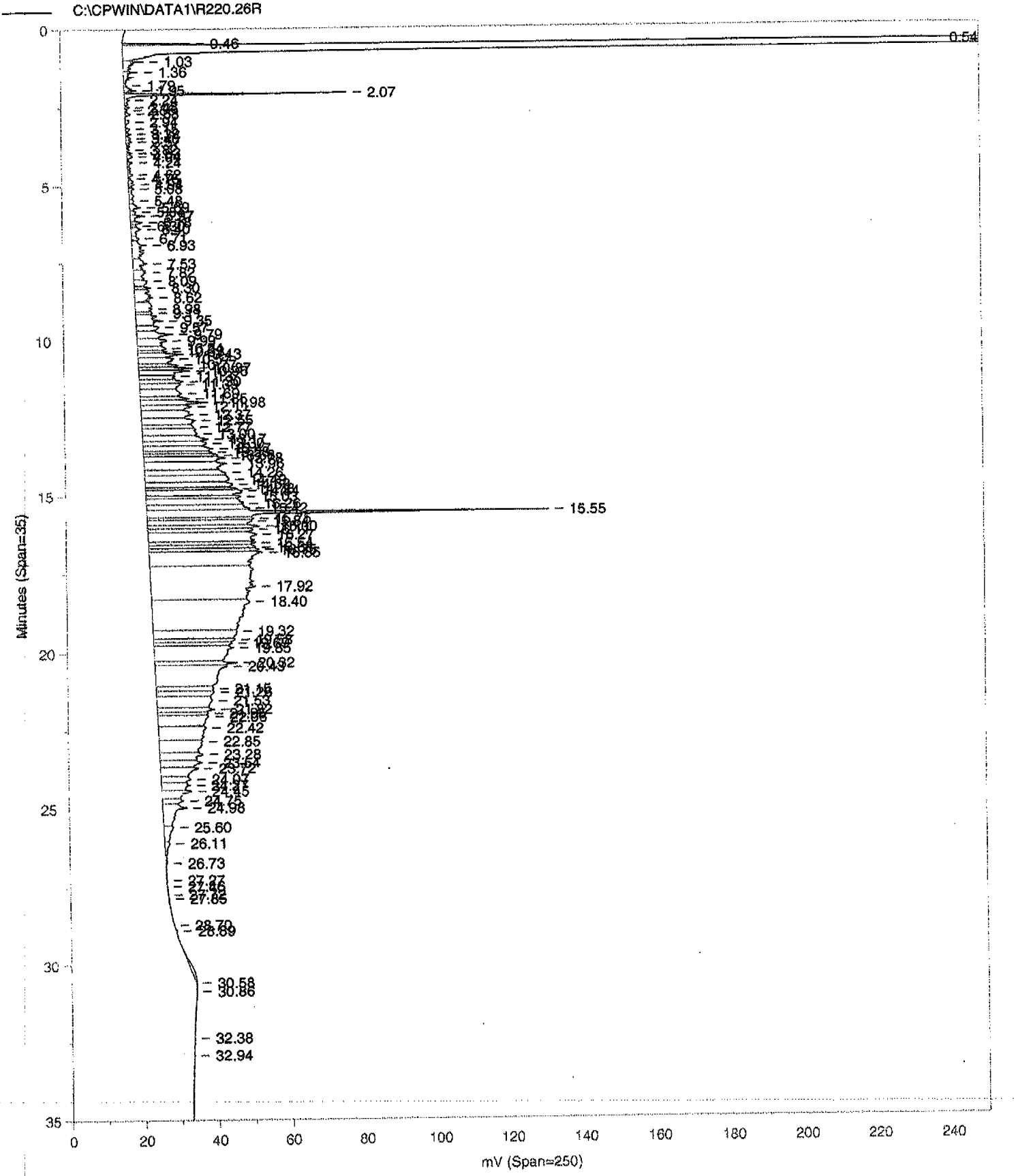
Sample Amount: 0.168

Dilution Factor: 100

TPH GC/FID; METHOD 8015B

6362668DF10 ABMW171 T 112200002A 02535

C:\CPWIN\DATA1\R220.26R



Instrument ID:CP25--H6611B

Volume Inj. per Column: 1

Oven Parameters: 40C 2 MIN; 10C/MIN to 320C; HOLD 5MIN

Sample Amount: 0.1247

Injected on: 8/9/2011 5:14:15 PM

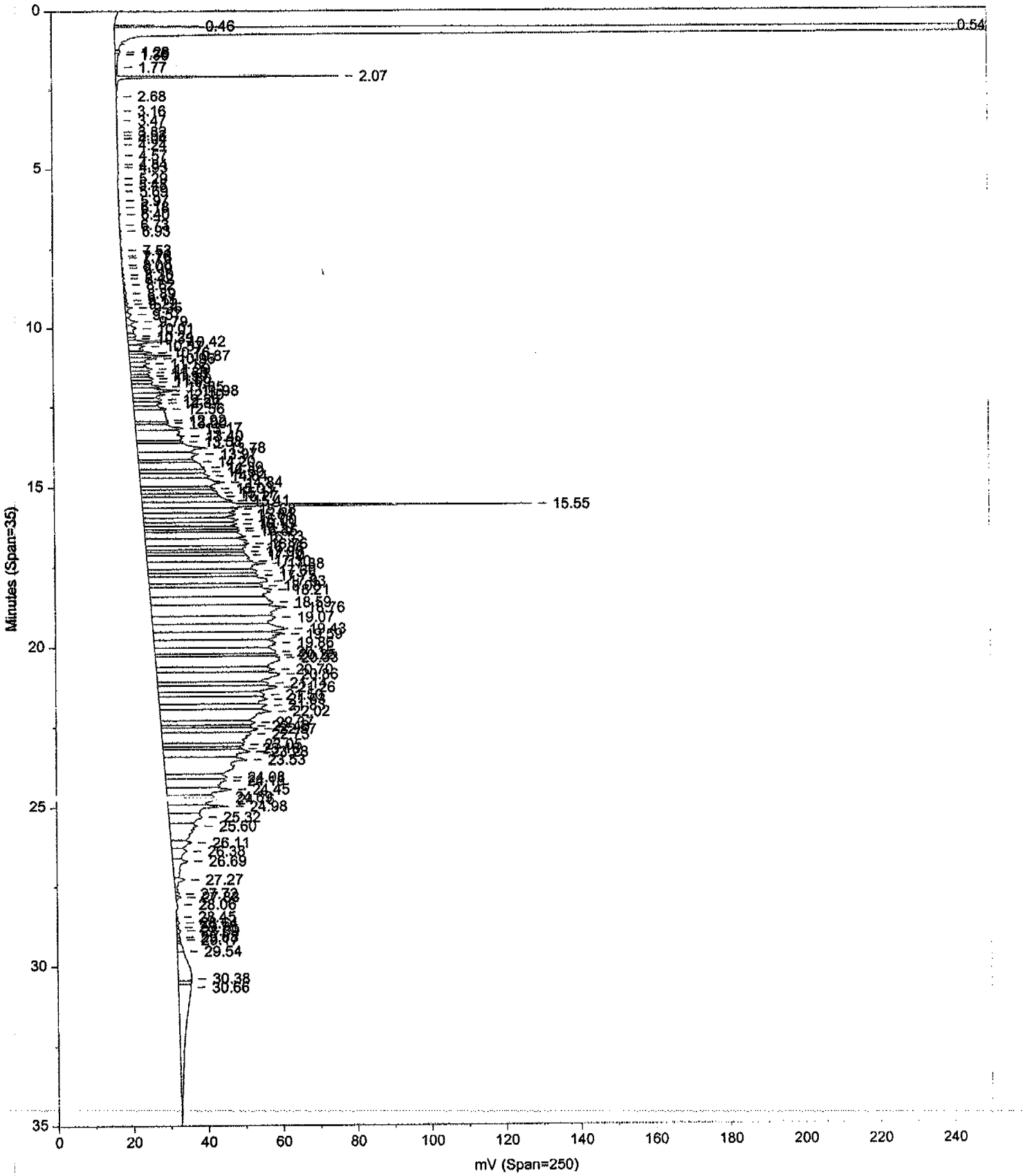
GC Column: ZB-5 30M x 0.32mm x 0.25um; INJ 300C; FID 320C

Dilution Factor: 100

TPH GC/FID; METHOD 8015B

6362669DF10 ABMW180 T 112200002A 02535

C:\CPWIN\DATA1\R220.27R



Instrument ID:CP25--H6611B

Injected on: 8/9/2011 5:59:04 PM

Volume Inj. per Column: 1

GC Column: ZB-5 30M x 0.32mm x 0.25um; INJ 300C; FID 320C

Oven Parameters: 40C 2 MIN; 10C/MIN to 320C; HOLD 5MIN

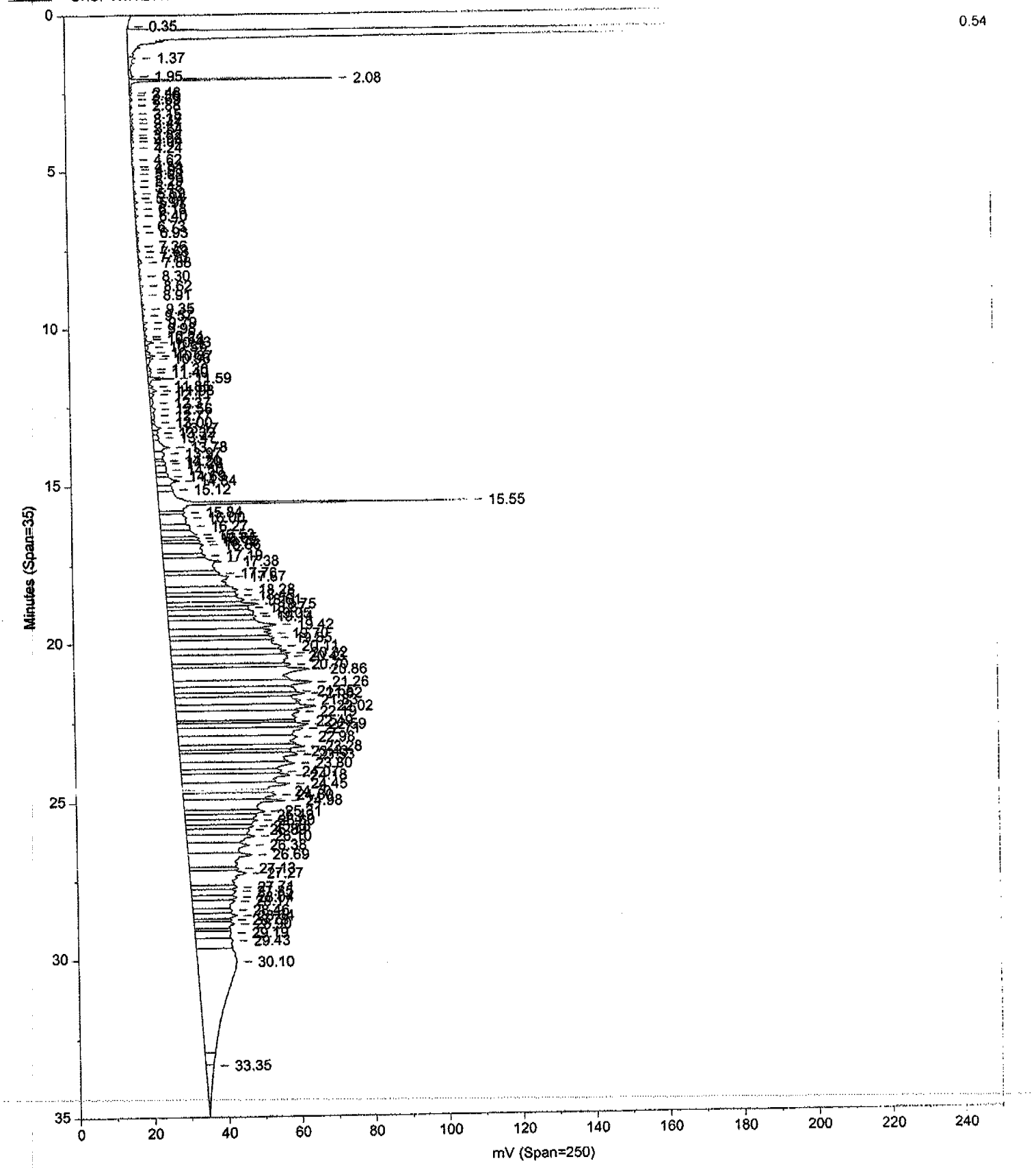
Sample Amount: 0.153

Dilution Factor: 100

TPH GC/FID; METHOD 8015B

6362670DF10 ABMW177 T 112200002A 02535

C:\CPWIN\DATA1\R220.28R



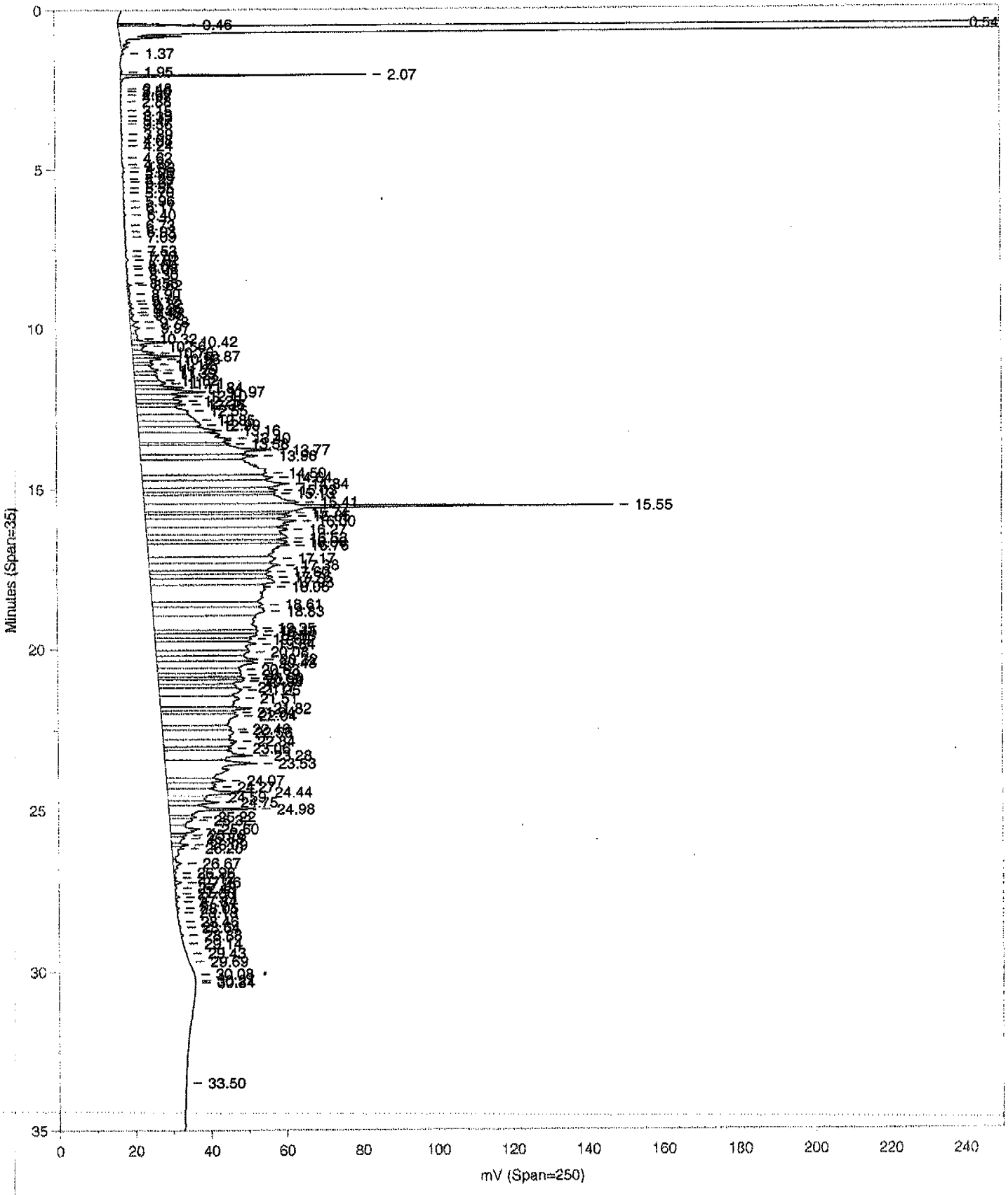
Instrument ID:CP25--H6611B
Volume Inj. per Column: 1
Oven Parameters: 40C 2 MIN; 10C/MIN to 320C; HOLD 5MIN
Sample Amount: 0.1616

Injected on: 8/9/2011 6:43:49 PM
GC Column: ZB-5 30M x 0.32mm x 0.25um; INJ 300C; FID 320C
Dilution Factor: 100

TPH GC/FID; METHOD 8015B

6362671DF10 ABMW213 T 112200002A 02535

C:\CPWIN\DATA1\R220.31R



Instrument ID:CP25--H6611B

Injected on: 8/9/2011 8:57:48 PM

Volume Inj. per Column: 1

GC Column: ZB-5 30M x 0.32mm x 0.25um; INJ 300C; FID 320C

Oven Parameters: 40C 2 MIN; 10C/MIN to 320C; HOLD 5MIN

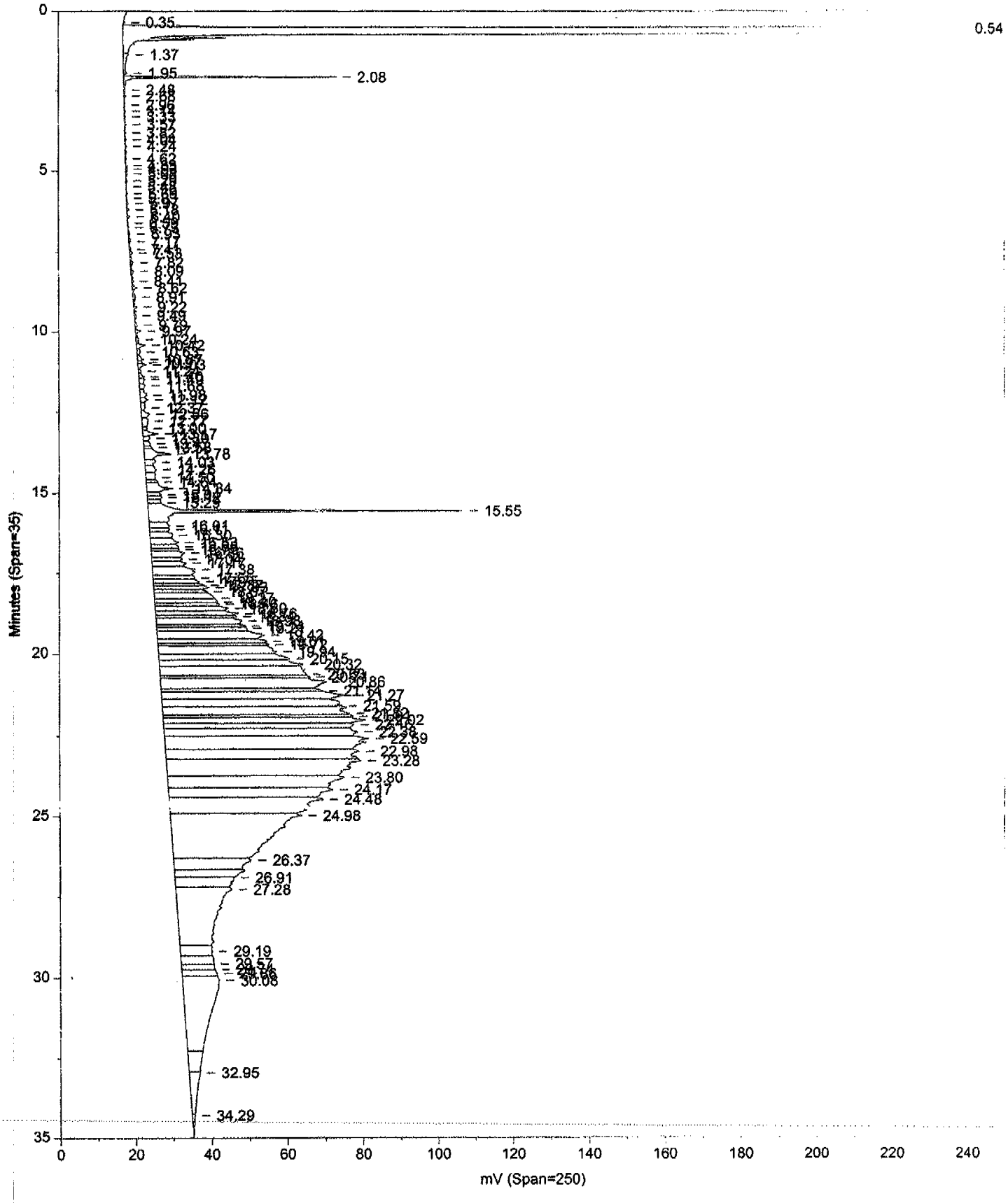
Sample Amount: 0.163

Dilution Factor: 100

TPH GC/FID; METHOD 8015B

6362672DF10 ABMW132 T 112200002A 02535

C:\CPWIN\DATA1\R220.32R



Instrument ID:CP25--H6611B

Injected on: 8/9/2011 9:42:23 PM

Volume Inj. per Column: 1

GC Column: ZB-5 30M x 0.32mm x 0.25um; INJ 300C; FID 320C

Oven Parameters: 40C 2 MIN; 10C/MIN to 320C; HOLD 5MIN

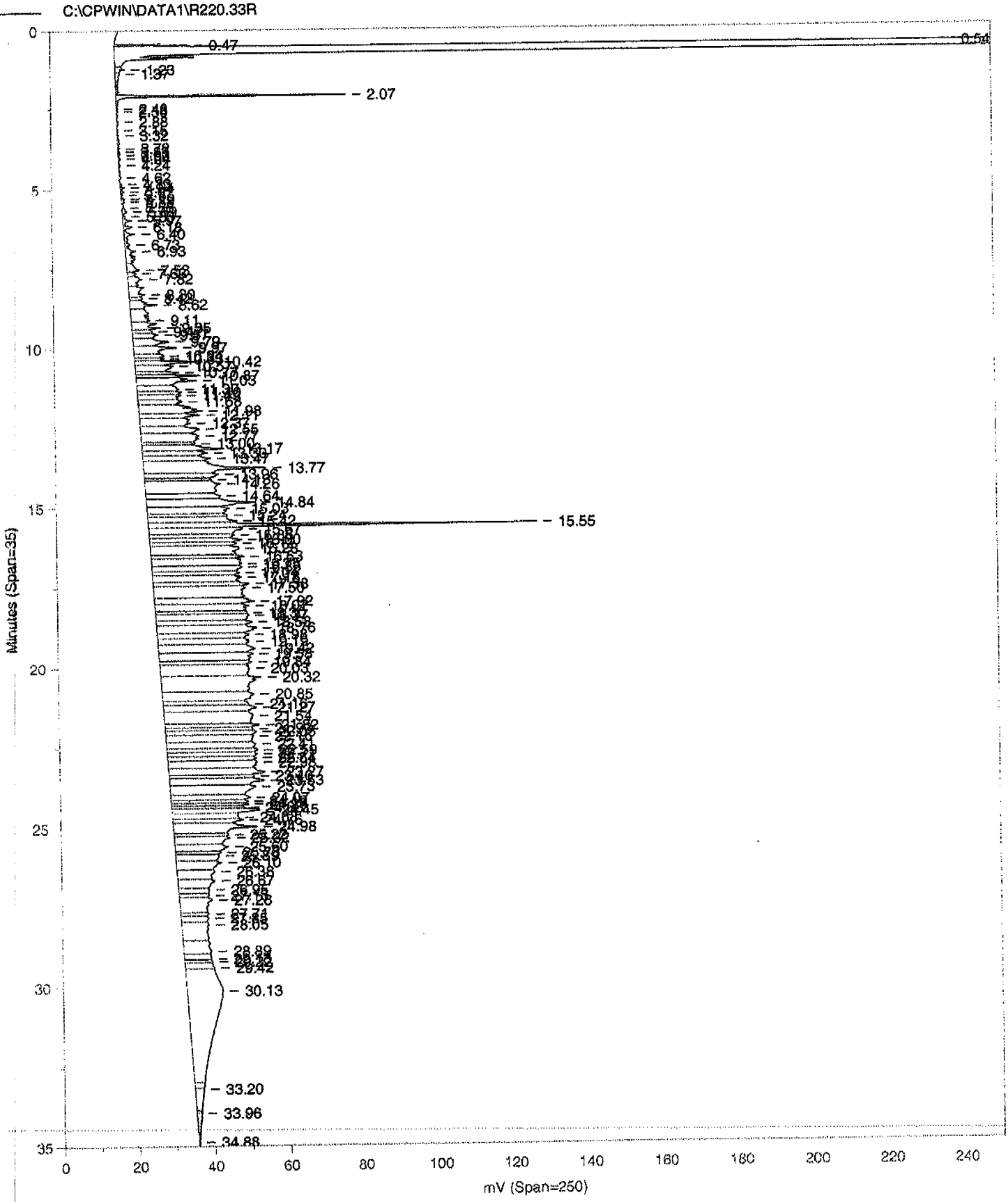
Sample Amount: 0.1994

Dilution Factor: 100

TPH GC/FID; METHOD 8015B

6362673DF10 ABMW130 T 112200002A 02535

C:\CPWIN\DATA1\R220.33R



Instrument ID:CP25--H6611B

Volume Inj. per Column: 1

Oven Parameters: 40C 2 MIN; 10C/MIN to 320C; HOLD 5MIN

Sample Amount: 0.2008

Injected on: 8/9/2011 10:27:02 PM

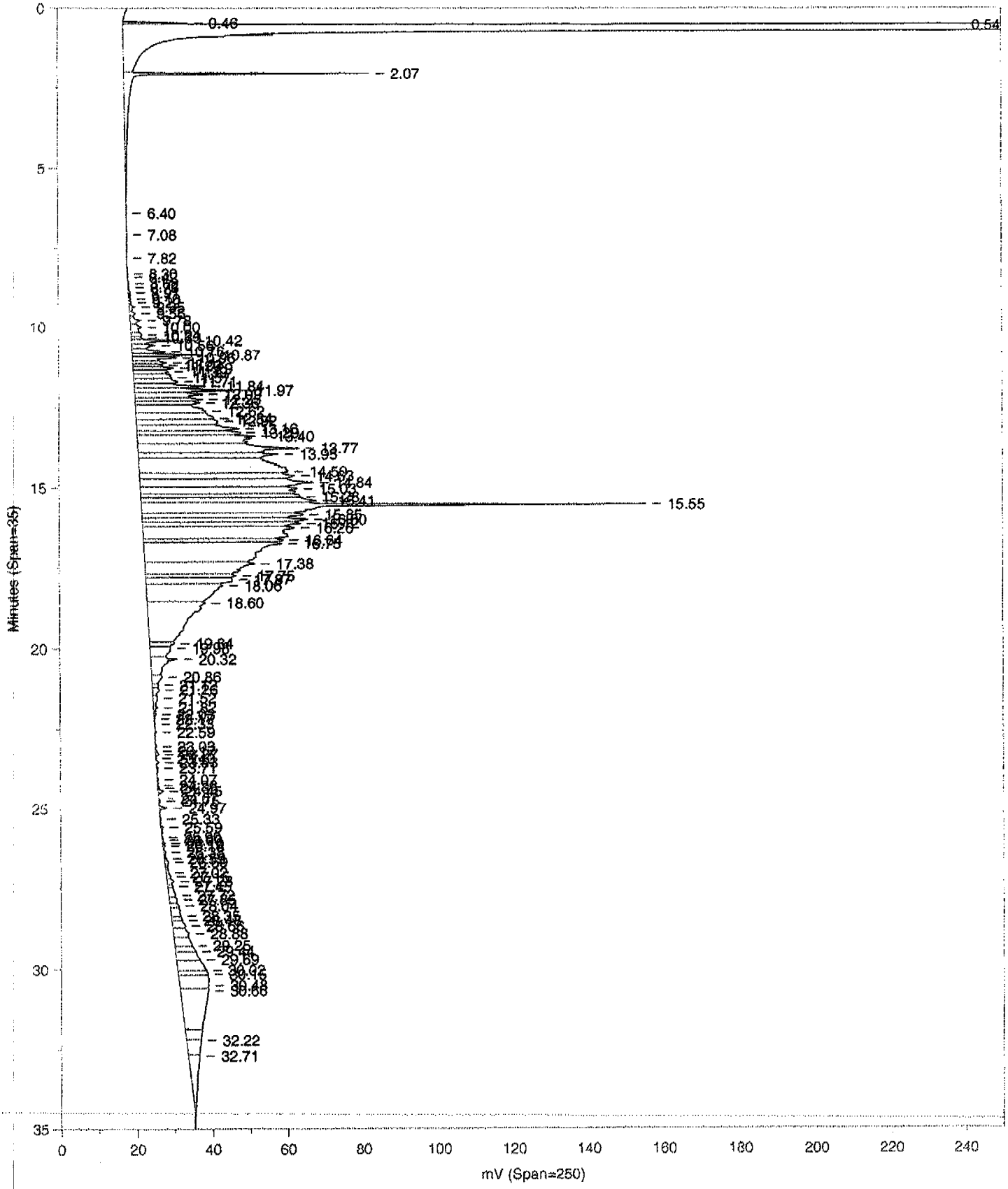
GC Column: ZB-5 30M x 0.32mm x 0.25um; INJ 300C; FID 320C

Dilution Factor: 100

TPH GC/FID; METHOD 8015B

6362674DF10 ABMW-54 T 112200002A 02535

C:\CPWIN\DATA1\R220.34R



Instrument ID:CP25--H6611B

Injected on: 8/9/2011 11:11:42 PM

Volume Inj. per Column: 1

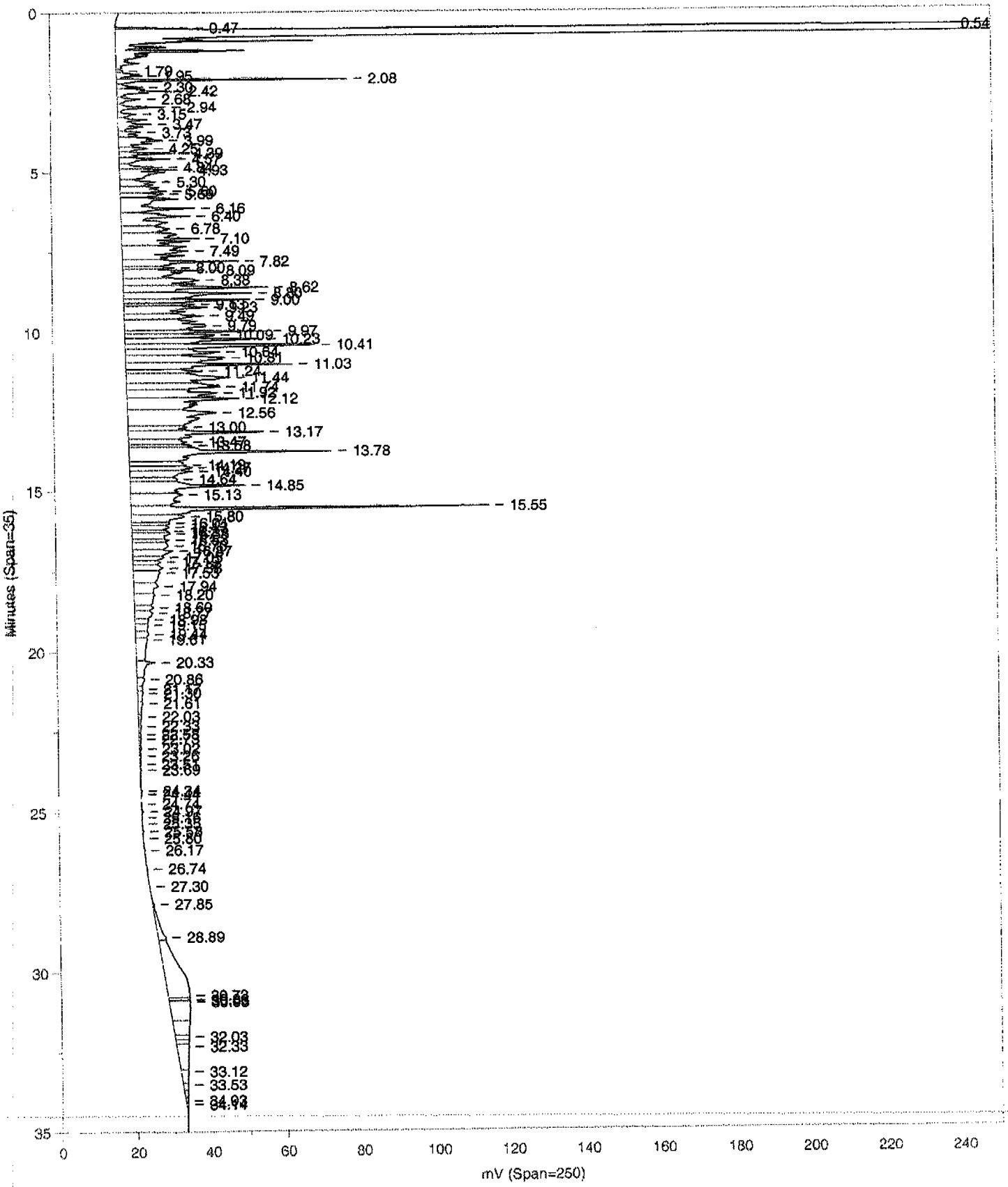
GC Column: ZB-5 30M x 0.32mm x 0.25um; INJ 300C; FID 320C

Oven Parameters: 40C 2 MIN; 10C/MIN to 320C; HOLD 5MIN

Sample Amount: 0.1202

Dilution Factor: 100

TPH GC/FID; METHOD 8015B
6362675DF10 ABMW-83 T 112200002A 02535
C:\CPWIN\DATA1\R220.35R



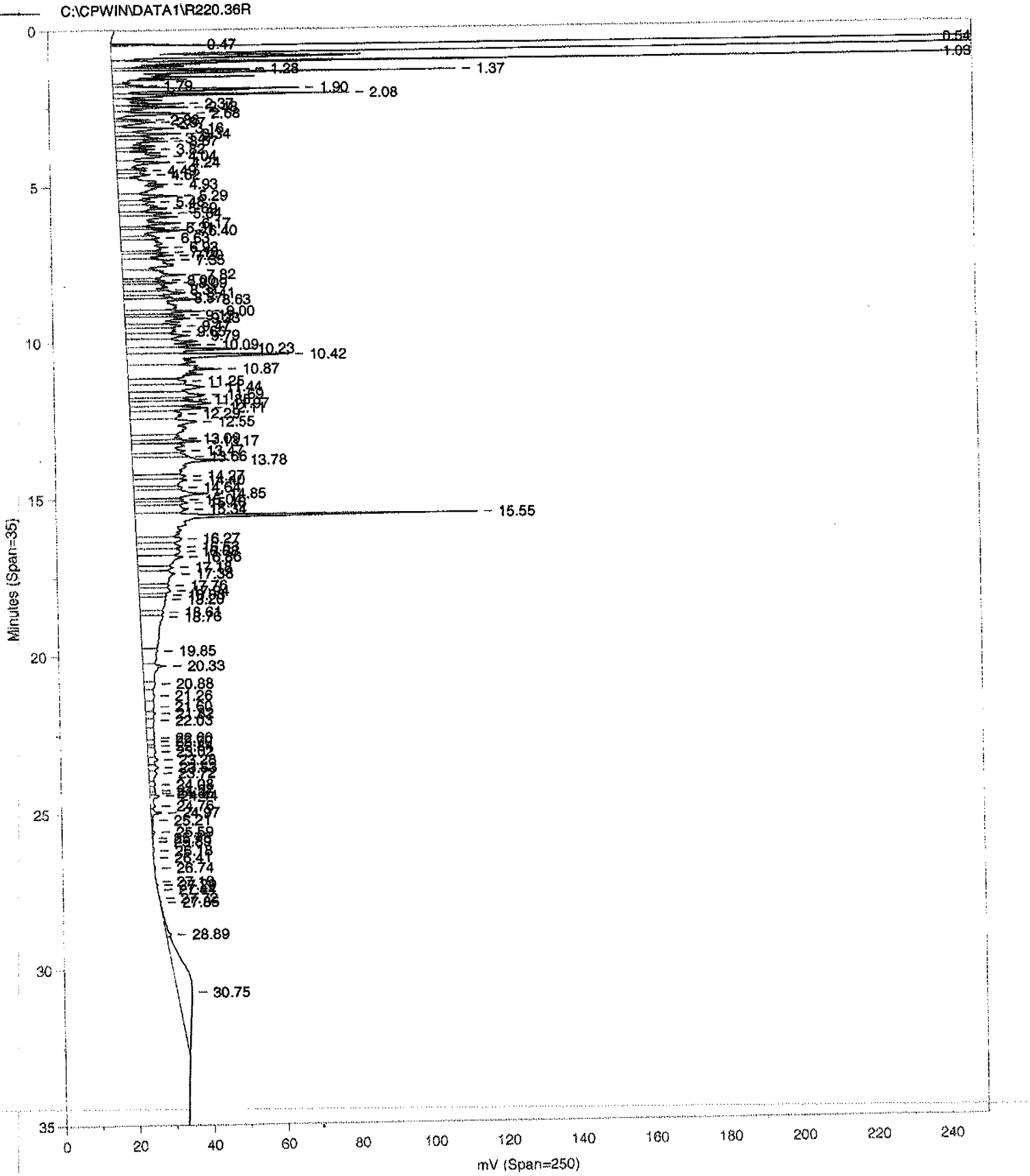
Instrument ID:CP25--H6611B
Volume Inj. per Column: 1
Oven Parameters: 40C 2 MIN; 10C/MIN to 320C; HOLD 5MIN
Sample Amount: 0.0861

Injected on: 8/9/2011 11:56:25 PM
GC Column: ZB-5 30M x 0.32mm x 0.25um; INJ 300C; FID 320C
Dilution Factor: 100

TPH GC/FID; METHOD 8015B

6362676DF10 ABMW-98 T 112200002A 02535

C:\CPWIN\DATA1\R220.36R



Instrument ID:CP25--H6611B

Volume Inj. per Column: 1

Oven Parameters: 40C 2 MIN; 10C/MIN to 320C; HOLD 5MIN

Sample Amount: 0.111

Injected on: 8/10/2011 12:40:59 AM

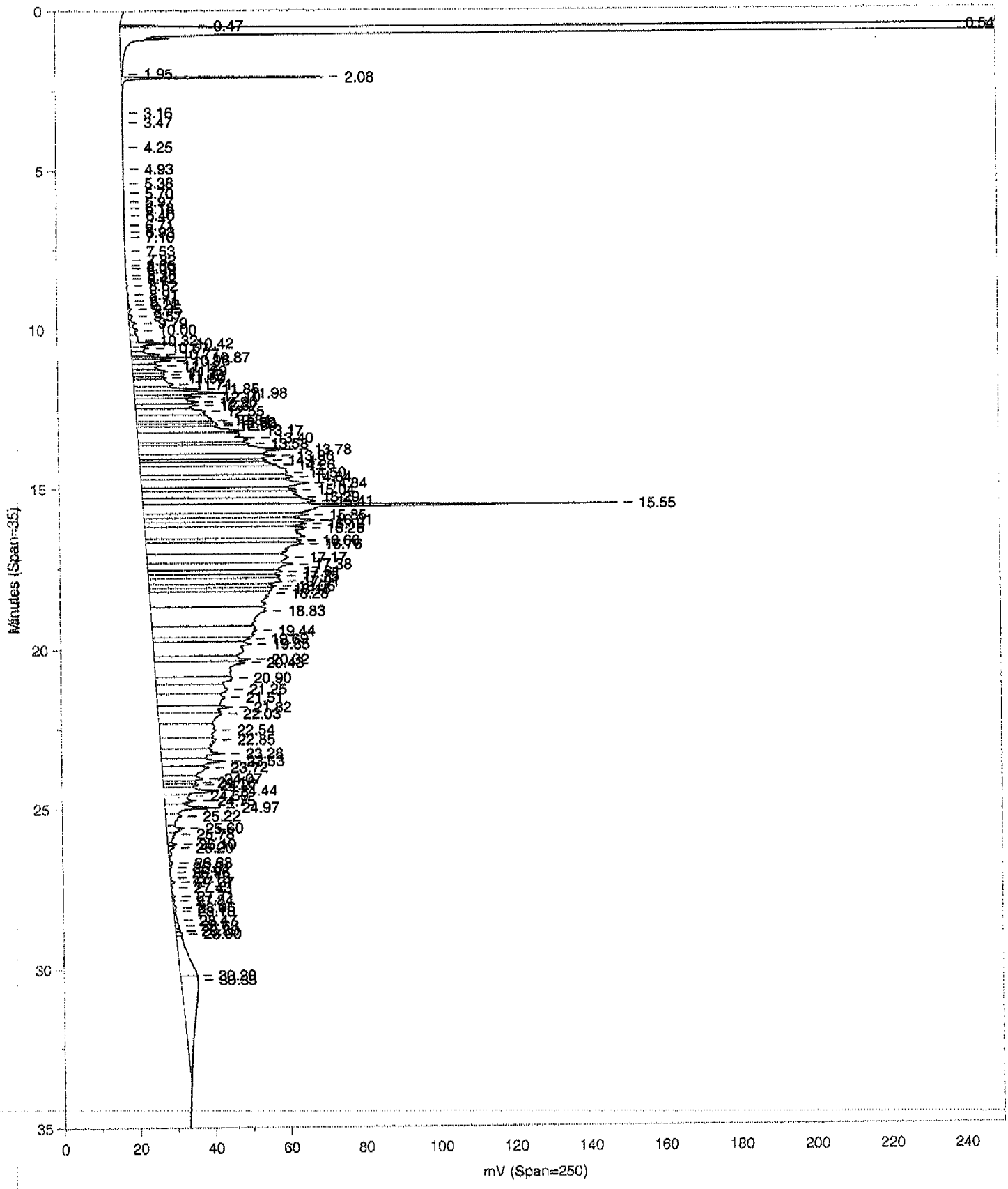
GC Column: ZB-5 30M x 0.32mm x 0.25um; INJ 300C; FID 320C

Dilution Factor: 100

TPH GC/FID; METHOD 8015B

6362677DF10 ABMW257 T 112200002A 02535

C:\CPWIN\DATA1\R220.37R



Instrument ID:CP25--H6611B

Injected on: 8/10/2011 1:25:31 AM

Volume Inj. per Column: 1

GC Column: ZB-5 30M x 0.32mm x 0.25um; INJ 300C; FID 320C

Oven Parameters: 40C 2 MIN; 10C/MIN to 320C; HOLD 5MIN

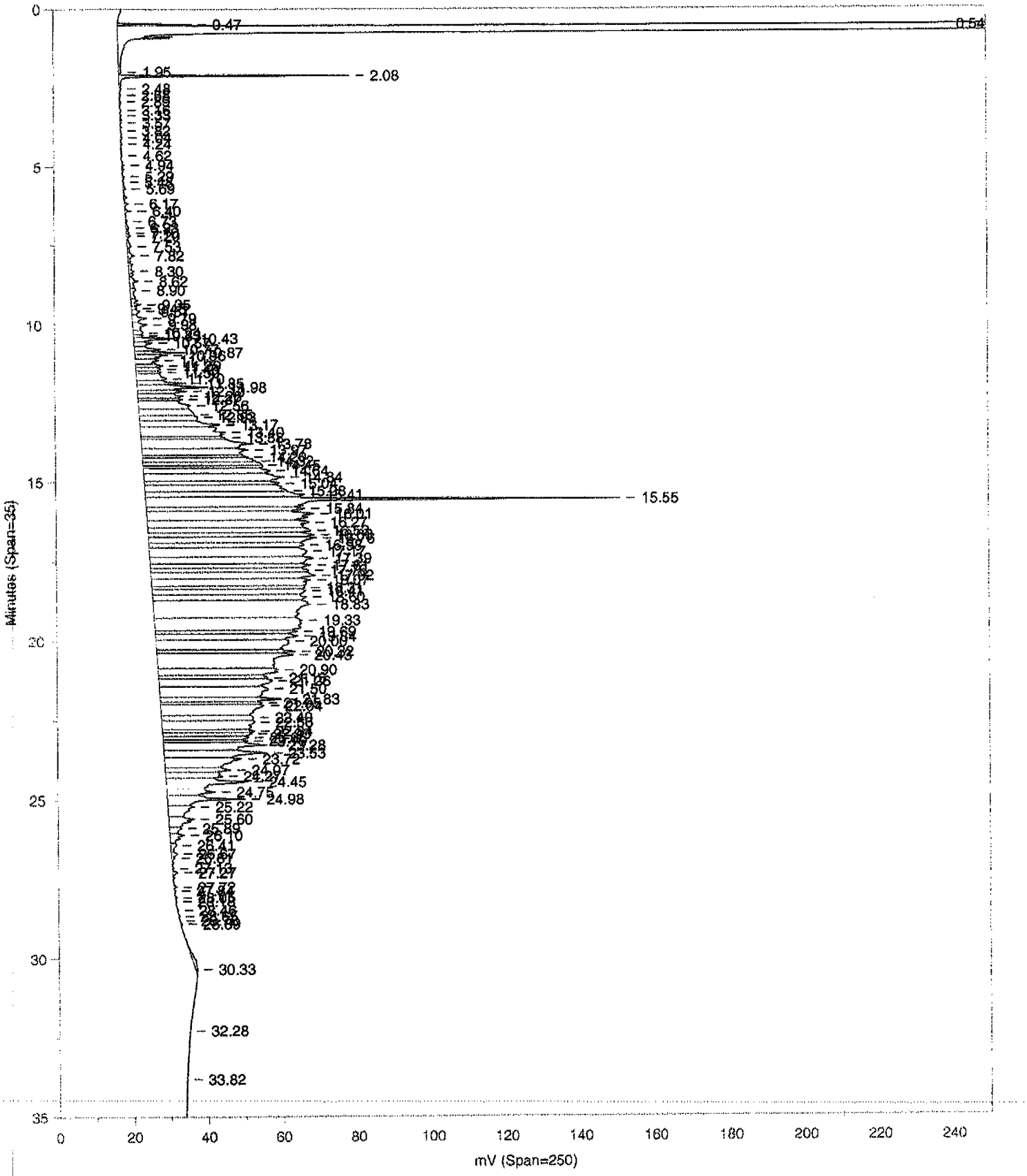
Sample Amount: 0.1512

Dilution Factor: 100

TPH GC/FID; METHOD 8015B

6362678DF10 ABMW222 T 112200002A 02535

C:\CPWIN\DATA1\R220.38R



Instrument ID:CP25--H6611B

Injected on: 8/10/2011 2:10:04 AM

Volume Inj. per Column: 1

GC Column: ZB-5 30M x 0.32mm x 0.25um; INJ 300C; FID 320C

Oven Parameters: 40C 2 MIN; 10C/MIN to 320C; HOLD 5MIN

Sample Amount: 0.1922

Dilution Factor: 100

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	**BMQL**	Below Minimum Quantitation Level
N.D.	none detected	**MPN**	Most Probable Number
TNTC	Too Numerous To Count	**CP Units**	cobalt-chloroplatinate units
IU	International Units	**NTU**	nephelometric turbidity units
umhos/cm	micromhos/cm	**ng**	nanogram(s)
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL LANCASTER LABORATORIES BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF LANCASTER LABORATORIES AND (B) WHETHER LANCASTER LABORATORIES HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Lancaster Laboratories which includes any conditions that vary from the Standard Terms and Conditions, and Lancaster hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

From:	DeBoer, Jenny
To:	DeBoer, Jenny
Subject:	FW: Evergreen (17836)
Date:	Tuesday, January 26, 2016 9:36:50 AM
Attachments:	image001.png

From: Taryn Mancine [mailto:Taryn.Mancine@pacelabs.com]
Sent: Monday, January 25, 2016 6:07 PM
To: DeBoer, Jenny
Subject: RE: Evergreen (17836)

Hi Jenny

Below is the data interpretation from Dr. Jeffrey:
All the samples except MW-170 contain unknown degraded heavy oil(s). The GC/FID patterns are similar in some oils and different in others, as indicated below. The differences may reflect different oils or may reflect different degrees of degradation of similar oils. C8-C40 GC/MS (ASTM D5739) would help to identify the heavy oil(s), and compare those with different GC/FID patterns. All the products in the samples are degraded to some extent, and cannot be dated other than they are more likely to be historic rather than recent releases.

MW-285, MW-491, MW-492, RW-26, RW-29, RW-169, have similar GC/FID patterns. Several also contain volatile HCs, whose composition could indicate that they are part of a degraded crude oil, which could be the heavy oil in these samples. RW-29 contains n-alkanes, and is the least degraded oil.

MW-231, MW-19, P-3, MW-33, RW-31, MW-188, MW-326, RW-15, MW-324 have similar GC/FID patterns of a degraded heavy oil. RW-31 also contains volatile HCs that could again be part of a degraded crude oil in these samples.

MW-439 and MW-371 contain heavy oil GC/FID patterns that are different from those above.

MW-170 contains a degraded light distillate. MW-326 contains a small amount of light distillate in addition to the heavy oil.

RW-29 contains a substantial amount of weathered gasoline. MW-285, MW-491, RW-31, MW-371, MW-324 contain traces of gasoline. Gasoline additives may help to date these gasolines.
Thanks!

Taryn Mancine
Project Manager
Pace Analytical®
220 William Pitt Way
Pittsburgh, PA 15238
Phone: 412-826-4481
taryn.mancine@pacelabs.com

January 22, 2016

formerly ZymaX Forensics

Jenny DeBoer
Stantec
1060 Andrew Drive; Suite 140
West Chester, PA 19380

RE: Evergreen, Marcus Hook AOI 4, 5
Project Number: 213402493

Pace Analytical received 18 sample(s) received on December 24th, 2015 for analysis labeled MW-231, MW-19, P-3, MW-33, MW285, MW-491, MW-492, RW-26, RW-31, RW-29, RW-169, MW-188, MW-439, MW-371, MW-326, MW-170, RW-15, and MW-324. Per client request, the following analyses were performed:

1. C3-C36 Whole Oil (ASTM 3328)
2. Specific Gravity (ASTM D1217)
3. Sulfur (ASTM D2622) – subbed to Clark Testing

The sample was performed in house under laboratory number **17836**.

Please call the lab at 412-826-4481, or you may email any questions or concerns to taryn.mancine@pacelabs.com regarding any analytical data reports.

Respectfully submitted,

Taryn Mancine

Taryn Mancine
Project Manager/Scientist

Pace Analytical®
www.pacelabs.com
Microseeps

220 William Pitt Way
Pittsburgh, PA 15238
412-826-5245

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

17836

Page: 1 of 2

005965

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Stantec Consulting Services	Report To: jennifer.menges@stantec.com	Attention:
Address: 1060 Andrew Drive, Ste 140	Copy To: Chris.mccardell@stantec.com	Company Name:
W. Chester, PA	Jenny.Deboer@stantec.com	Address:
Email To: Jenny.Deboer@stantec.com	Purchase Order No.:	Pace Quote Reference:
Phone: 610-250-2500 Fax: 610-840-2501	Project Name: Evergreen, Marcus Hook	Pace Project Manager:
Requested Due Date/TAT: Standard	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: PA

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	TSP	BAK	Zinc Acetate & NaOH	Other	Analysis Test (Y/N)	C3-C36 (ASTM D3328)	~~Bromine~~ CO	Sulfur	Specific Gravity	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-231	P	G	12/21/15	840				2	2									X	X CO	X	X		
2	MW-19	P	G		910				2	2									X	X CO	X	X		
3	P-3	P	G		1000				2	2									X		X	X		
4	MW-33	P	G		1030				2	2									X		X	X		
5	MW-285	P	G		1100				3	3									X		X	X		
6	MW-491	P	G		1130				2	2									X		X	X		
7	MW-492	P	G		1230				2	2									X		X	X		
8	RW-26	P	G		1250				2	2									X		X	X		
9	RW-31	P	G		1325				2	2									X		X	X		
10	RW-29	P	G		1345				2	2									X		X	X		
11	RW-169	P	G		1455				2	2									X		X	X		
12	MW-188	P	G	12/22/15	0830				2	2									X		X	X		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Please report product identification (and relative proportions), degree of weathering	[signature]	12/22/15	1130	JD [signature]	12/22/15	11:30				
age information and any other interpretive information available from the requested	[signature]	12/22/15	1700	[signature] Pace	12/22/15	1920				
analyses. Questions can be directed to Jenny Deboer (610-209-2511)	[signature]	12/22/15	2330	Ben Mauntea	12-23-15	23:30	-2.5	Y	N	Y
Hold additional volume for possible analyses	[signature] Pace	12-24-15	1210	[signature] PACE	12-24-15	1215	2	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Colin Dubinski

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 12/22/15

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Pace Analytical®
www.pacelabs.com

220 William Pitt Way
Pittsburgh, PA 15238
412-826-5245

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

17836

Page: 2 of 2

005964

Microseeps

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Stantec Consulting Services	Report To: jennifer.menges@stantec.com	Attention:
Address: 1060 Andrew Drive Ste 140	Copy To: chris.mccardell@stantec.com	Company Name:
W. Chester, PA	Jenny.deboer@stantec.com	Address:
Email To: Jenny.deboer@stantec.com	Purchase Order No.:	Pace Quote Reference:
Phone: 610-250-2500 Fax: 610-840-2501	Project Name: Evergreen, Marcus Hook	Pace Project Manager:
Requested Due Date/TAT: Standard	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: PA

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes — MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	TSP	BAK	Zinc Acetate & NaOH	Other	Analysis Test (Y/N): C3-C36 (ASTM D3328)	Sulfur	Specific Gravity	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-439	P	G	12/22/15	0910				2	2								X	X	X		
2	MW-371			↓	1015				2									X	X	X		
3	~~MW-324~~			↓														~~X~~	~~X~~			
4	MW-326			12/3/15	0910				1									X	X	X		
5	MW-170			12/3/15	0941				1									X	X	X		
6	RW-15			12/3/15	0815				1									X	X	X		
7	MW-324			12/3/15	0733				1									X	X	X		
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Please report product identification (and relative proportions), degree of weathering, age information and any other interpretive information available from the requested analyses. Questions can be directed to Jenny Deboer (610-209-2511)	[signature]	12/22/15	1130	[signature]	12/22/15	1130				
	[signature]	12/22/15	1700	[signature] Pace	12/22/15	1700				
	[signature]	12/22/15	2330	[signature] Mountain	12-23-15	2330	-25	Y	N	Y
Hold additional volume for possible analyses	[signature] Pace	12-24-15	1210	[signature] PPLS	12/24/15	1215	2	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Colin Dubinski

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 12/22/15

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

Cooler Receipt Form

Client Name: Stantec Project: Evergreen Lab Work Order: 17836

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx UPS USPS Client Other: Pace G Air bill Present: Yes No

Tracking Number: _____

Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam Other: _____

Type of Ice: Wet Blue None Ice Intact: Yes Melted

Cooler Temperature: 2°C Radiation Screened: Yes No Chain of Custody Present: Yes No

Comments: _____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC	✓			
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC	✓			
Sample name/date and time collected	✓			
Sufficient volume provided				
PAES containers used			✓	
Are containers properly preserved for the requested testing? (as labeled)			✓	
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments: _____

Cooler contents examined/received by: LJ Date: 12 24 15

Project Manager Review: TM Date: 12-24-15

1/16/2016

ZymaX ID	17836-1
Sample ID	MW-231

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.00
Aromatics / Naphthenes	0.00

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.00
% Isoparaffinic	0.00
% Aromatic	0.00
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-1
Sample ID		MW-231
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

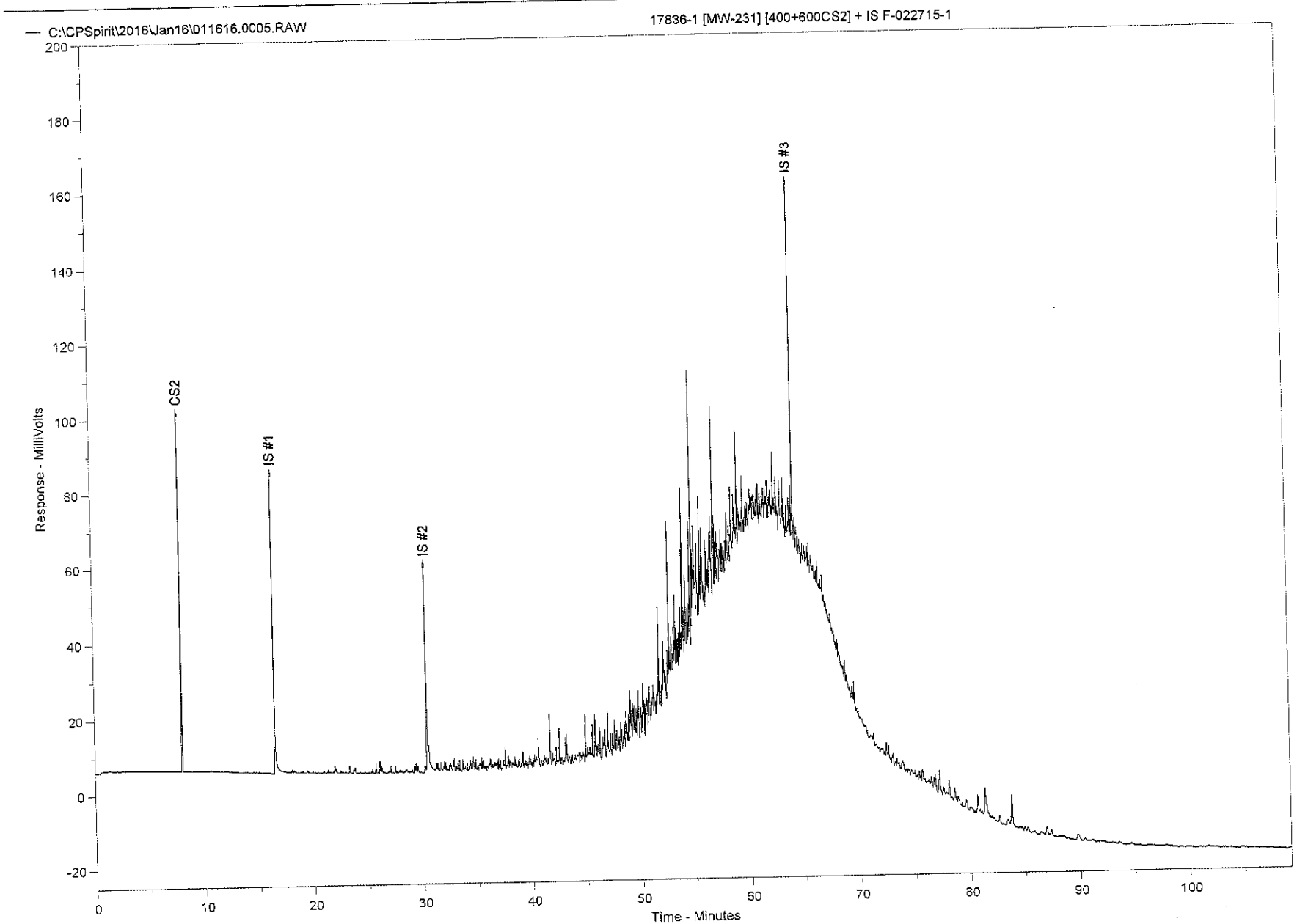
1/16/2016

ZymaX ID		17836-1
Sample ID		MW-231
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	0.00
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-1
Sample ID		MW-231
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	0.00
79	1,3-Diethylbenzene	0.00
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	0.00
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.00
88	1,2,3,5-Tetramethylbenzene	0.00
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report



Printed on 1/22/2016 4:42:12 PM

Sample Name = **17836-1 [MW-231] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0005.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 3:41:06 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.01	5.2119	323212.60
IS #1	16.50	4.5089	279618.20
	25.74	0.1548	9601.33
	26.10	0.1262	7823.23
IS #2	30.41	2.9922	185561.10
	33.67	0.1986	12318.54
	34.35	0.2060	12774.10
	34.63	0.2728	16919.20
	37.43	0.2738	16981.67
	37.58	0.3367	20881.58
	37.85	0.1636	10148.00
	39.19	0.2620	16246.29
	39.80	0.4552	28231.07
	40.25	0.2970	18415.60
	40.62	0.6737	41779.52
	41.69	1.0170	63065.76
	42.27	0.2062	12788.04
	42.55	0.5146	31915.47
	43.11	0.3550	22016.25
	43.21	0.4948	30686.02
	43.73	0.1763	10934.07
	44.34	0.4338	26902.31
	44.73	0.2450	15194.23
	44.94	0.5904	36615.93
	45.15	0.1613	10002.07
	45.59	0.4235	26264.67
	45.84	0.5355	33208.70
	46.27	0.4057	25161.10
	46.58	0.5542	34366.78
	46.74	0.5788	35894.17
	47.01	1.0506	65154.54
	47.25	0.3925	24340.54
	47.41	0.4280	26544.51
	47.60	0.8012	49683.16
	47.83	0.4722	29285.90
	48.19	0.5661	35108.08
	48.42	0.2527	15671.56
	48.54	0.5247	32540.47
	48.68	0.8830	54759.04
	48.91	0.4246	26333.12
	49.07	0.7793	48328.27
	49.15	0.5425	33645.40
	49.34	0.7344	45542.96
	49.44	0.5719	35464.70
	49.65	0.4644	28800.88
	49.75	0.6270	38884.62
	49.86	0.6534	40522.43
	50.05	0.3825	23720.03
	50.25	0.4221	26173.67
	50.44	0.2503	15520.34
	50.54	0.1830	11349.13
	50.86	0.7298	45260.61
	51.20	0.7083	43926.49
	51.28	0.6733	41752.40
	51.67	0.8220	50975.10

Peak Name	Ret. Time	Area %	Area
	51.75	1.0063	62402.47
	51.99	0.2130	13211.38
	52.07	0.3869	23994.28
	52.19	0.7536	46732.48
	52.54	0.9882	61280.89
	52.72	1.3118	81352.46
	52.93	0.7146	44316.21
	53.17	0.9187	56971.72
	53.30	0.7199	44645.75
	53.38	0.4485	27813.72
	53.53	0.3517	21809.25
	53.62	0.2455	15224.41
	53.79	0.5899	36582.78
	53.88	0.3551	22021.63
	53.96	1.1539	71557.69
	54.04	1.7251	106978.40
	54.15	0.4207	26091.47
	54.30	1.0150	62944.14
	54.44	1.1273	69910.68
	54.71	1.6048	99520.76
	54.89	2.2407	138956.40
	54.99	0.9907	61436.72
	55.12	0.4936	30607.61
	55.40	1.4898	92391.48
	55.61	0.3932	24384.93
	55.67	0.8842	54831.65
	55.78	0.3341	20718.34
	55.84	0.4153	25752.09
	56.22	0.9350	57983.43
	56.32	0.6944	43062.50
	56.48	0.2950	18292.29
	56.70	0.6825	42325.28
	56.86	0.7588	47053.87
	56.94	2.3241	144127.90
	57.05	0.6318	39183.67
	57.14	0.9130	56619.38
	57.25	0.9153	56761.02
	57.37	1.0051	62330.51
	57.54	0.6694	41514.39
	57.81	0.3179	19712.27
	58.06	0.5137	31856.02
	58.21	0.9966	61803.40
	58.39	0.5249	32548.98
	58.51	0.4174	25884.76
	58.60	0.6649	41234.07
	58.87	0.3805	23593.94
	59.17	0.8907	55238.15
	59.70	0.8823	54717.86
	59.94	0.3920	24307.46
	60.02	0.3783	23460.98
	60.14	0.5654	35061.68
	60.48	0.1774	11000.96
	60.69	0.5764	35745.22
	61.09	0.9836	60999.70
	61.31	0.4325	26823.82
	61.51	0.2128	13198.30
	61.81	0.3571	22144.48
	61.99	0.7583	47022.92
	62.26	0.7558	46868.41
	62.51	0.7470	46326.64
	62.77	0.6883	42685.14
	63.12	1.4277	88540.16
	63.43	0.4347	26955.75
	63.67	0.2281	14143.38
	63.95	0.3105	19253.62
	64.12	0.4140	25671.19
IS #3	64.28	2.8453	176448.40

Peak Name	Ret. Time	Area %	Area
	64.43	0.4723	29287.80
	64.55	0.6330	39257.77
	64.87	0.5705	35379.39
	65.11	0.3537	21931.69
	65.26	0.2380	14759.30
	65.67	0.4301	26671.77
	66.44	0.5633	34931.23
	68.80	0.2619	16241.46
	69.58	0.2875	17827.87
	72.45	0.2919	18099.91
	73.93	0.4863	30156.09
	75.67	0.5351	33182.27
	76.47	0.4223	26191.12
	76.82	0.8000	49613.14
	77.20	0.6939	43031.22
	77.58	0.2305	14293.22
	78.08	0.3680	22824.29
	78.57	0.4541	28162.97
	79.63	0.3402	21097.06
	80.63	0.4573	28357.57
	81.32	0.5828	36140.89
	83.38	0.3676	22796.08
	83.75	1.2986	80533.38
	86.92	0.3051	18918.32

Total Area = 6201447 Total Height = 1758044 Total Amount = 1

1/16/2016

ZymaX ID	17836-2
Sample ID	MW-19
Evaporation	
n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00
Waterwashing	
Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.00
Aromatics / Naphthenes	0.00
Biodegradation	
(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00
Octane rating	
2,2,4,-Trimethylpentane / Methylcyclohexane	0.00
Relative percentages - Bulk hydrocarbon composition as PIANO	
% Paraffinic	0.00
% Isoparaffinic	0.00
% Aromatic	0.00
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-2
Sample ID		MW-19
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

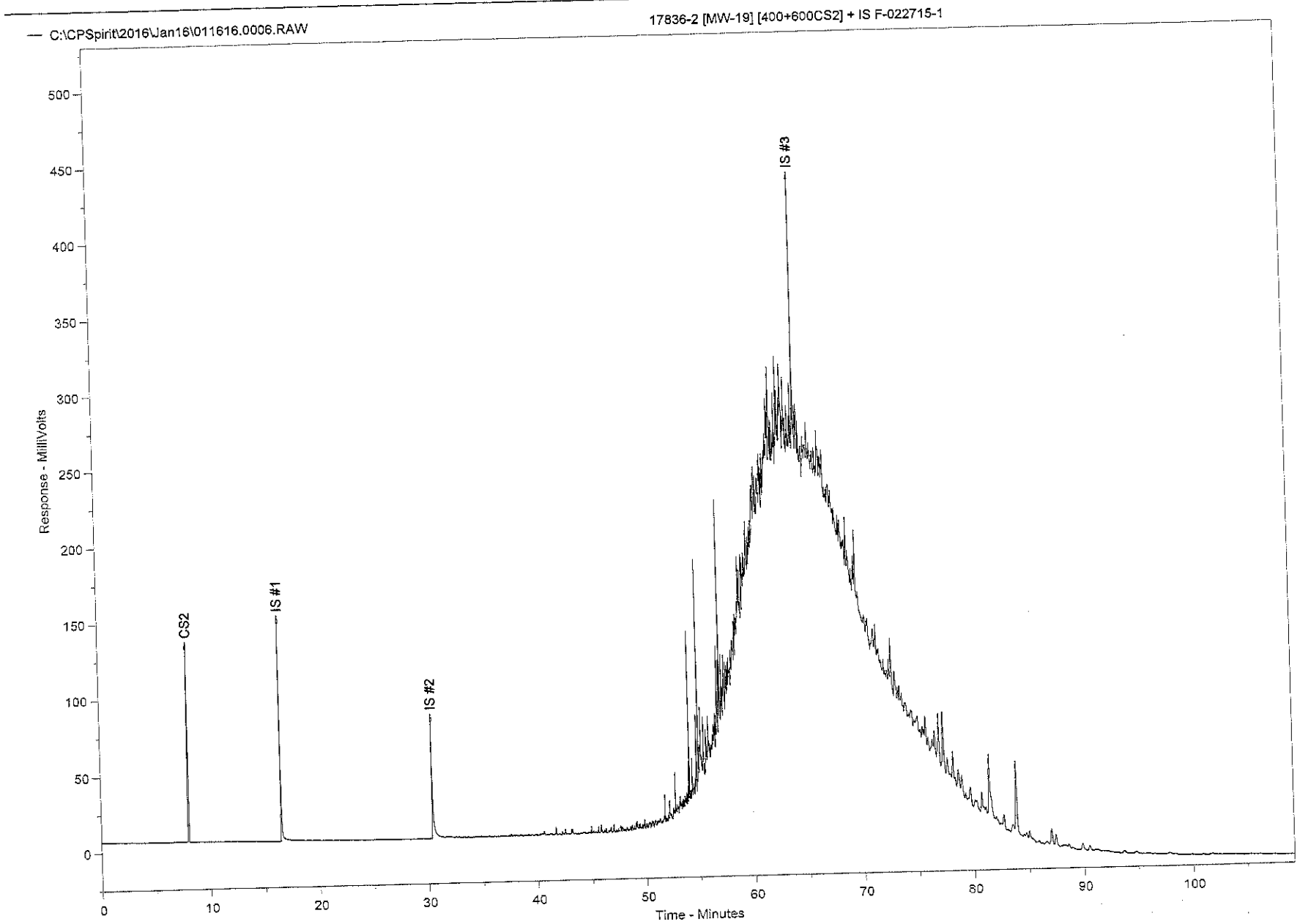
1/16/2016

ZymaX ID		17836-2
Sample ID		MW-19
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	0.00
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-2
Sample ID		MW-19
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	0.00
79	1,3-Diethylbenzene	0.00
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	0.00
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.00
88	1,2,3,5-Tetramethylbenzene	0.00
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report



Printed on 1/22/2016 4:39:08 PM

Sample Name = **17836-2 [MW-19] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0006.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 5:45:14 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.07	2.3484	624900.60
IS #1	16.50	1.7488	465336.80
IS #2	30.42	1.6733	445250.80
	41.70	0.0673	17913.15
	42.56	0.0478	12731.71
	43.12	0.0393	10454.66
	44.95	0.0489	13005.44
	45.59	0.0412	10958.90
	45.85	0.0587	15613.84
	46.27	0.0367	9760.78
	47.02	0.0740	19699.85
	47.60	0.0800	21291.24
	48.55	0.0419	11161.85
	48.70	0.0624	16616.11
	49.08	0.0376	9999.35
	50.36	0.1131	30107.76
	50.54	0.1120	29812.89
	50.86	0.0721	19192.63
	51.75	0.1347	35842.04
	52.10	0.0537	14279.01
	52.19	0.1311	34894.21
	52.55	0.0843	22422.06
	52.72	0.2523	67127.18
	53.17	0.2200	58536.57
	53.44	0.1046	27822.43
	53.53	0.0510	13572.68
	53.79	0.0610	16222.58
	53.89	0.0686	18259.75
	53.96	0.2453	65260.88
	54.05	0.8857	235692.20
	54.30	0.3101	82521.60
	54.45	0.1818	48381.78
	54.58	0.0800	21294.97
	54.71	0.5843	155479.20
	54.90	1.2645	336483.30
	55.03	0.4428	117836.60
	55.12	0.3714	98827.91
	55.40	0.4061	108068.90
	55.62	0.4716	125482.00
	55.84	0.7897	210122.80
	56.04	0.0786	20903.68
	56.14	0.1686	44867.41
	56.25	0.2545	67726.55
	56.41	0.1679	44686.19
	56.48	0.2059	54786.85
	56.57	0.2892	76943.60
	56.71	0.9177	244203.00
	56.87	0.6260	166569.60
	56.95	1.6084	427999.90
	57.15	0.6639	176657.90
	57.30	0.3097	82404.02
	57.38	0.5746	152887.20
	57.52	0.4911	130686.20
	57.64	0.2358	62736.45
	57.75	0.3291	87564.52

Peak Name	Ret. Time	Area %	Area
	57.82	0.3760	100056.20
	58.07	0.3726	99159.55
	58.25	0.7768	206700.50
	58.40	0.5538	147376.30
	58.51	0.3807	101299.30
	58.61	0.5166	137473.50
	58.77	0.4037	107412.00
	58.88	1.1191	297778.70
	59.00	0.9044	240645.40
	59.19	0.9224	245437.50
	59.26	1.1513	306346.30
	59.43	0.8832	235014.60
	59.51	0.6853	182364.00
	59.71	1.3643	363025.90
	59.89	0.8298	220797.40
	60.04	1.5788	420101.20
	60.15	0.9269	246643.50
	60.38	2.6170	696383.80
	60.50	1.1191	297785.60
	60.56	1.4485	385446.60
	60.68	1.5688	417443.30
	60.86	0.7733	205763.10
	60.92	1.0810	287649.00
	61.04	1.0294	273906.80
	61.10	0.7928	210961.50
	61.17	0.8197	218113.10
	61.26	0.6628	176371.90
	61.33	0.8134	216452.90
	61.42	0.8484	225744.50
	61.56	1.9702	524259.20
	61.66	1.2841	341696.90
	61.83	1.2692	337722.70
	61.92	1.5117	402250.10
	62.00	0.8670	230703.30
	62.06	1.5981	425250.20
	62.16	0.8184	217764.70
	62.24	0.8716	231933.50
	62.35	1.1656	310152.40
	62.47	0.6402	170365.00
	62.53	0.7863	209222.80
	62.62	0.8111	215820.60
	62.77	1.8061	480591.70
	62.85	0.8422	224113.50
	63.05	1.0041	267174.20
	63.15	0.7789	207252.00
	63.21	0.7753	206309.20
	63.32	0.5802	154390.80
	63.45	0.5945	158205.90
	63.55	0.2840	75573.11
	63.70	0.1654	44017.39
	63.76	0.2304	61319.67
	63.97	0.3042	80950.33
	64.07	0.4697	124997.10
	64.16	0.1467	39046.74
	64.22	0.4491	119513.60
	64.30	1.6649	443030.70
IS #3	64.46	0.6185	164593.20
	64.57	0.7983	212412.50
	64.73	0.4019	106952.00
	64.94	0.3729	99223.21
	65.09	0.2308	61420.21
	65.28	0.4624	123031.40
	65.50	0.2419	64367.64
	65.70	0.2082	55408.08
	65.91	0.0855	22763.26
	66.16	0.2674	71163.11
	66.31	0.0545	14494.19

Peak Name	Ret. Time	Area %	Area
	66.43	0.7033	187142.30
	66.60	0.0734	19527.04
	66.74	0.0653	17381.36
	66.87	0.2158	57419.30
	67.02	0.0819	21799.82
	67.19	0.1568	41716.32
	67.38	0.6112	162641.10
	67.56	0.6055	161132.30
	67.83	0.4877	129763.60
	68.17	0.2509	66751.22
	68.32	0.3733	99333.84
	68.51	0.1698	45172.84
	68.59	0.1786	47536.07
	68.69	0.2732	72700.48
	68.84	0.5154	137155.00
	68.97	0.5668	150814.90
	69.25	0.1886	50195.07
	69.42	0.2479	65957.78
	69.49	0.3535	94062.48
	69.63	0.8192	217981.60
	69.85	0.4553	121165.00
	70.37	0.3241	86245.87
	70.58	0.1990	52951.37
	70.66	0.3698	98391.67
	71.14	0.3199	85127.17
	71.37	0.4122	109695.60
	71.55	0.0375	9974.12
	72.05	0.1386	36891.25
	72.34	0.1319	35099.93
	72.51	0.3115	82878.65
	72.70	0.7292	194024.90
	73.02	0.5432	144542.60
	73.29	0.1845	49095.98
	73.44	0.2890	76913.67
	73.65	0.2851	75872.59
	73.91	0.3464	92170.96
	74.43	0.0573	15242.06
	74.72	0.0779	20741.86
	75.46	0.2078	55284.75
	75.60	0.1604	42685.03
	75.73	0.4674	124376.50
	75.96	0.1857	49409.89
	76.35	0.3440	91525.84
	76.55	0.5342	142142.20
	76.91	1.0492	279188.80
	77.29	1.2326	327999.80
	77.66	0.4193	111581.30
	78.18	0.6163	163983.90
	78.66	0.5894	156844.80
	78.95	0.4408	117297.90
	79.30	0.1665	44316.05
	79.71	0.4509	119988.20
	80.15	0.3113	82828.97
	80.74	0.3091	82263.32
	81.43	0.8930	237630.50
	82.72	0.2862	76157.95
	83.55	0.3162	84136.79
	83.86	1.9449	517521.20
	84.75	0.0736	19571.74
	85.01	0.2523	67133.80
	87.02	0.4053	107849.90
	87.42	0.2900	77179.38
	89.85	0.2000	53226.55
	90.49	0.1326	35294.21

Total Area = 2.660961E+07 Total Height = 5795070 Total Amount = 0

1/16/2016

ZymaX ID	17836-3
Sample ID	P-3

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.00
Aromatics / Naphthenes	0.00

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.00
% Isoparaffinic	0.00
% Aromatic	100.00
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-3
Sample ID		P-3
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

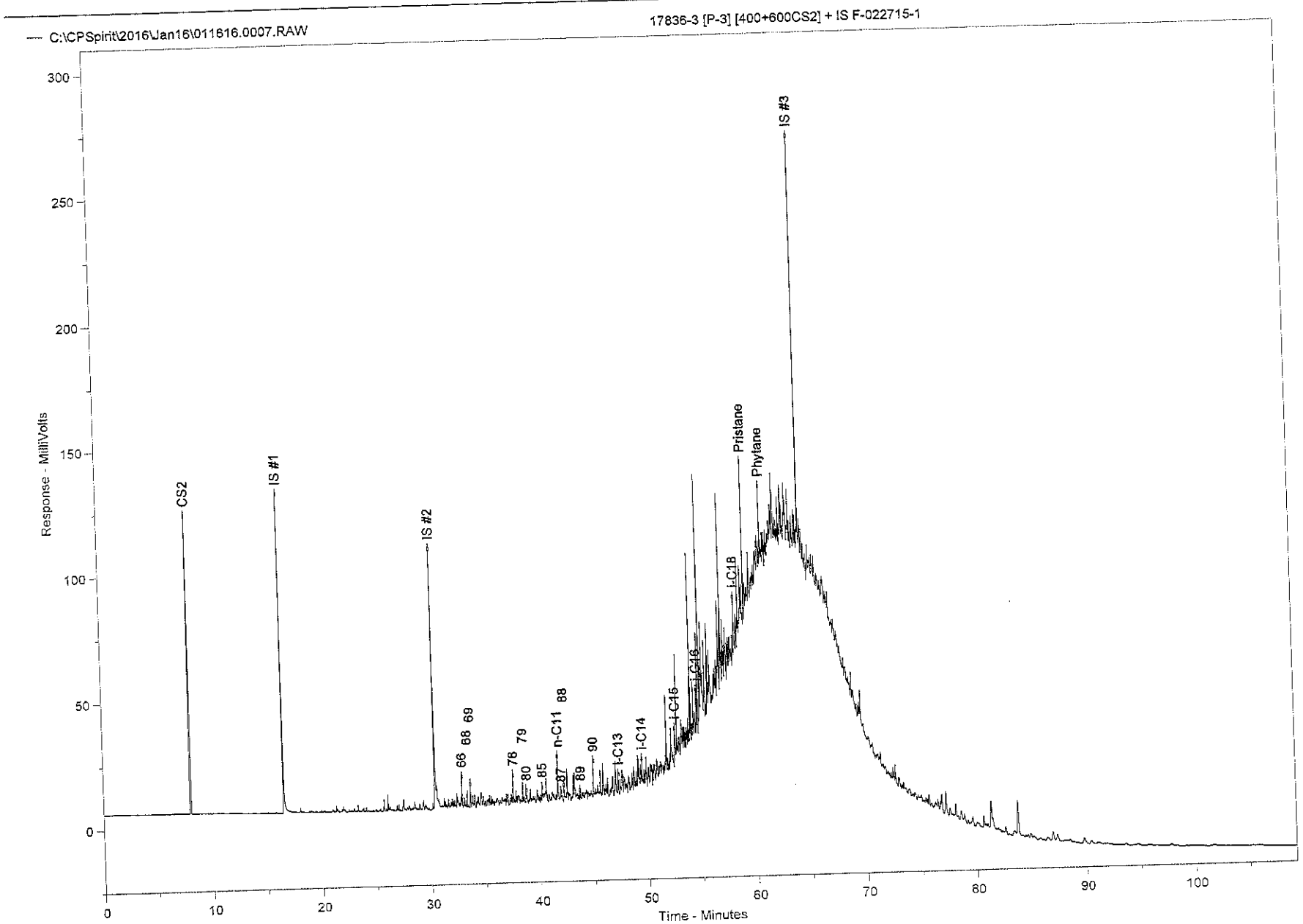
1/16/2016

ZymaX ID		17836-3
Sample ID		P-3
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	17.16
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	4.53
69	1,3,5-Trimethylbenzene	11.51
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-3
Sample ID		P-3
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	15.06
79	1,3-Diethylbenzene	5.83
80	1,4-Diethylbenzene	9.22
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	7.51
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	2.74
88	1,2,3,5-Tetramethylbenzene	5.64
89	1,2,3,4-Tetramethylbenzene	5.01
90	Naphthalene	15.79
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report



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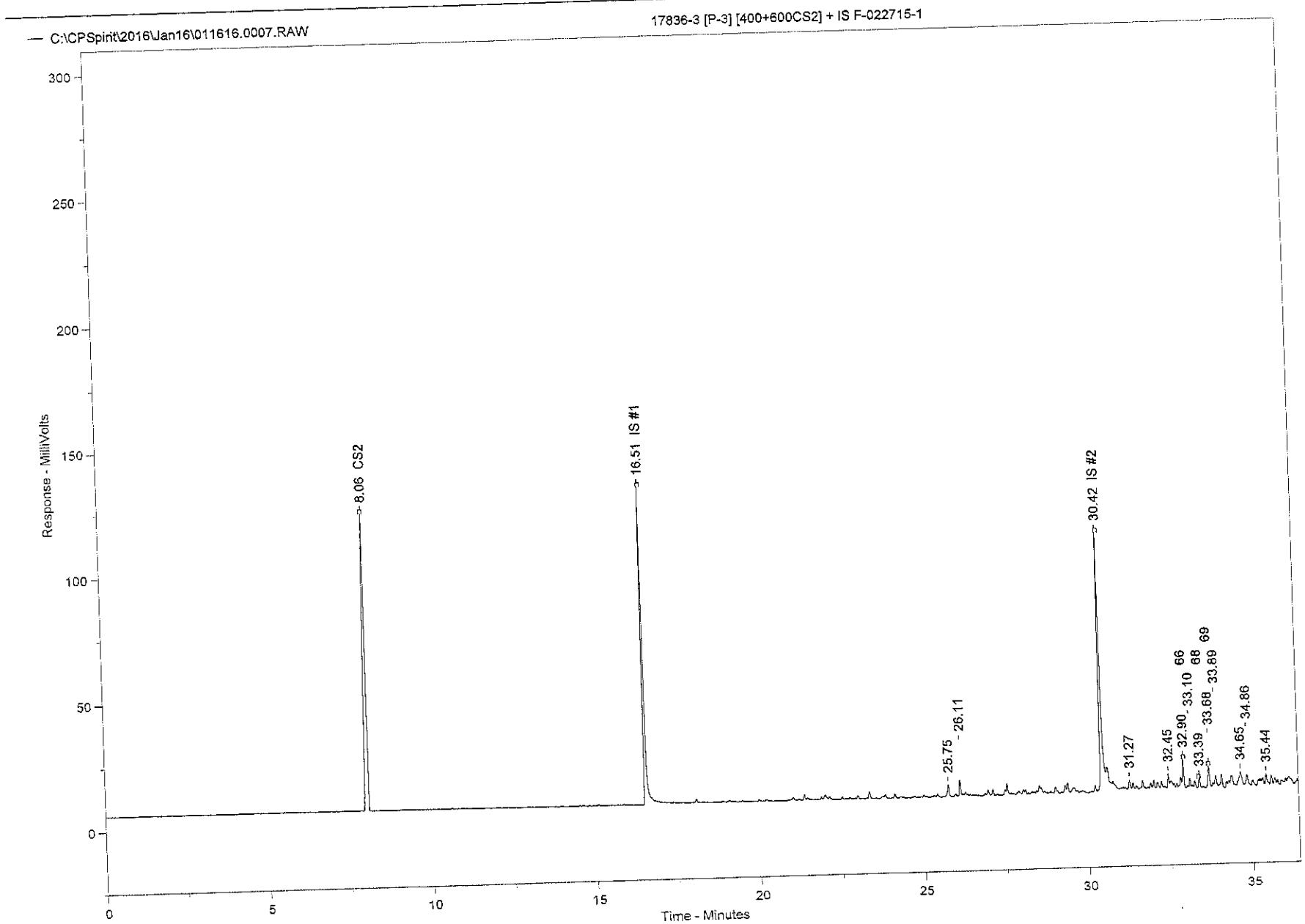

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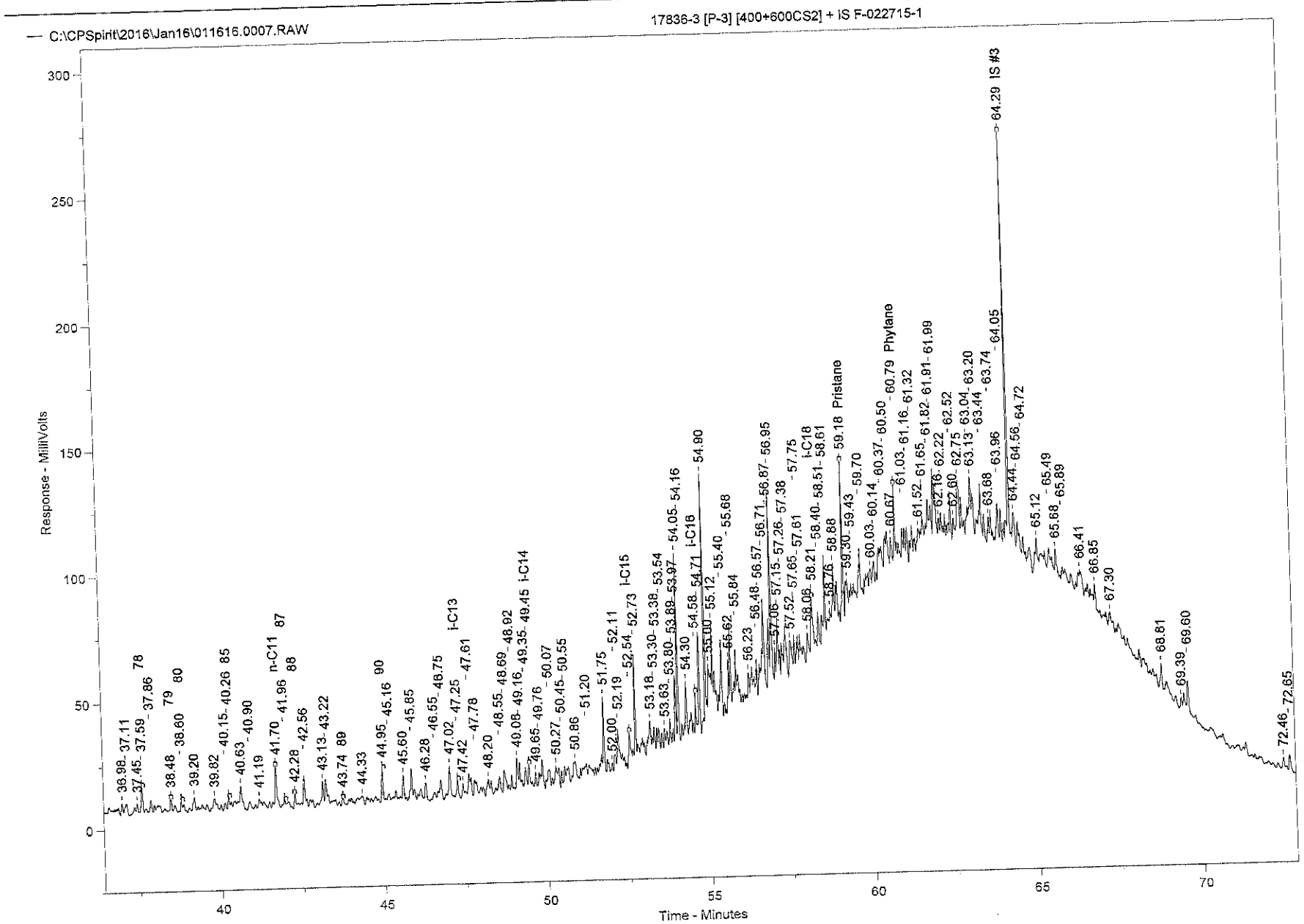

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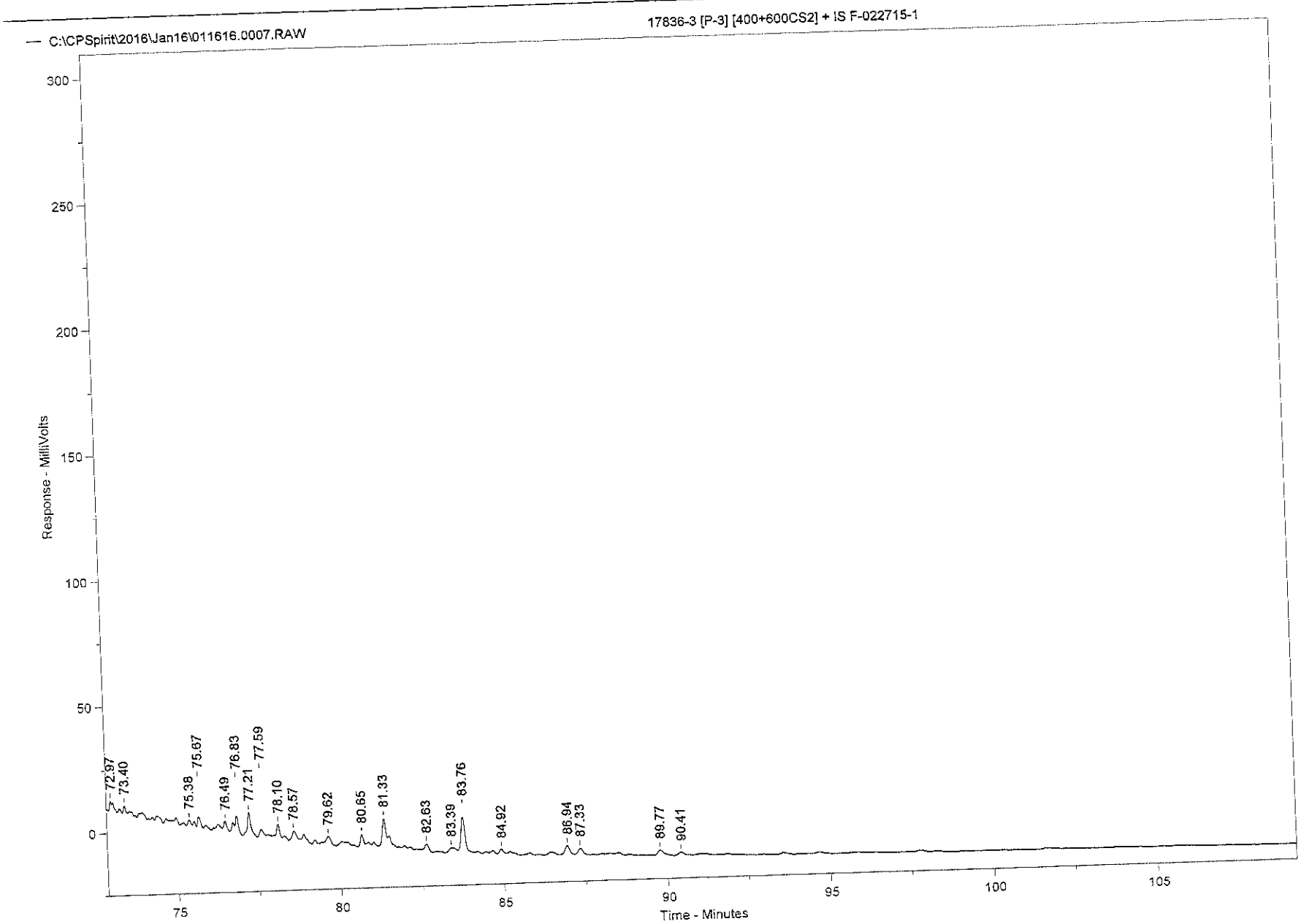

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Sample Name = **17836-3 [P-3] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0007.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 7:49:01 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.06	5.8074	525823.30
IS #1	16.51	4.5059	407976.00
	25.75	0.1983	17955.26
	26.11	0.1857	16815.47
IS #2	30.42	3.6135	327174.70
	31.27	0.1086	9834.89
	32.45	0.1192	10789.68
	32.90	0.4917	44522.32
66	33.10	0.1151	10424.19
	33.39	0.1297	11745.29
68	33.68	0.3296	29843.65
69	33.89	0.1098	9940.71
	34.65	0.3580	32410.25
	34.86	0.2154	19504.23
	35.44	0.1646	14904.54
	36.98	0.1668	15106.75
	37.11	0.2933	26555.71
	37.45	0.3239	29325.57
	37.59	0.4313	39054.11
78	37.86	0.1870	16931.51
	38.48	0.1670	15119.67
79	38.80	0.2640	23898.83
80	39.20	0.2267	20524.26
	39.82	0.1223	11069.88
	40.15	0.1192	10795.06
	40.26	0.2152	19486.07
85	40.63	0.3334	30182.84
	40.90	0.1594	14429.30
	41.19	0.1627	14732.53
	41.70	0.6189	56035.68
n-C11	41.96	0.0786	7117.00
87	42.28	0.1617	14645.08
88	42.56	0.3194	28915.71
	43.13	0.2857	25870.78
	43.22	0.2332	21115.59
	43.74	0.1435	12991.89
89	44.33	0.4066	36818.20
	44.95	0.4523	40953.79
90	45.16	0.1209	10946.84
	45.60	0.3244	29373.41
	45.85	0.4253	38504.70
	46.28	0.2462	22288.58
	46.55	0.1562	14144.80
	46.75	0.3607	32656.44
	47.02	0.4956	44868.70
	47.25	0.2915	26394.68
i-C13	47.42	0.1981	17939.78
	47.61	0.5950	53876.37
	47.78	0.3672	33244.62
	48.20	0.3611	32692.53
	48.55	0.4645	42054.14
	48.69	0.5148	46611.09
	48.92	0.2205	19967.36
	49.08	0.4535	41060.06
	49.16	0.4586	41519.07

Peak Name	Ret. Time	Area %	Area
	49.35	0.3760	34043.38
i-C14	49.45	0.3474	31450.92
	49.65	0.1706	15445.65
	49.76	0.1058	9580.27
	50.07	0.2768	25059.01
	50.27	0.1268	11484.60
	50.45	0.1399	12662.94
	50.55	0.1064	9633.53
	50.86	0.4513	40863.58
	51.20	0.3404	30819.97
	51.75	0.6648	60191.07
	52.00	0.0980	8871.46
	52.11	0.2502	22657.44
	52.19	0.5173	46838.43
i-C15	52.54	0.6446	58367.75
	52.73	1.1291	102232.60
	53.18	0.7294	66041.27
	53.30	0.2188	19806.81
	53.38	0.1572	14234.66
	53.54	0.1898	17180.87
	53.63	0.1842	16681.62
	53.80	0.2765	25031.54
	53.89	0.1663	15057.69
	53.97	0.7108	64353.48
	54.05	1.7797	161139.70
	54.16	0.1616	14632.87
	54.30	0.6270	56773.16
	54.58	0.4258	38557.48
i-C16	54.71	1.2614	114208.50
	54.90	2.3484	212628.70
	55.00	0.8724	78994.13
	55.12	0.5543	50187.73
	55.40	1.1637	105366.20
	55.62	0.5141	46547.57
	55.68	0.7392	66928.19
	55.84	0.2657	24061.64
	56.23	0.2637	23874.75
	56.48	0.2670	24172.28
	56.57	0.5887	53302.41
	56.71	1.4568	131901.20
	56.87	0.9466	85707.38
	56.95	2.2862	206998.10
	57.06	0.3181	28804.85
	57.15	1.1628	105281.60
	57.26	0.6100	55231.59
	57.38	1.0225	92583.48
	57.52	0.7574	68577.05
	57.65	0.3297	29854.37
	57.75	0.3286	29751.01
	57.81	0.3012	27269.16
	58.06	0.4986	45144.59
i-C18	58.21	1.2655	114581.00
	58.40	0.5273	47744.02
	58.51	0.3157	28587.32
	58.61	0.8192	74174.52
	58.76	0.1506	13633.00
	58.88	0.5899	53408.84
Pristane	59.18	1.6578	150104.60
	59.30	0.6870	62205.59
	59.43	0.1153	10437.06
	59.70	0.8001	72442.24
	60.03	0.2699	24440.33
	60.14	0.3081	27896.32
	60.37	0.9520	86197.68
	60.50	0.2061	18660.94
	60.67	0.4292	38860.38
Phytane	60.79	0.9311	84308.69

Peak Name	Ret. Time	Area %	Area
	61.03	0.4656	42155.05
	61.16	0.3961	35864.36
	61.32	0.6107	55293.20
	61.52	0.6216	56280.16
	61.65	0.4669	42271.27
	61.82	0.8276	74929.08
	61.91	0.4405	39881.38
	61.99	0.4123	37329.53
	62.16	0.1611	14587.39
	62.22	0.1697	15368.35
	62.52	0.3763	34068.41
	62.60	0.2832	25641.28
	62.75	0.9930	89907.91
	63.04	0.7411	67101.97
	63.13	0.7008	63451.78
	63.20	0.6576	59539.06
	63.44	1.4084	127522.60
	63.68	0.3697	33470.68
	63.74	0.6599	59752.23
	63.96	0.7744	70113.41
	64.05	0.6292	56966.31
IS #3	64.29	4.7630	431259.70
	64.44	0.9302	84221.09
	64.56	0.8401	76062.40
	64.72	0.4145	37533.77
	65.12	0.5867	53120.57
	65.49	0.3789	34306.71
	65.68	0.3781	34238.67
	65.89	0.1185	10729.05
	66.41	0.7264	65773.84
	66.85	0.2297	20799.88
	67.30	0.1925	17433.02
	68.81	0.3436	31112.40
	69.39	0.0992	8979.61
	69.60	0.3418	30943.74
	72.46	0.2016	18257.59
	72.65	0.3715	33634.48
	72.97	0.3579	32401.72
	73.40	0.1230	11137.41
	75.38	0.1554	14074.83
	75.67	0.2861	25904.80
	76.49	0.2078	18819.19
	76.83	0.6808	61638.72
	77.21	0.8588	77757.66
	77.59	0.4693	42493.04
	78.10	0.3544	32088.83
	78.57	0.3403	30814.63
	79.62	0.3042	27540.97
	80.65	0.2809	25434.16
	81.33	0.6151	55693.89
	82.63	0.2283	20667.58
	83.39	0.3088	27962.33
	83.76	1.3874	125615.80
	84.92	0.1524	13801.44
	86.94	0.3840	34766.90
	87.33	0.2927	26498.02
	89.77	0.3213	29092.86
	90.41	0.1761	15948.68

Total Area = 9054293 Total Height = 2600871 Total Amount = 0

1/16/2016

ZymaX ID	17836-4
Sample ID	MW-33

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	50.02
Aromatics / Naphthenes	0.00

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	1.96
% Isoparaffinic	0.00
% Aromatic	98.04
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-4
Sample ID		MW-33
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

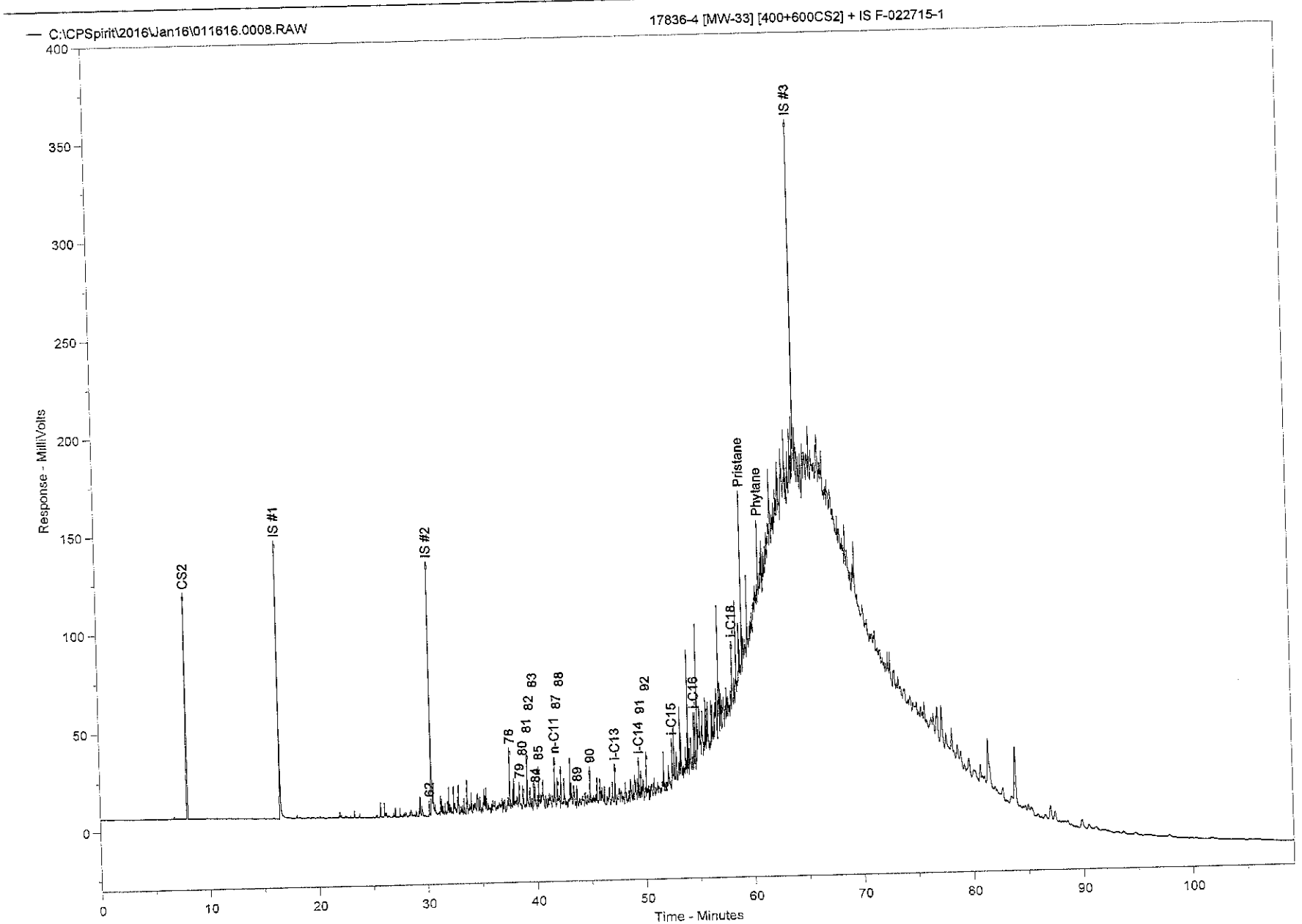
1/16/2016

ZymaX ID		17836-4
Sample ID		MW-33
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	1.96
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	0.00
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-4
Sample ID		MW-33
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	12.22
79	1,3-Diethylbenzene	3.17
80	1,4-Diethylbenzene	2.16
81	n-Butylbenzene	13.98
82	1,3-Dimethyl-5-ethylbenzene	4.98
83	1,4-Dimethyl-2-ethylbenzene	7.85
84	1,3-Dimethyl-4-ethylbenzene	7.20
85	1,2-Dimethyl-4-ethylbenzene	10.73
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	3.17
88	1,2,3,5-Tetramethylbenzene	6.69
89	1,2,3,4-Tetramethylbenzene	4.90
90	Naphthalene	8.07
91	2-Methyl-naphthalene	4.62
92	1-Methyl-naphthalene	8.29

Chrom Perfect Chromatogram Report



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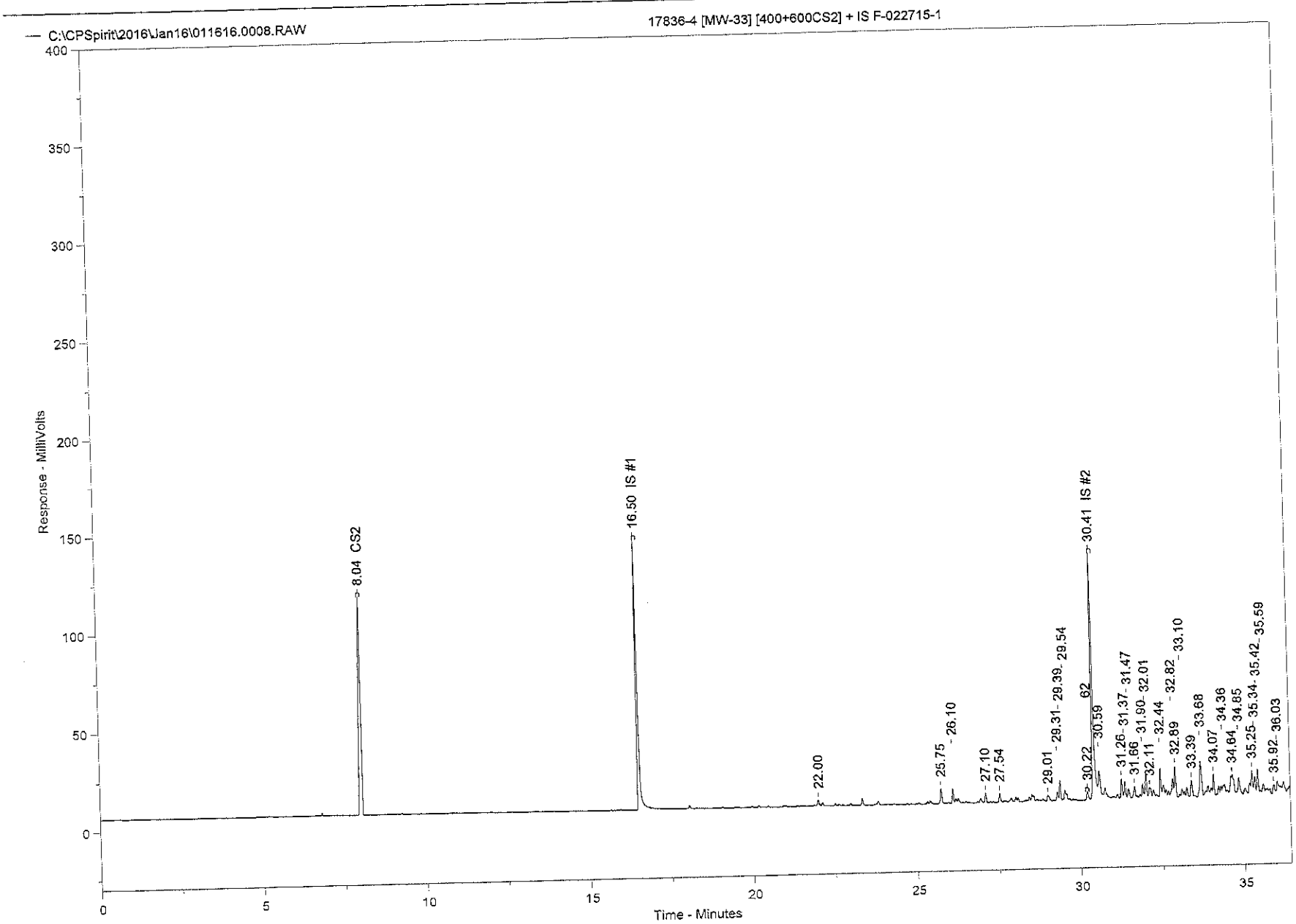

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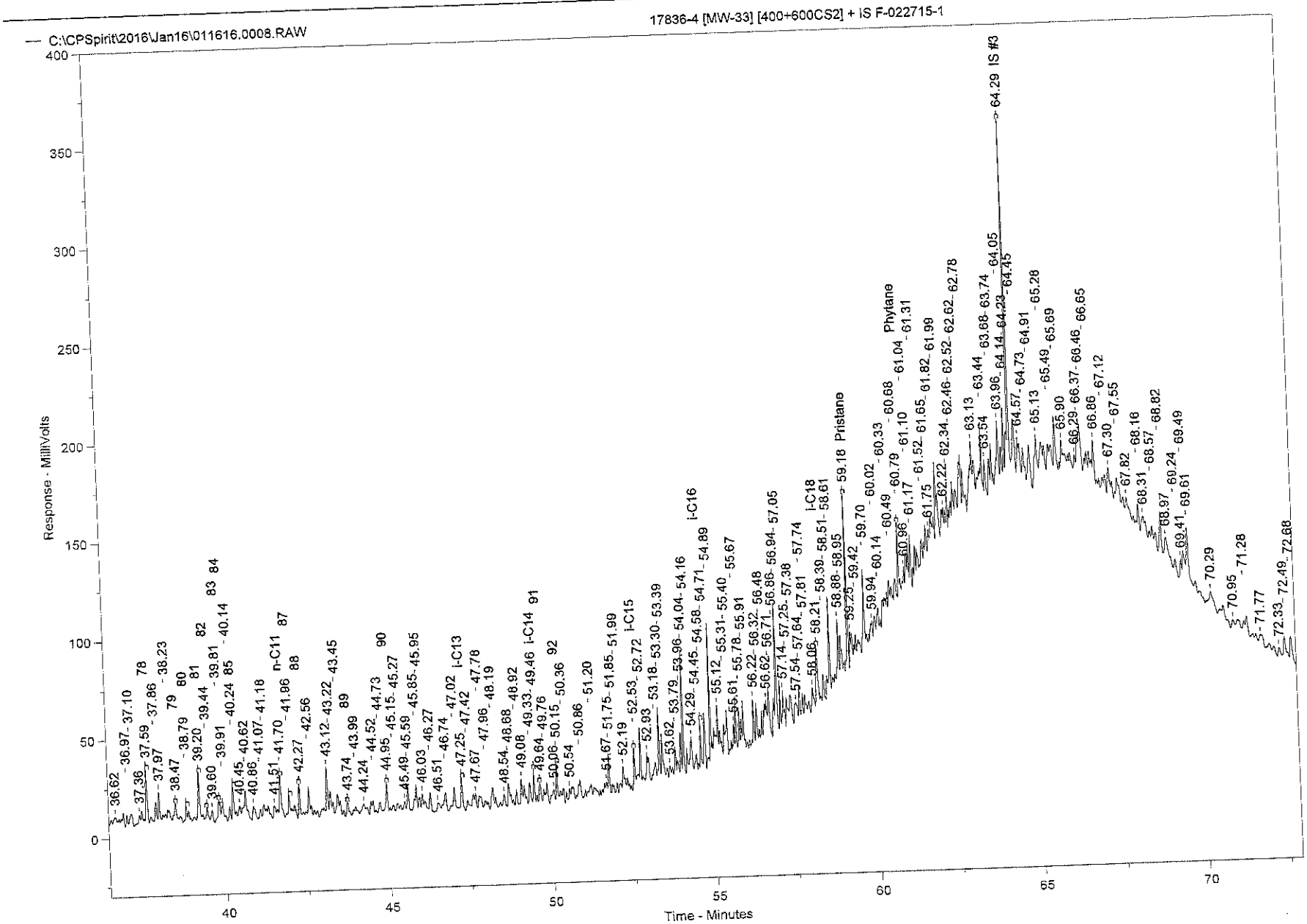
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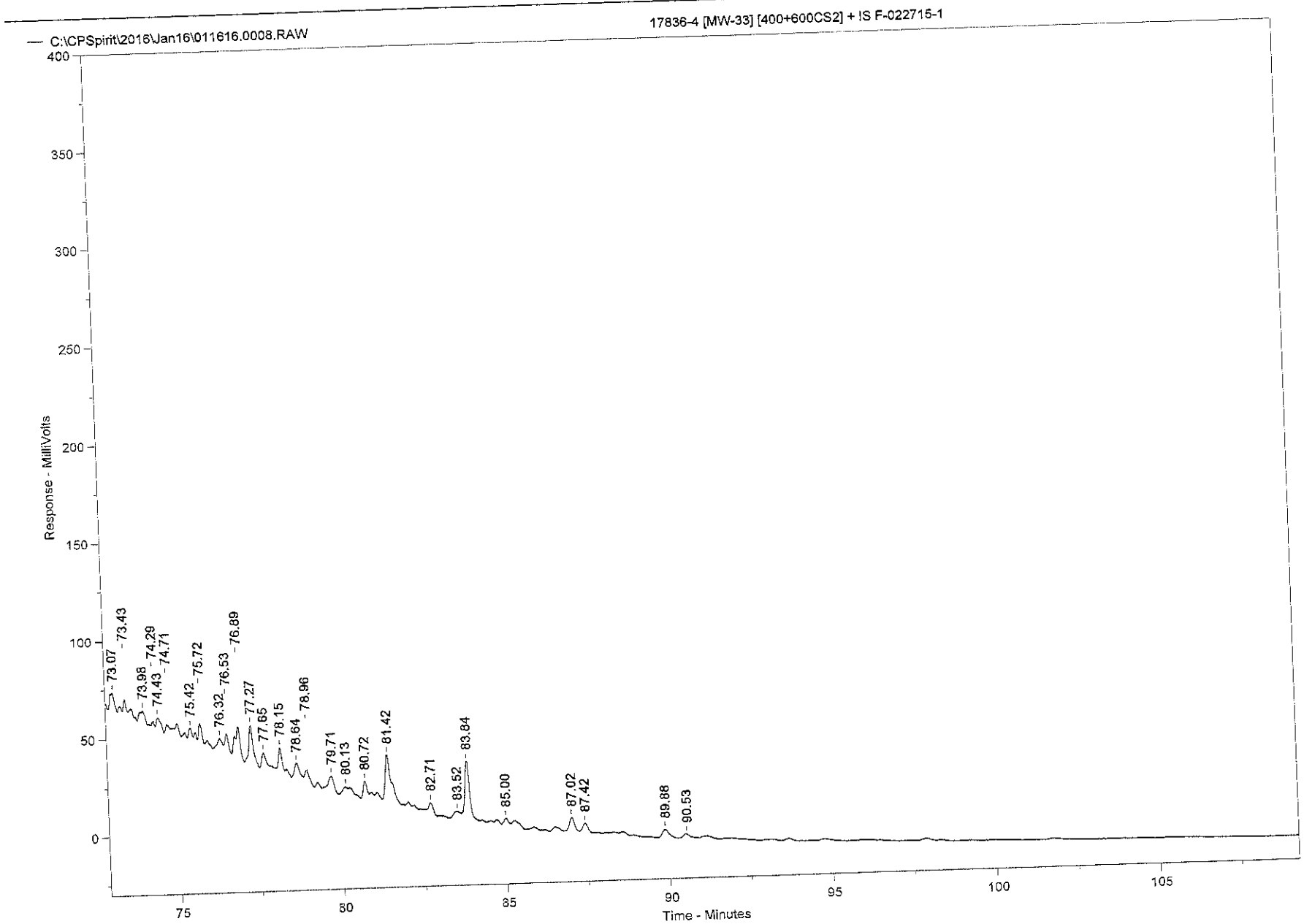
17836-4 [MW-33] [400+600CS2] + IS F-022715-1
Response - MilliVolts
Time - Minutes
IS #3
Pristane
Phytane
i-C16
i-C18
i-C15
i-C14
i-C13
n-C11



Printed on 1/22/2016 4:29:51 PM

Sample Name = **17836-4 [MW-33] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0008.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 9:52:10 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.04	2.5235	465278.80
IS #1	16.50	2.4527	452225.80
	22.00	0.0521	9609.72
	25.75	0.1426	26294.64
	26.10	0.1024	18889.10
	27.10	0.0715	13180.70
	27.54	0.0759	13985.81
	29.01	0.0705	13000.47
	29.31	0.0712	13119.32
	29.39	0.1497	27600.61
	29.54	0.1164	21462.78
	30.22	0.0764	14086.54
62	30.41	2.2555	415871.70
IS #2	30.59	0.3010	55492.38
	31.26	0.1662	30636.19
	31.37	0.1364	25155.98
	31.47	0.0881	16246.75
	31.66	0.1210	22317.48
	31.90	0.0940	17325.72
	32.01	0.2005	36960.84
	32.11	0.1071	19745.81
	32.44	0.1728	31852.98
	32.82	0.1703	31399.47
	32.89	0.2495	46008.12
	33.10	0.0666	12271.70
	33.39	0.1489	27456.91
	33.68	0.4025	74205.09
	34.07	0.1289	23760.83
	34.36	0.1874	34558.05
	34.64	0.3949	72809.20
	34.85	0.2001	36899.32
	35.25	0.2713	50031.05
	35.34	0.1343	24759.51
	35.42	0.1931	35599.66
	35.59	0.0914	16845.04
	35.92	0.0813	14997.99
	36.03	0.1061	19560.69
	36.62	0.0846	15593.61
	36.97	0.0981	18083.85
	37.10	0.2093	38591.63
	37.36	0.0800	14744.14
78	37.59	0.4765	87859.42
	37.86	0.1581	29158.98
	37.97	0.1990	36695.84
	38.23	0.1304	24035.57
79	38.47	0.1236	22793.62
80	38.79	0.0842	15533.58
81	39.20	0.5451	100497.50
82	39.44	0.1942	35807.46
	39.60	0.1349	24873.24
83	39.81	0.3058	56385.81
84	39.91	0.2805	51723.82
	40.14	0.1419	26161.05
85	40.24	0.4183	77127.80
	40.45	0.2025	37328.76

Peak Name	Ret. Time	Area %	Area
	40.62	0.4778	88087.95
	40.86	0.1892	34887.75
	41.07	0.0630	11612.10
	41.18	0.0721	13293.08
	41.51	0.1441	26560.06
n-C11	41.70	0.4726	87142.06
87	41.96	0.1237	22812.61
88	42.27	0.2607	48065.00
	42.56	0.1878	34633.15
	43.12	0.4604	84887.79
	43.22	0.1259	23214.72
	43.45	0.1236	22781.04
89	43.74	0.1910	35225.36
	43.99	0.2026	37347.56
	44.24	0.2172	40049.10
	44.52	0.2300	42410.13
	44.73	0.1694	31239.71
90	44.95	0.3147	58014.79
	45.15	0.0905	16677.96
	45.27	0.1020	18814.60
	45.49	0.1125	20751.65
	45.59	0.2432	44844.88
	45.85	0.2759	50871.96
	45.95	0.1005	18524.88
	46.03	0.0850	15669.61
	46.27	0.1525	28125.00
	46.51	0.1331	24535.89
	46.74	0.2400	44255.16
	47.02	0.3746	69073.14
i-C13	47.25	0.3296	60764.26
	47.42	0.1677	30911.98
	47.67	0.3370	62143.58
	47.78	0.2673	49279.49
	47.96	0.1846	34037.16
	48.19	0.2795	51541.94
	48.54	0.2060	37990.50
	48.68	0.3060	56428.06
	48.92	0.1092	20127.09
	49.08	0.1559	28739.69
	49.33	0.1967	36263.83
i-C14	49.46	0.2281	42063.59
91	49.64	0.1799	33165.15
	49.76	0.0632	11651.54
	50.06	0.2555	47112.75
92	50.15	0.3233	59618.16
	50.36	0.1542	28425.47
	50.54	0.0403	7429.43
	50.86	0.2180	40187.47
	51.20	0.1637	30177.10
	51.67	0.1580	29126.37
	51.75	0.2646	48795.50
	51.85	0.0899	16584.49
	51.99	0.0661	12193.73
	52.19	0.1977	36451.52
i-C15	52.53	0.3078	56758.89
	52.72	0.3142	57938.02
	52.93	0.0715	13192.11
	53.18	0.1427	26307.75
	53.30	0.4305	79374.68
	53.39	0.3515	64806.15
	53.62	0.0963	17748.43
	53.79	0.2327	42911.04
	53.96	0.3056	56342.72
	54.04	0.7510	138461.00
	54.16	0.1948	35909.98
	54.29	0.4174	76961.09
	54.45	0.2454	45246.09

Peak Name	Ret. Time	Area %	Area
i-C16	54.58	0.3315	61115.98
	54.71	0.4672	86150.80
	54.89	0.7948	146551.70
	55.12	0.2120	39094.39
	55.31	0.1880	34671.27
	55.40	0.4174	76967.12
	55.61	0.1209	22282.83
	55.67	0.2879	53089.08
	55.78	0.4250	78360.84
	55.91	0.3302	60883.26
	56.22	0.2841	52373.23
	56.32	0.3004	55388.00
	56.48	0.1745	32169.34
	56.62	0.7316	134883.40
	56.71	0.4331	79855.38
	56.86	0.3268	60249.85
	56.94	1.0241	188814.20
	57.05	0.2773	51119.45
	57.14	0.4493	82844.91
	57.25	0.3261	60129.46
	57.38	0.4249	78346.05
	57.54	0.3071	56630.98
	57.64	0.2047	37737.27
	57.74	0.1389	25605.60
	57.81	0.1350	24892.15
	58.06	0.2504	46172.18
i-C18	58.21	0.7258	133819.30
	58.39	0.2340	43142.93
	58.51	0.1638	30196.98
	58.61	0.5687	104850.80
	58.88	0.3947	72768.78
	58.95	0.3532	65131.21
Pristane	59.18	1.0572	194931.50
	59.25	0.4411	81320.38
	59.42	0.4260	78536.65
	59.70	0.7672	141457.20
	59.94	0.1959	36120.59
	60.02	0.1688	31131.20
	60.14	0.1975	36419.39
	60.33	0.3121	57550.17
	60.49	0.1381	25453.55
	60.68	0.1966	36240.22
Phytane	60.79	0.5240	96611.77
	60.96	0.2175	40104.13
	61.04	0.3743	69018.04
	61.10	0.2778	51226.70
	61.17	0.3490	64352.51
	61.31	0.4171	76898.30
	61.52	0.6399	117978.20
	61.65	0.5392	99423.88
	61.75	0.4903	90395.72
	61.82	0.6874	126737.60
	61.99	1.6112	297068.50
	62.22	0.9868	181942.20
	62.34	0.4155	76614.74
	62.46	0.5633	103854.10
	62.52	0.8066	148720.80
	62.62	0.8541	157482.10
	62.78	2.3568	434543.60
	63.13	2.0314	374547.80
	63.44	2.4159	445440.20
	63.54	0.8454	155876.10
	63.68	0.7567	139512.00
	63.74	1.0004	184459.30
	63.96	1.6239	299419.30
	64.05	0.7882	145334.00
	64.14	0.8096	149272.30

Peak Name	Ret. Time	Area %	Area
IS #3	64.23	0.9382	172990.30
	64.29	2.6648	491328.10
	64.45	1.5442	284714.80
	64.57	1.2442	229402.70
	64.73	0.7117	131219.10
	64.91	0.7082	130573.50
	65.13	0.5511	101610.00
	65.28	0.2525	46556.15
	65.49	0.1252	23077.41
	65.69	0.4667	86050.75
	65.90	0.1441	26578.12
	66.29	0.1141	21030.27
	66.37	0.3218	59326.56
	66.46	0.6849	126272.20
	66.65	0.4174	76961.82
	66.86	0.3506	64641.59
	67.12	0.0571	10520.58
	67.30	0.2335	43061.61
	67.55	0.2691	49623.09
	67.82	0.2081	38369.95
	68.16	0.1770	32634.50
	68.31	0.1291	23803.23
	68.57	0.0854	15754.71
	68.82	0.4351	80229.75
	68.97	0.5898	108745.20
	69.24	0.1769	32609.71
	69.41	0.1826	33660.66
	69.49	0.4129	76124.41
	69.61	0.6364	117331.50
	70.29	0.2652	48900.95
	70.95	0.0802	14794.48
	71.28	0.0479	8834.05
	71.77	0.1792	33045.07
	72.33	0.1377	25390.88
	72.49	0.4464	82315.62
	72.68	0.4807	88638.21
	73.07	0.4428	81647.57
	73.43	0.1521	28052.66
	73.98	0.4300	79287.29
	74.29	0.1033	19037.69
	74.43	0.3428	63210.12
	74.71	0.1763	32506.50
	75.42	0.2032	37471.94
	75.72	0.3282	60516.78
	76.32	0.4193	77309.49
	76.53	0.4713	86901.66
	76.89	0.9825	181160.60
	77.27	0.9934	183158.20
	77.65	0.6620	122054.30
	78.15	0.6303	116206.20
	78.64	0.6063	111782.40
	78.96	0.3950	72834.81
	79.71	0.4105	75693.58
	80.13	0.4054	74754.18
	80.72	0.5924	109217.80
	81.42	1.9799	365050.80
	82.71	0.3550	65457.31
	83.52	0.3105	57248.20
	83.84	1.7418	321158.20
	85.00	0.1324	24416.42
	87.02	0.4112	75809.87
	87.42	0.2813	51869.92
	89.88	0.3355	61855.38
	90.53	0.1687	31108.29

Total Area = 1.843786E+07 Total Height = 4334394 Total Amount = 0

1/16/2016

ZymaX ID	17836-5
Sample ID	MW-285

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.38

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.02
Aromatics / Total Paraffins (n+iso+cyc)	0.25
Aromatics / Naphthenes	0.48

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	31.78
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	18.43

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.03

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	4.04
% Isoparaffinic	33.03
% Aromatic	19.68
% Naphthenic	41.35
% Olefinic	1.90

1/16/2016

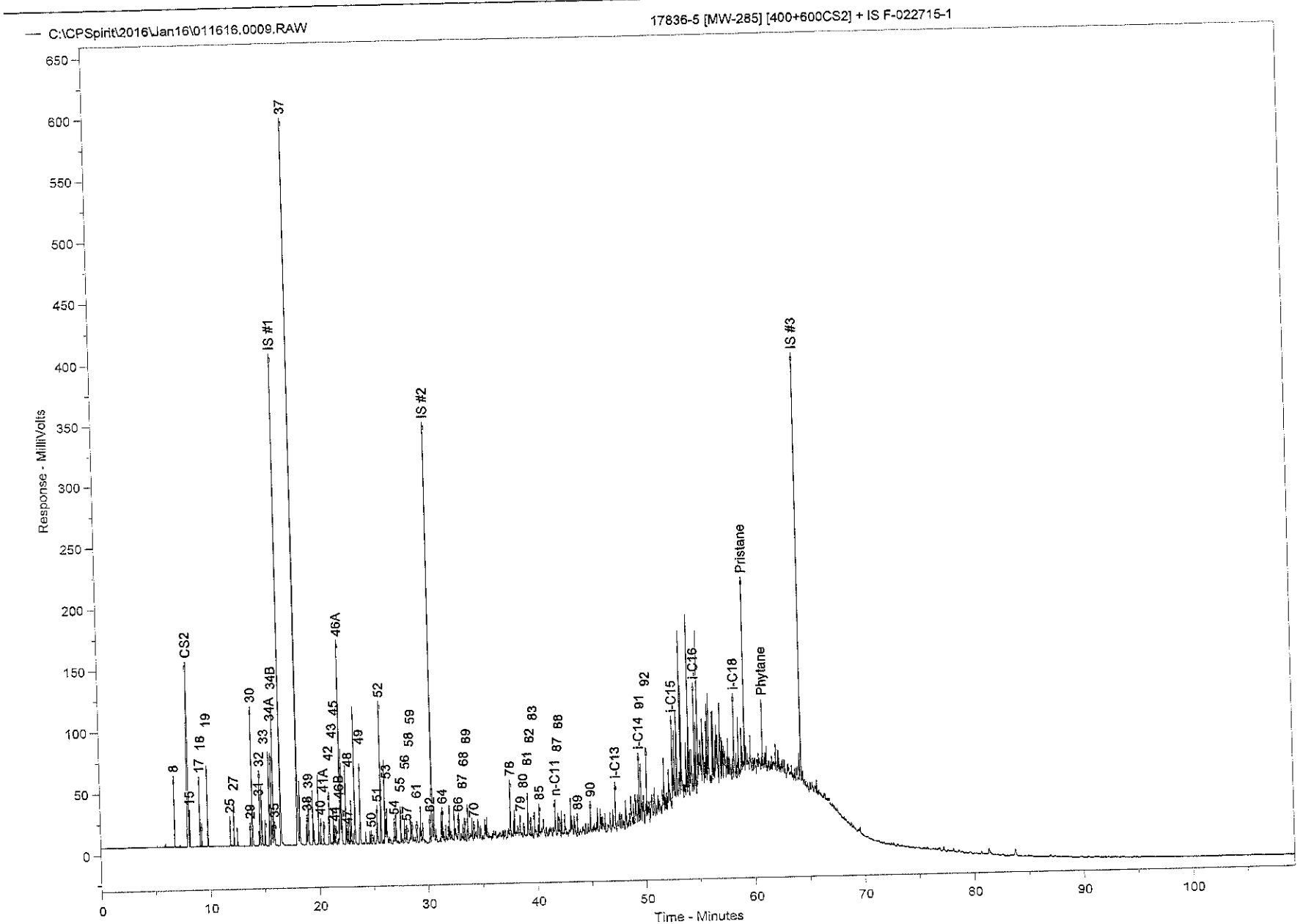
ZymaX ID		17836-5
Sample ID		MW-285
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	1.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.54
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	1.36
18	2-Methylpentane	0.36
19	3-Methylpentane	1.72
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.61
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.98
28	Benzene	0.00
29	5-Methyl-1-hexene	0.53
30	Cyclohexane	4.23
31	2-Methylhexane/TAME	0.25
32	2,3-Dimethylpentane	2.20
33	3-Methylhexane	0.62
34A	1-trans-3-Dimethylcyclopentane	2.69
34B	1-cis-3-Dimethylcyclopentane	4.22
35	2,2,4-Trimethylpentane	0.69
I.S. #1	à,à,à-Trifluorotoluene	0.00

1/16/2016

ZymaX ID		17836-5
Sample ID		MW-285
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	24.68
38	2,5-Dimethylhexane	0.75
39	2,4-Dimethylhexane	1.68
40	2,3,4-Trimethylpentane	0.70
41	Toluene/2,3,3-Trimethylpentane	0.60
42	2,3-Dimethylhexane	2.86
43	2-Methylheptane	0.96
44	4-Methylheptane	0.41
45	3,4-Dimethylhexane	0.59
46A	3-Ethyl-3-methylpentane	8.36
46B	1,4-Dimethylcyclohexane	0.57
47	3-Methylheptane	0.33
48	2,2,5-Trimethylhexane	0.60
49	n-Octane	3.21
50	2,2-Dimethylheptane	0.19
51	2,4-Dimethylheptane	1.23
52	Ethylcyclohexane	4.96
53	2,6-Dimethylheptane	1.13
54	Ethylbenzene	0.77
55	m+p Xylenes	1.06
56	4-Methyloctane	0.25
57	2-Methyloctane	0.25
58	3-Ethylheptane	0.91
59	3-Methyloctane	0.83
60	o-Xylene	0.00
61	1-Nonene	0.76
62	n-Nonane	0.82
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.97
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.77
67	1-Methyl-3-ethylbenzene	0.30
68	1-Methyl-4-ethylbenzene	0.72
69	1,3,5-Trimethylbenzene	1.54
70	3,3,4-Trimethylheptane	0.31

1/16/2016

ZymaX ID		17836-5
Sample ID		MW-285
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	1.74
79	1,3-Diethylbenzene	0.39
80	1,4-Diethylbenzene	0.14
81	n-Butylbenzene	1.81
82	1,3-Dimethyl-5-ethylbenzene	0.65
83	1,4-Dimethyl-2-ethylbenzene	1.01
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	1.03
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.66
88	1,2,3,5-Tetramethylbenzene	0.53
89	1,2,3,4-Tetramethylbenzene	0.70
90	Naphthalene	1.09
91	2-Methyl-naphthalene	2.07
92	1-Methyl-naphthalene	2.11



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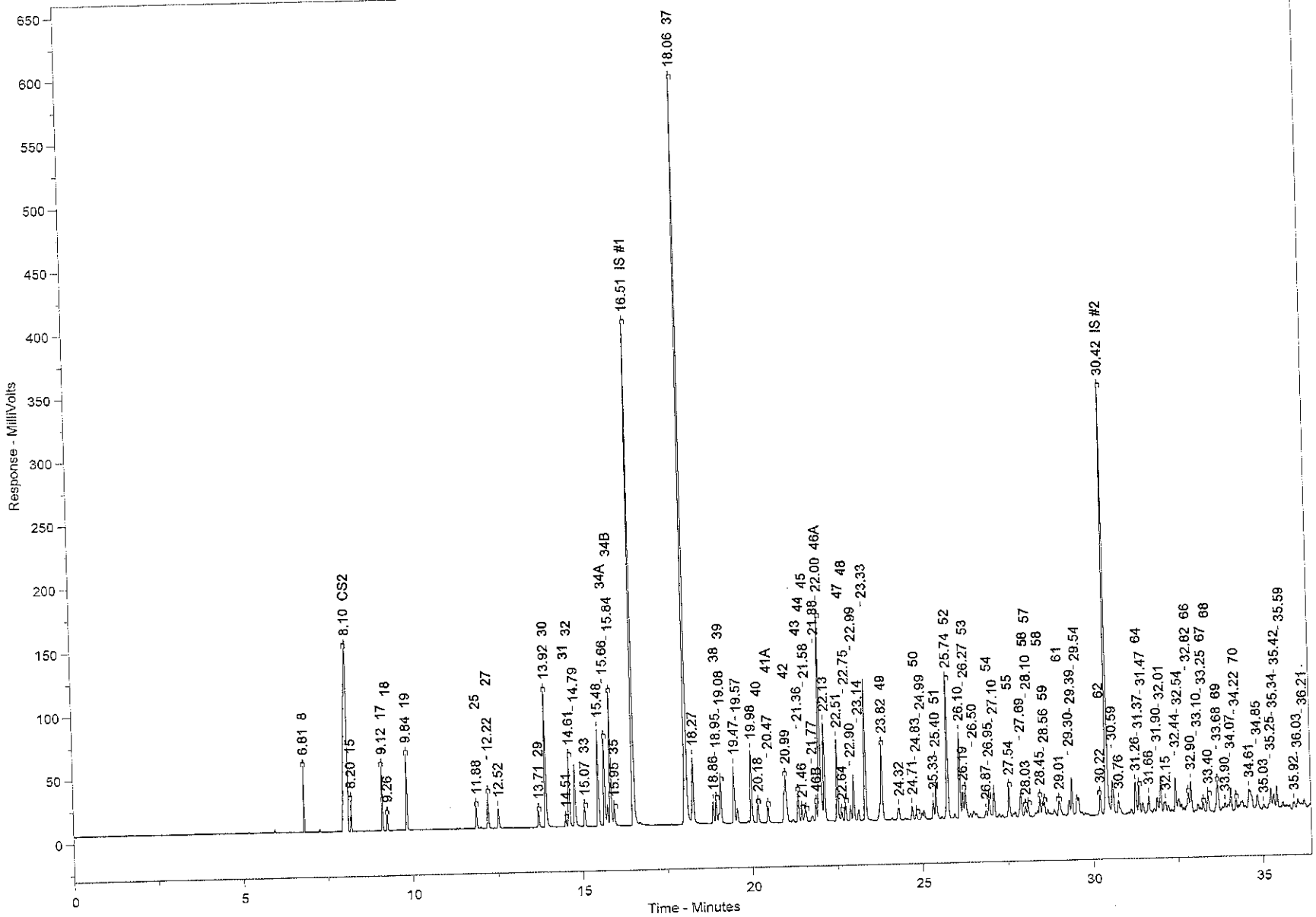
17836-5 [MW-285] [400+600CS2] + IS F-022715-1



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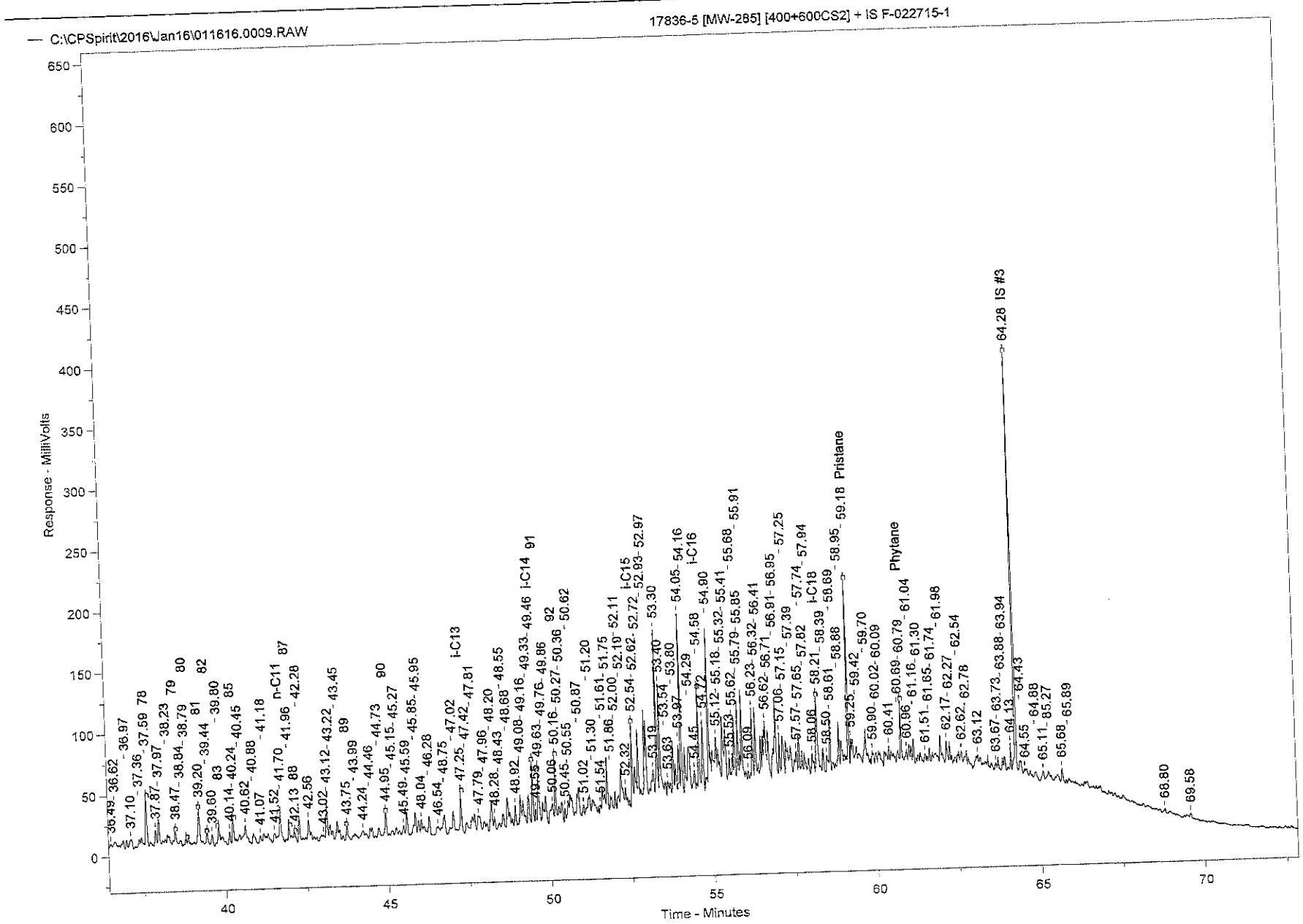
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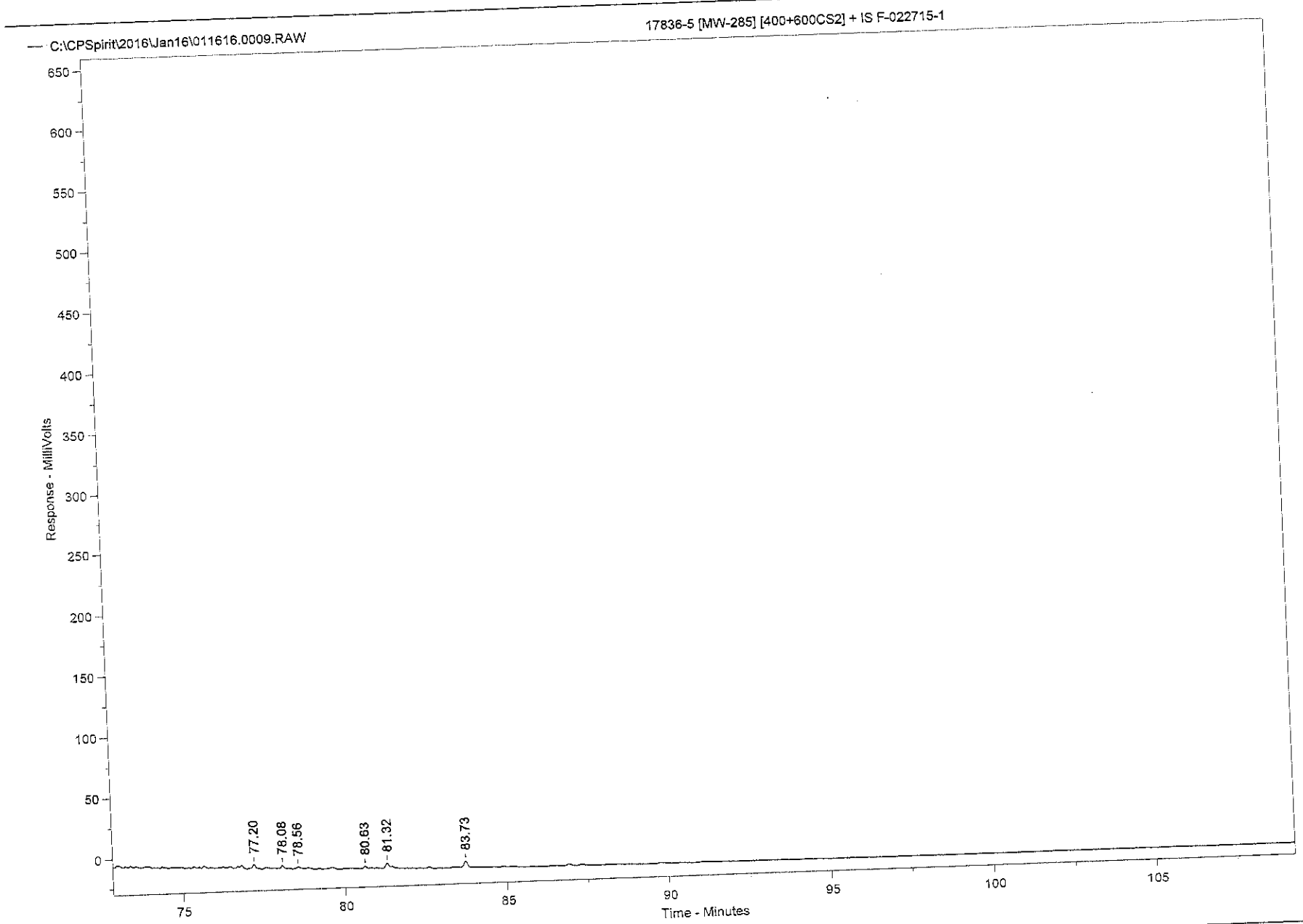
17836-5 [MW-285] [400+600CS2] + IS F-022715-1
Response - MilliVolts
Time - Minutes
i-C13
n-C11
i-C14
i-C15
i-C16
Pristane
Phytane
i-C18
IS #3



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Sample Name = **17836-5 [MW-285] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0009.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 11:55:23 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
8	6.81	0.2343	67864.23
CS2	8.10	3.0988	897689.70
15	8.20	0.1280	37073.41
17	9.12	0.3193	92508.08
18	9.26	0.0855	24775.00
19	9.84	0.4053	117424.70
25	11.88	0.1432	41489.83
27	12.22	0.2311	66938.07
	12.52	0.1386	40153.87
29	13.71	0.1254	36318.34
30	13.92	0.9951	288262.20
31	14.51	0.0586	16983.80
32	14.61	0.5190	150342.70
	14.79	0.4918	142462.30
33	15.07	0.1466	42458.46
	15.48	0.7069	204787.40
34A	15.66	0.6340	183670.80
34B	15.84	0.9943	288052.50
35	15.95	0.1616	46822.34
IS #1	16.51	3.5280	1022029.00
37	18.06	5.8120	1683661.00
	18.27	0.6505	188457.40
	18.86	0.1610	46631.95
38	18.95	0.1776	51438.42
39	19.08	0.3950	114414.70
	19.47	0.4233	122614.70
	19.57	0.1277	36993.84
	19.98	0.5491	159060.30
40	20.18	0.1653	47882.46
41A	20.47	0.1404	40665.51
42	20.99	0.6733	195039.00
43	21.36	0.2264	65575.62
44	21.46	0.0965	27966.42
45	21.58	0.1395	40403.91
	21.77	0.0698	20207.05
46B	21.88	0.1345	38951.32
46A	22.00	1.9686	570277.10
	22.13	0.7537	218334.80
	22.51	0.6330	183364.60
47	22.64	0.0779	22571.88
48	22.75	0.1418	41070.43
	22.90	0.1160	33593.82
	22.99	0.3553	102928.40
	23.14	0.0944	27348.39
	23.33	1.0990	318370.30
49	23.82	0.7568	219246.20
	24.32	0.1354	39221.79
	24.71	0.1055	30559.33
50	24.83	0.0454	13164.76
	24.99	0.0308	8922.96
	25.33	0.1336	38715.35
51	25.40	0.2891	83754.52
52	25.74	1.1676	338227.70
	26.10	0.6509	188566.00
	26.19	0.2051	59411.36

Peak Name	Ret. Time	Area %	Area
53	26.27	0.2660	77051.60
	26.50	0.0460	13337.63
	26.87	0.0606	17543.95
	26.95	0.1816	52613.61
54	27.10	0.2493	72215.80
	27.54	0.2494	72255.68
55	27.89	0.2382	68992.10
	28.03	0.0582	16873.84
56	28.10	0.0584	16924.00
57	28.45	0.2145	62130.46
58	28.58	0.1949	56472.65
59	29.01	0.1783	51641.18
61	29.30	0.1287	37284.32
	29.39	0.2799	81090.05
	29.54	0.2378	68893.96
	30.22	0.1934	56021.97
62	30.42	3.4206	990914.20
IS #2	30.59	0.3951	114458.50
	30.76	0.1635	47356.87
	31.26	0.2686	77822.80
	31.37	0.2287	66250.23
64	31.47	0.1084	31393.21
	31.66	0.1623	47026.34
	31.90	0.1055	30549.36
	32.01	0.2692	77977.82
	32.15	0.1169	33853.52
	32.44	0.2350	68073.21
	32.54	0.0953	27615.17
	32.82	0.1815	52592.41
66	32.90	0.2492	72204.11
	33.10	0.0502	14553.21
	33.25	0.0700	20292.34
67	33.40	0.1704	49354.00
68	33.68	0.3616	104745.60
69	33.90	0.1316	38117.55
	34.07	0.1825	52880.92
	34.22	0.0721	20899.87
70	34.61	0.3424	99201.28
	34.85	0.1653	47877.57
	35.03	0.0564	16350.07
	35.25	0.2100	60822.67
	35.34	0.1186	34355.27
	35.42	0.1832	53066.61
	35.59	0.0447	12953.13
	35.92	0.0797	23079.57
	36.03	0.1145	33179.44
	36.21	0.0977	28292.97
	36.49	0.0430	12443.55
	36.62	0.1103	31938.28
	36.97	0.0794	22997.30
	37.10	0.1598	46297.87
	37.36	0.0356	10299.02
	37.59	0.4095	118626.60
78	37.87	0.1429	41404.08
	37.97	0.1991	57688.29
	38.23	0.1196	34660.06
	38.47	0.0929	26899.33
79	38.64	0.0475	13754.67
	38.79	0.0332	9606.14
80	39.20	0.4262	123473.10
81	39.44	0.1525	44176.26
82	39.60	0.1170	33905.84
	39.80	0.2372	68720.29
83	40.14	0.1230	35625.30
	40.24	0.2418	70054.21
85	40.45	0.1365	39540.23
	40.62	0.3569	103392.30

Peak Name	Ret. Time	Area %	Area
	40.86	0.1410	40855.79
	41.07	0.0506	14669.97
	41.18	0.0464	13434.27
	41.52	0.1150	33321.15
n-C11	41.70	0.3679	106569.50
87	41.96	0.1546	44775.48
88	42.13	0.1257	36410.71
	42.28	0.2021	58540.49
	42.56	0.2332	67556.52
	43.02	0.0903	26151.99
	43.12	0.2747	79584.98
	43.22	0.0810	23471.70
	43.45	0.1169	33876.22
89	43.75	0.1640	47512.51
	43.99	0.1182	34234.78
	44.24	0.0799	23144.49
	44.46	0.0504	14602.31
	44.73	0.1314	38060.23
90	44.95	0.2570	74458.58
	45.15	0.0746	21614.08
	45.27	0.0986	28575.84
	45.49	0.1057	30624.99
	45.59	0.2206	63918.69
	45.85	0.2501	72448.66
	45.95	0.1113	32242.83
	46.04	0.0806	23338.98
	46.28	0.1560	45183.18
	46.54	0.1462	42362.50
	46.75	0.2539	73555.02
	47.02	0.3775	109366.40
i-C13	47.25	0.3950	114438.10
	47.42	0.1285	37230.56
	47.61	0.1958	56734.89
	47.79	0.2528	73238.90
	47.96	0.0646	18719.47
	48.20	0.3447	99866.83
	48.28	0.1043	30201.41
	48.43	0.0667	19316.34
	48.55	0.1641	47538.51
	48.68	0.1979	57337.27
	48.92	0.1556	45079.81
	49.08	0.2843	82370.15
	49.16	0.2868	83094.92
	49.33	0.3042	88110.88
i-C14	49.46	0.4574	132491.50
	49.55	0.1118	32374.22
91	49.63	0.4867	140983.30
	49.76	0.2597	75244.97
	49.86	0.2490	72130.51
	50.06	0.3731	108087.10
92	50.16	0.4980	144269.70
	50.27	0.1841	53323.51
	50.36	0.2166	62734.74
	50.45	0.0991	28717.03
	50.55	0.2015	58366.56
	50.62	0.4345	125874.70
	50.87	0.4885	141506.50
	51.02	0.1405	40711.11
	51.20	0.4291	124304.80
	51.30	0.3855	111672.10
	51.54	0.0871	25224.37
	51.61	0.2326	67382.49
	51.75	0.4397	127383.90
	51.86	0.2514	72824.86
	52.00	0.1677	48588.67
	52.11	0.2032	58854.95
	52.19	0.5845	169314.50

Peak Name	Ret. Time	Area %	Area
	52.32	0.2820	81705.18
i-C15	52.54	0.6377	184745.20
	52.62	0.5224	151340.40
	52.72	0.7836	226988.40
	52.93	0.7583	219660.20
	52.97	0.6106	176883.50
	53.19	0.5433	157386.90
	53.30	1.2713	368290.60
	53.40	1.0964	317628.80
	53.54	0.2198	63673.15
	53.63	0.2218	64259.51
	53.80	0.5223	151306.20
	53.97	0.4649	134690.60
	54.05	1.2309	356577.20
	54.16	0.4652	134751.70
	54.29	0.7549	218673.50
	54.45	0.3566	103294.40
i-C16	54.58	0.7716	223529.20
	54.72	0.6847	198358.60
	54.90	2.0272	587260.70
	55.12	0.5811	168328.40
	55.18	0.5946	172262.60
	55.32	0.7703	223161.20
	55.41	0.5188	150303.40
	55.53	0.4154	120346.70
	55.62	0.2264	65594.76
	55.68	0.5293	153340.50
	55.79	0.6468	187374.60
	55.85	0.2603	75393.38
	55.91	0.7471	216419.00
	56.09	0.1460	42293.72
	56.23	0.5691	164848.50
	56.32	0.6114	177102.80
	56.41	0.1806	52320.04
	56.62	1.4531	420954.60
	56.71	0.5051	146317.50
	56.91	0.5702	165183.80
	56.95	0.6077	176049.90
	57.06	0.2921	84606.59
	57.15	0.5687	164749.20
	57.25	0.2745	79526.23
	57.39	0.4476	129664.80
	57.57	0.4105	118912.20
	57.65	0.3576	103579.10
	57.74	0.1710	49536.18
	57.82	0.2490	72141.87
	57.94	0.1575	45627.51
	58.06	0.2503	72497.30
i-C18	58.21	0.8378	242712.80
	58.39	0.1855	53733.04
	58.50	0.1690	48946.41
	58.61	0.3268	94677.34
	58.69	0.1138	32976.04
	58.88	0.3218	93215.33
	58.95	0.4028	116694.60
Pristane	59.18	1.0805	313005.00
	59.25	0.3011	87217.98
	59.42	0.1053	30489.89
	59.70	0.2596	75205.98
	59.90	0.1516	43913.49
	60.02	0.1258	36430.03
	60.09	0.2341	67812.20
	60.41	0.0664	19235.31
	60.69	0.1311	37977.25
Phytane	60.79	0.4144	120043.50
	60.96	0.1376	39854.59
	61.04	0.1588	45999.65

Peak Name	Ret. Time	Area %	Area
	61.16	0.1634	47327.51
	61.30	0.0459	13308.98
	61.51	0.1048	30358.48
	61.65	0.0840	24347.01
	61.74	0.0377	10913.94
	61.98	0.2486	72008.05
	62.17	0.1845	53441.13
	62.27	0.1719	49806.99
	62.54	0.1127	32651.34
	62.62	0.1307	37876.73
	62.78	0.1567	45386.77
	63.12	0.1440	41725.55
	63.67	0.0668	19348.40
	63.73	0.0925	26791.20
	63.88	0.0954	27627.75
	63.94	0.1097	31767.14
	64.13	0.1452	42075.73
IS #3	64.28	2.4378	706199.20
	64.43	0.1893	54846.43
	64.55	0.1189	34446.36
	64.88	0.1166	33765.68
	65.11	0.1490	43173.43
	65.27	0.2340	67785.20
	65.68	0.1349	39082.80
	65.89	0.0461	13359.41
	68.80	0.0438	12688.01
	69.58	0.0366	10606.10
	77.20	0.0988	28614.41
	78.08	0.0431	12490.55
	78.56	0.0510	14762.24
	80.63	0.0405	11735.41
	81.32	0.1599	46321.39
	83.73	0.1448	41943.20

Total Area = 2.896895E+07 Total Height = 8999535 Total Amount = 0.9999999

1/16/2016

ZymaX ID	17836-6
Sample ID	MW-491

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.52
Aromatics / Total Paraffins (n+iso+cyc)	5.62
Aromatics / Naphthenes	17.01

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	17.94

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.50

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.79
% Isoparaffinic	9.24
% Aromatic	84.26
% Naphthenic	4.95
% Olefinic	0.75

1/16/2016

ZymaX ID		17836-6
Sample ID		MW-491
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.73
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.92
I.S. #1	à,à,à-Trifluorotoluene	0.00

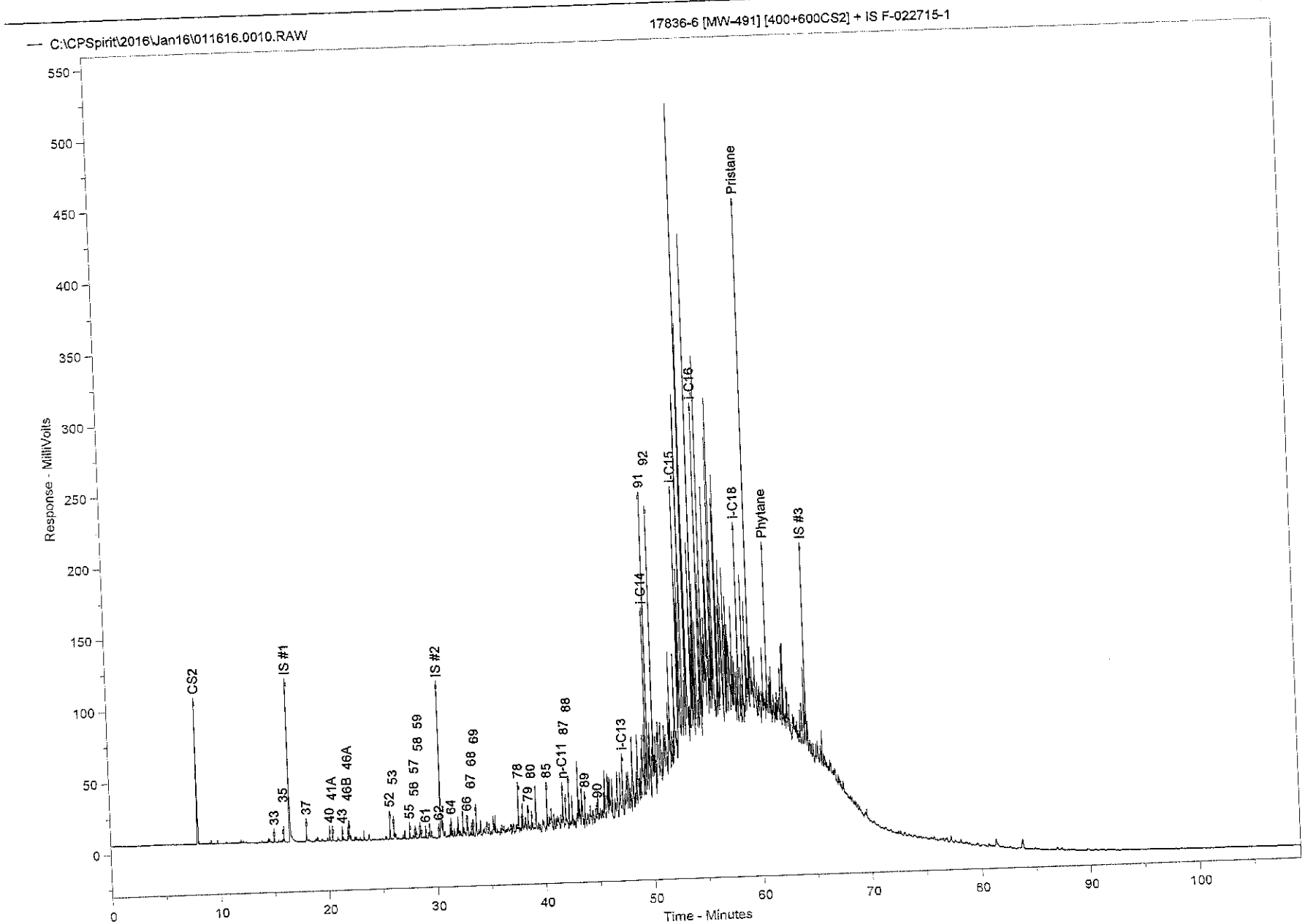
1/16/2016

ZymaX ID		17836-6
Sample ID		MW-491
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	1.82
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.93
41	Toluene/2,3,3-Trimethylpentane	0.94
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.57
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	1.51
46B	1,4-Dimethylcyclohexane	0.57
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	2.57
53	2,6-Dimethylheptane	1.39
54	Ethylbenzene	0.00
55	m+p Xylenes	0.96
56	4-Methyloctane	0.55
57	2-Methyloctane	0.29
58	3-Ethylheptane	0.74
59	3-Methyloctane	0.33
60	o-Xylene	0.00
61	1-Nonene	0.75
62	n-Nonane	0.79
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	1.28
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	1.76
67	1-Methyl-3-ethylbenzene	0.49
68	1-Methyl-4-ethylbenzene	1.13
69	1,3,5-Trimethylbenzene	3.75
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-6
Sample ID		MW-491
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	4.32
79	1,3-Diethylbenzene	2.80
80	1,4-Diethylbenzene	0.83
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	4.03
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	1.96
88	1,2,3,5-Tetramethylbenzene	4.42
89	1,2,3,4-Tetramethylbenzene	3.86
90	Naphthalene	1.14
91	2-Methyl-naphthalene	28.18
92	1-Methyl-naphthalene	23.68

Chrom Perfect Chromatogram Report



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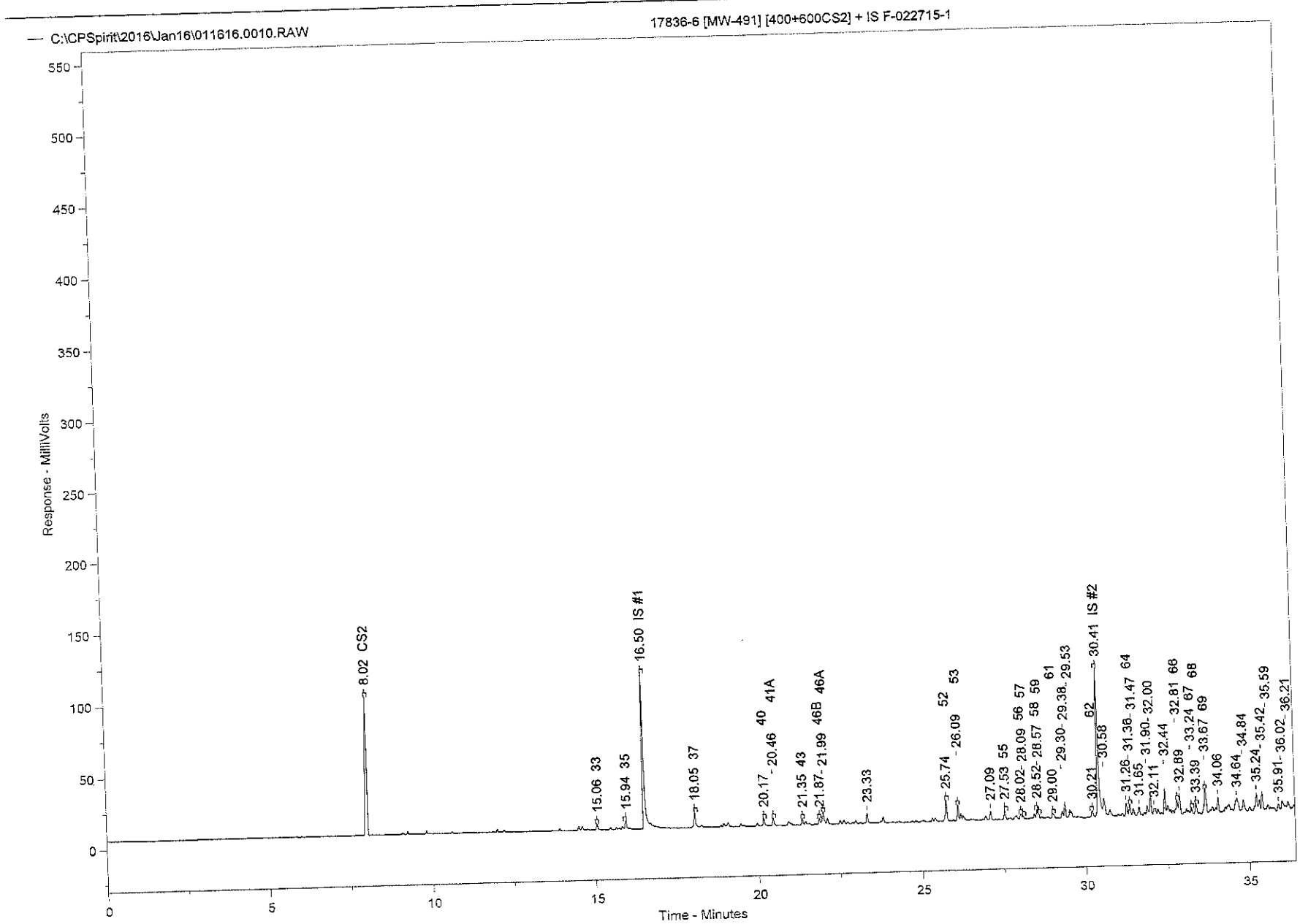

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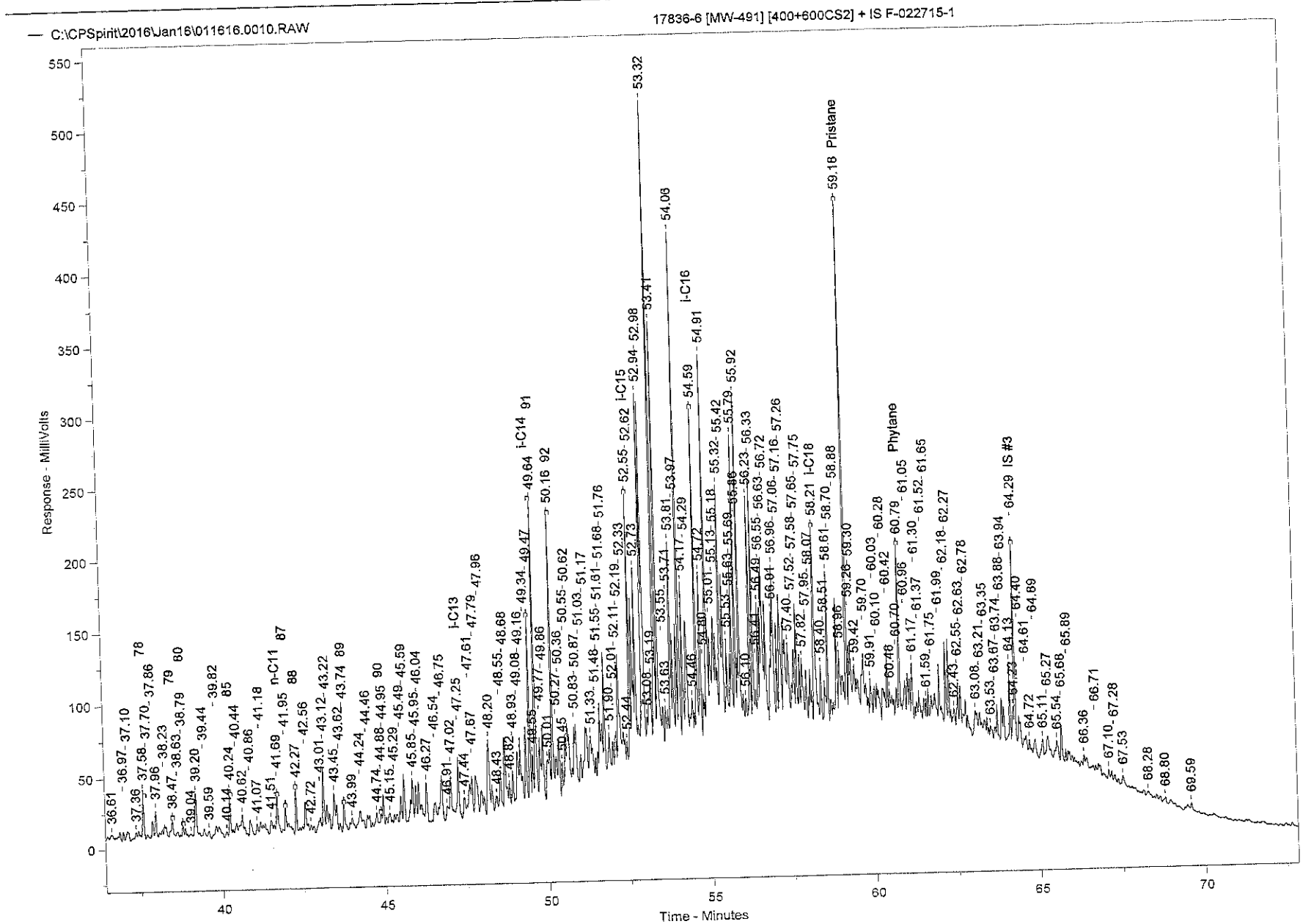

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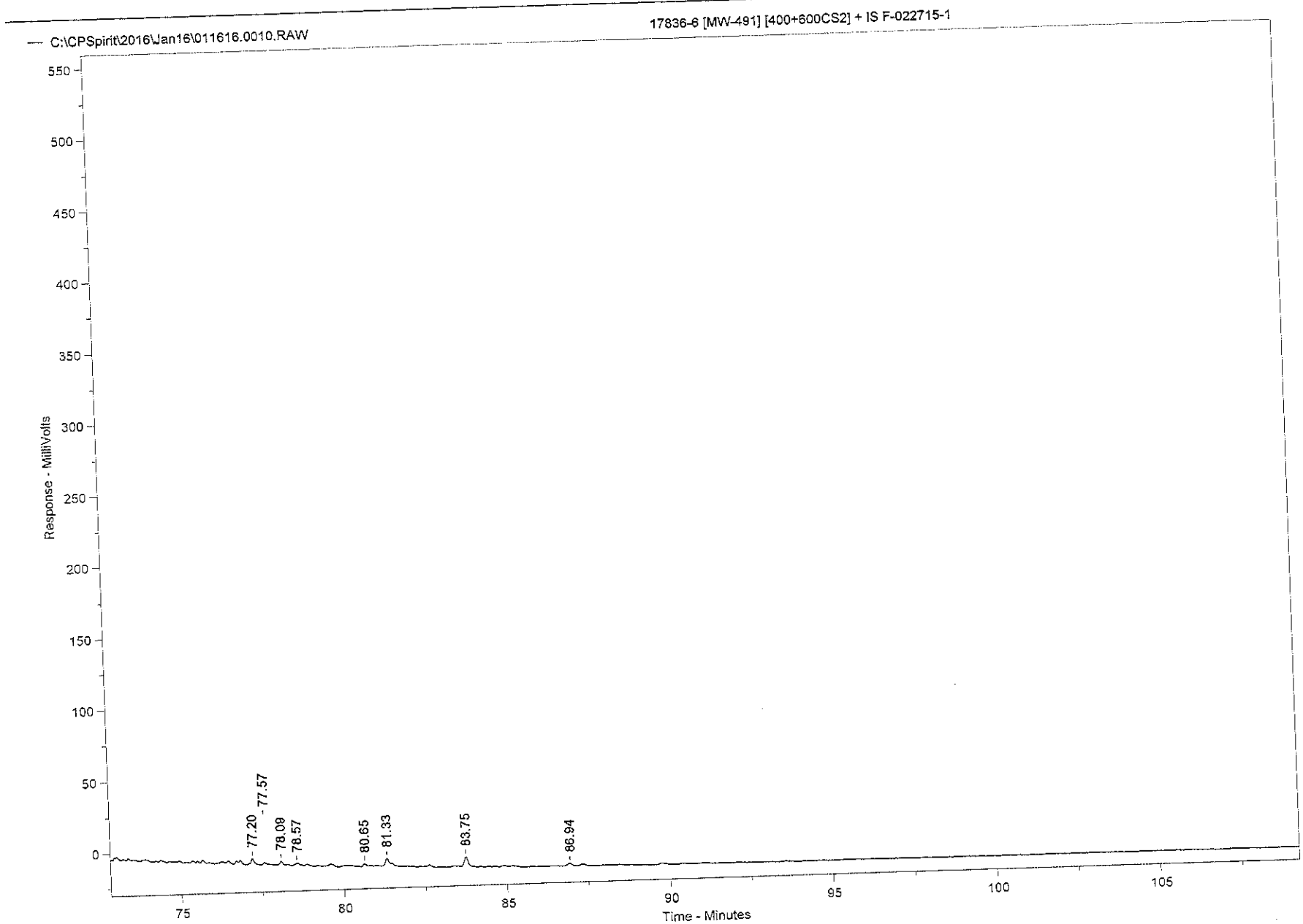

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Sample Name = **17836-6 [MW-491] [400+600CS2] + IS F-022715-1**

Acquisition Port = DP#

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0010.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 1:58:35 PM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.02	0.9845	348227.50
33	15.06	0.0418	14791.65
35	15.94	0.0523	18497.35
IS #1	16.50	0.9135	323113.20
37	18.05	0.1036	36657.32
40	20.17	0.0527	18639.92
41A	20.46	0.0538	19013.06
43	21.35	0.0322	11387.80
46B	21.87	0.0322	11398.24
46A	21.99	0.0862	30501.65
	23.33	0.0556	19671.79
52	25.74	0.1461	51677.23
53	26.09	0.0793	28049.80
	27.09	0.0452	15974.24
55	27.53	0.0546	19298.33
56	28.02	0.0312	11041.25
57	28.09	0.0163	5751.11
58	28.52	0.0424	14986.52
59	28.57	0.0189	6687.45
61	29.00	0.0428	15130.25
	29.30	0.0399	14096.21
	29.38	0.0850	30079.65
	29.53	0.0670	23708.75
62	30.21	0.0450	15933.08
IS #2	30.41	1.0163	359490.50
	30.58	0.1438	50876.01
	31.26	0.0798	28241.34
64	31.36	0.0728	25753.62
	31.47	0.0493	17439.01
	31.65	0.0629	22264.74
	31.90	0.0452	16000.09
	32.00	0.1092	38626.50
	32.11	0.0532	18832.81
	32.44	0.1160	41020.80
	32.81	0.1002	35441.10
66	32.89	0.1209	42775.50
	33.24	0.0281	9935.06
67	33.39	0.0644	22776.00
68	33.67	0.2134	75501.18
69	34.06	0.0682	24138.66
	34.64	0.1592	56321.93
	34.84	0.0936	33100.07
	35.24	0.1226	43352.61
	35.42	0.1042	36845.33
	35.59	0.0302	10699.75
	35.91	0.0520	18390.39
	36.02	0.0879	31086.67
	36.21	0.0689	24383.87
	36.61	0.0776	27432.58
	36.97	0.0556	19659.84
	37.10	0.1142	40382.13
	37.36	0.0272	9635.08
	37.58	0.2459	86975.17
78	37.70	0.0328	11609.51
	37.86	0.1070	37849.23

Peak Name	Ret. Time	Area %	Area
	37.96	0.1432	50670.43
	38.23	0.0945	33439.97
79	38.47	0.1593	56344.46
	38.63	0.0401	14173.78
80	38.79	0.0471	16645.84
	39.04	0.0334	11830.78
	39.20	0.3268	115608.30
	39.44	0.0759	26840.00
	39.59	0.0650	22987.06
	39.82	0.0594	21023.01
	40.14	0.0370	13090.90
85	40.24	0.2294	81141.97
	40.44	0.0661	23378.59
	40.62	0.1046	37001.25
	40.86	0.1481	52403.23
	41.07	0.0542	19171.01
	41.18	0.0451	15936.98
	41.51	0.1191	42136.25
n-C11	41.69	0.3034	107335.40
87	41.95	0.1117	39516.01
88	42.27	0.2519	89106.23
	42.56	0.1499	53021.91
	42.72	0.0295	10441.94
	43.01	0.1932	68354.37
	43.12	0.4211	148968.80
	43.22	0.2020	71464.57
	43.45	0.3341	118196.50
	43.62	0.0567	20045.76
89	43.74	0.2198	77733.46
	43.99	0.1521	53800.27
	44.24	0.1156	40884.07
	44.46	0.0451	15936.62
	44.74	0.1210	42799.45
90	44.88	0.0651	23037.44
	44.95	0.1695	59950.72
	45.15	0.0999	35343.88
	45.29	0.0280	9911.31
	45.49	0.1711	60513.08
	45.59	0.3073	108694.50
	45.85	0.3454	122182.50
	45.95	0.1783	63059.49
	46.04	0.1588	56178.06
	46.27	0.2319	82013.87
	46.54	0.2023	71543.55
	46.75	0.4866	172136.00
	46.91	0.1441	50982.36
	47.02	0.4030	142539.40
i-C13	47.25	0.4427	156580.80
	47.44	0.1873	66265.63
	47.61	0.2940	103990.70
	47.67	0.2527	89369.77
	47.79	0.5022	177654.90
	47.96	0.3418	120901.20
	48.20	0.6741	238455.70
	48.43	0.1462	51723.59
	48.55	0.3091	109342.30
	48.68	0.6387	225919.10
	48.82	0.1554	54967.87
	48.93	0.2588	91545.43
	49.08	0.4619	163399.10
	49.16	0.4349	153853.60
	49.34	0.5050	178618.70
i-C14	49.47	0.9343	330470.50
	49.55	0.2446	86529.37
91	49.64	1.6045	567548.90
	49.77	0.4824	170631.10
	49.86	0.4437	156962.80

Peak Name	Ret. Time	Area %	Area
	50.01	0.3263	115410.90
92	50.16	1.3483	476916.80
	50.27	0.2979	105381.50
	50.36	0.4025	142380.50
	50.45	0.1591	56270.57
	50.55	0.3652	129183.30
	50.62	0.7629	269847.50
	50.83	0.4220	149283.50
	50.87	0.4089	144624.20
	51.03	0.2072	73296.95
	51.17	0.7031	248722.00
	51.33	0.3812	134837.70
	51.48	0.0712	25168.81
	51.55	0.1202	42502.27
	51.61	0.3440	121671.50
	51.68	0.3325	117604.00
	51.76	0.5548	196264.70
	51.90	0.2667	94344.26
	52.01	0.1361	48151.46
	52.11	0.2350	83109.58
	52.19	0.9228	326404.90
	52.33	0.2800	99036.44
	52.44	0.0730	25825.16
	52.55	1.1251	397984.70
i-C15	52.62	0.9415	333047.30
	52.73	0.7307	258475.30
	52.94	1.6069	568420.60
	52.98	1.2794	452555.30
	53.08	0.1072	37926.81
	53.19	0.5509	194880.90
	53.32	2.9123	1030161.00
	53.41	2.0506	725346.40
	53.55	0.2079	73551.59
	53.63	0.2142	75779.55
	53.71	0.1629	57620.12
	53.81	1.6444	581670.30
	53.97	0.6072	214800.80
	54.06	2.1881	774005.10
	54.17	0.7707	272604.60
	54.29	1.0749	380231.70
	54.46	0.3806	134642.20
	54.59	1.4802	523573.60
i-C16	54.72	0.9474	335113.70
	54.80	0.3053	107996.30
	54.91	2.0555	727098.80
	55.01	0.6942	245563.20
	55.13	0.8800	311293.30
	55.18	0.8539	302059.50
	55.32	1.5272	540211.50
	55.42	0.8274	292681.50
	55.53	0.6449	228118.40
	55.63	0.3201	113233.10
	55.69	0.8070	285460.70
	55.79	1.3121	464125.20
	55.86	0.3303	116824.40
	55.92	1.4881	526389.80
	56.10	0.1734	61338.29
	56.23	1.1650	412096.60
	56.33	1.1097	392524.30
	56.41	0.1650	58348.52
	56.49	0.5286	186971.70
	56.55	0.4463	157867.90
	56.63	1.3772	487149.00
	56.72	0.6362	225042.80
	56.91	0.8181	289367.90
	56.96	0.6686	236504.60
	57.06	0.3081	108998.00

Peak Name	Ret. Time	Area %	Area
	57.16	0.8348	295281.80
	57.26	0.2068	73158.88
	57.40	0.2594	91770.81
	57.52	0.1254	44371.86
	57.58	0.3116	110233.70
	57.65	0.5137	181722.20
	57.75	0.2257	79821.33
	57.82	0.3660	129457.20
	57.95	0.2353	83246.34
	58.07	0.3578	126554.00
i-C18	58.21	1.4404	509496.30
	58.40	0.2923	103382.90
	58.51	0.2776	98183.48
	58.61	0.5642	199577.80
	58.70	0.1371	48499.39
	58.88	0.6235	220538.30
	58.96	0.9675	342235.00
Pristane	59.18	2.2165	784038.60
	59.26	0.3543	125309.30
	59.30	0.4612	163152.20
	59.42	0.6550	231676.30
	59.70	0.6748	238700.30
	59.91	0.3108	109950.20
	60.03	0.2525	89328.02
	60.10	0.4278	151340.90
	60.28	0.3054	108017.30
	60.42	0.2310	81707.05
	60.48	0.0668	23617.04
	60.70	0.1836	64940.02
Phytane	60.79	0.8097	286409.90
	60.96	0.3220	113913.40
	61.05	0.4440	157056.60
	61.17	0.2907	102842.90
	61.30	0.1220	43149.19
	61.37	0.2512	88845.87
	61.52	0.1890	66859.66
	61.59	0.1057	37373.45
	61.65	0.1749	61879.73
	61.75	0.3274	115822.70
	61.99	0.5307	187728.60
	62.18	0.4986	176385.50
	62.27	0.5249	185673.70
	62.43	0.2387	84417.65
	62.55	0.3127	110604.70
	62.63	0.3246	114830.60
	62.78	0.5795	204988.20
	63.08	0.3871	136920.20
	63.21	0.3309	117064.60
	63.35	0.2357	83359.69
	63.53	0.1762	62334.89
	63.67	0.1453	51402.20
	63.74	0.2569	90885.63
	63.88	0.2749	97247.03
	63.94	0.2490	88075.09
	64.13	0.5341	188920.80
	64.23	0.3018	106768.50
IS #3	64.29	0.9101	321934.80
	64.40	0.3883	137364.00
	64.61	0.2438	86245.99
	64.72	0.1313	46441.85
	64.89	0.1795	63506.29
	65.11	0.1690	59793.35
	65.27	0.3334	117930.10
	65.54	0.2560	90548.36
	65.68	0.2136	75564.40
	65.89	0.0766	27109.79
	66.36	0.0383	13549.10

Peak Name	Ret. Time	Area %	Area
	66.71	0.0206	7302.67
	67.10	0.0592	20949.53
	67.28	0.0446	15759.34
	67.53	0.0872	30857.70
	68.28	0.0623	22027.17
	68.80	0.0455	16094.62
	69.59	0.0354	12504.95
	77.20	0.1018	35998.01
	77.57	0.0441	15614.36
	78.09	0.0445	15741.05
	78.57	0.0439	15542.91
	80.65	0.0330	11682.00
	81.33	0.1622	57365.50
	83.75	0.1549	54808.90
	86.94	0.0513	18142.65

Total Area = 3.537274E+07 Total Height = 1.154115E+07 Total Amount = 0

1/16/2016

ZymaX ID	17836-7
Sample ID	MW-492

Evaporation

n-Pentane / n-Heptane	0.47
2-Methylpentane / 2-Methylheptane	1.80

Waterwashing

Benzene / Cyclohexane	0.04
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.19
Aromatics / Naphthenes	0.35

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	38.92
3-Methylhexane / n-Heptane	1.04
Methylcyclohexane / n-Heptane	9.07
Isoparaffins + Naphthenes / Paraffins	8.59

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	8.65
% Isoparaffinic	29.84
% Aromatic	15.40
% Naphthenic	44.47
% Olefinic	1.64

1/16/2016

ZymaX ID		17836-7
Sample ID		MW-492
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.14
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.98
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	1.08
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.50
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	1.13
18	2-Methylpentane	2.17
19	3-Methylpentane	1.74
20	Hexane	2.39
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.52
26	Methylcyclopentane	3.78
27	2,4-Dimethylpentane	0.83
28	Benzene	0.33
29	5-Methyl-1-hexene	0.44
30	Cyclohexane	9.49
31	2-Methylhexane/TAME	1.58
32	2,3-Dimethylpentane	1.74
33	3-Methylhexane	2.40
34A	1-trans-3-Dimethylcyclopentane	2.15
34B	1-cis-3-Dimethylcyclopentane	3.67
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

1/16/2016

ZymaX ID		17836-7
Sample ID		MW-492
		Relative Area %
36	n-Heptane	2.32
37	Methylcyclohexane	21.04
38	2,5-Dimethylhexane	1.17
39	2,4-Dimethylhexane	1.10
40	2,3,4-Trimethylpentane	0.28
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	1.90
43	2-Methylheptane	1.21
44	4-Methylheptane	0.52
45	3,4-Dimethylhexane	0.37
46A	3-Ethyl-3-methylpentane	5.49
46B	1,4-Dimethylcyclohexane	0.81
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.41
49	n-Octane	1.88
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.90
52	Ethylcyclohexane	3.53
53	2,6-Dimethylheptane	0.93
54	Ethylbenzene	0.71
55	m+p Xylenes	0.70
56	4-Methyloctane	0.19
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.76
59	3-Methyloctane	0.63
60	o-Xylene	0.00
61	1-Nonene	0.67
62	n-Nonane	0.84
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.17
64	3,3,5-Trimethylheptane	0.92
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.96
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.68
69	1,3,5-Trimethylbenzene	1.75
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-7
Sample ID		MW-492
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	1.77
79	1,3-Diethylbenzene	0.47
80	1,4-Diethylbenzene	0.16
81	n-Butylbenzene	2.11
82	1,3-Dimethyl-5-ethylbenzene	0.49
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	1.03
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.41
88	1,2,3,5-Tetramethylbenzene	1.27
89	1,2,3,4-Tetramethylbenzene	0.98
90	Naphthalene	1.41
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report

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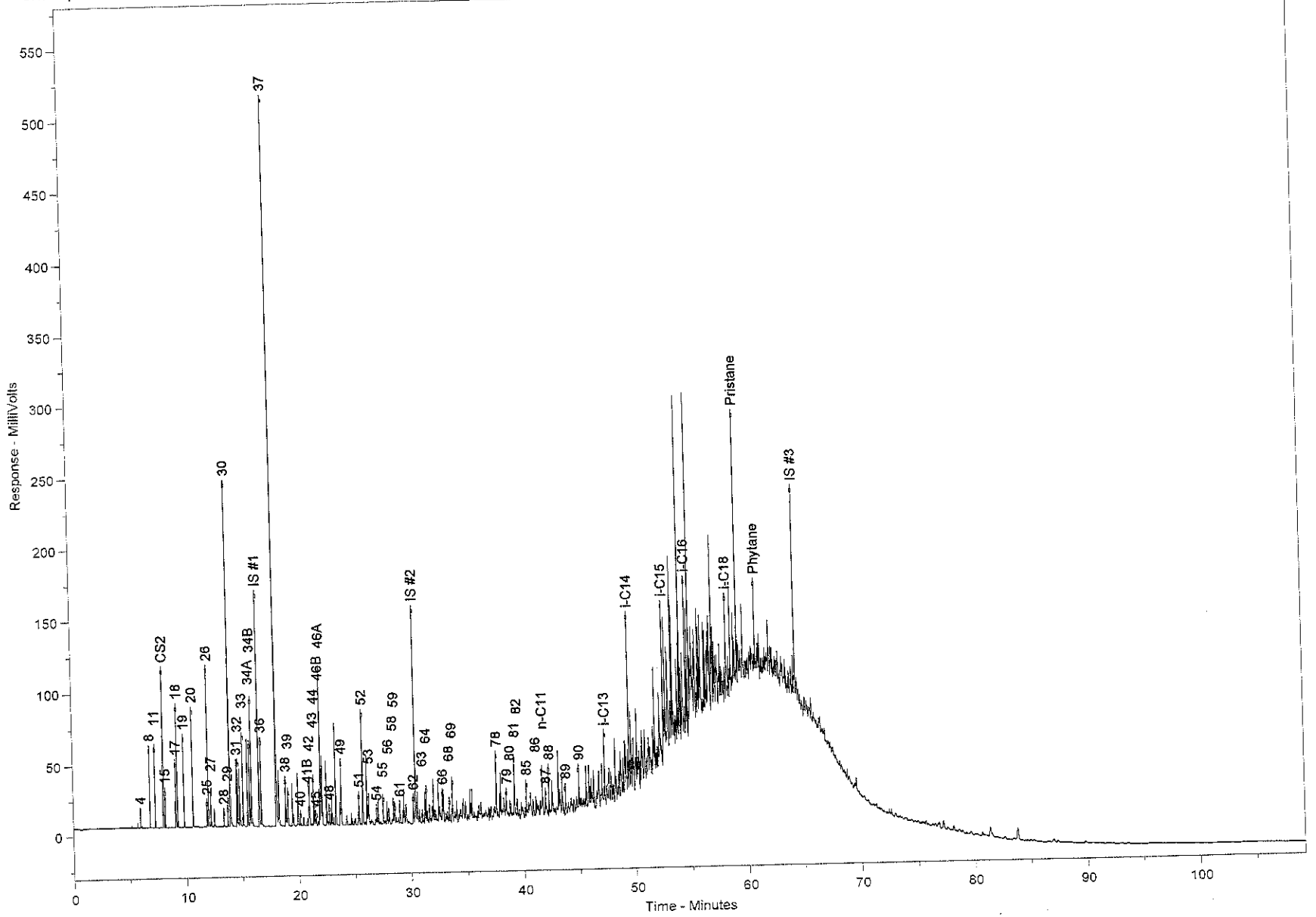
17836-7 [MW-492] [400+600CS2] + IS F-022715-1



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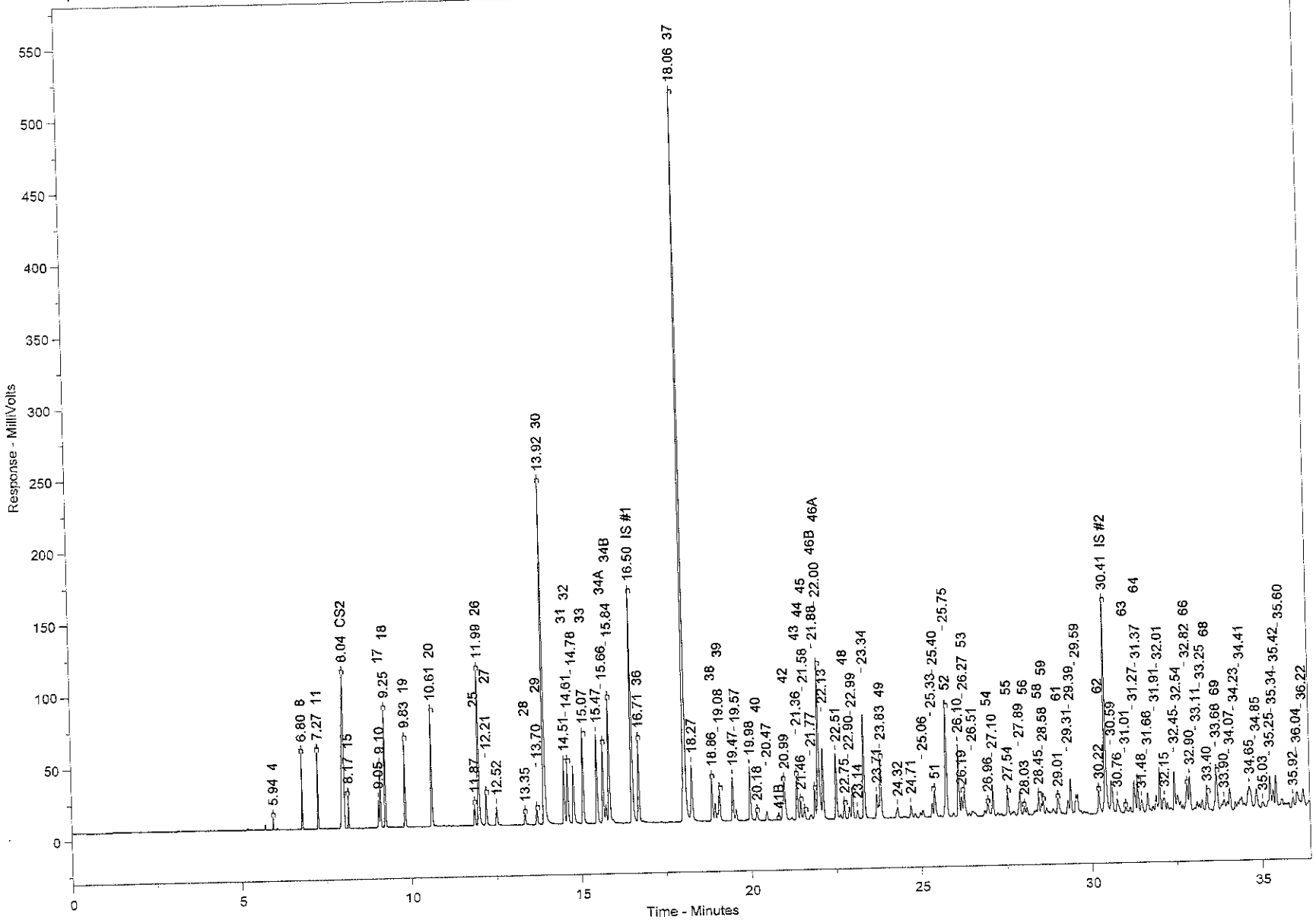

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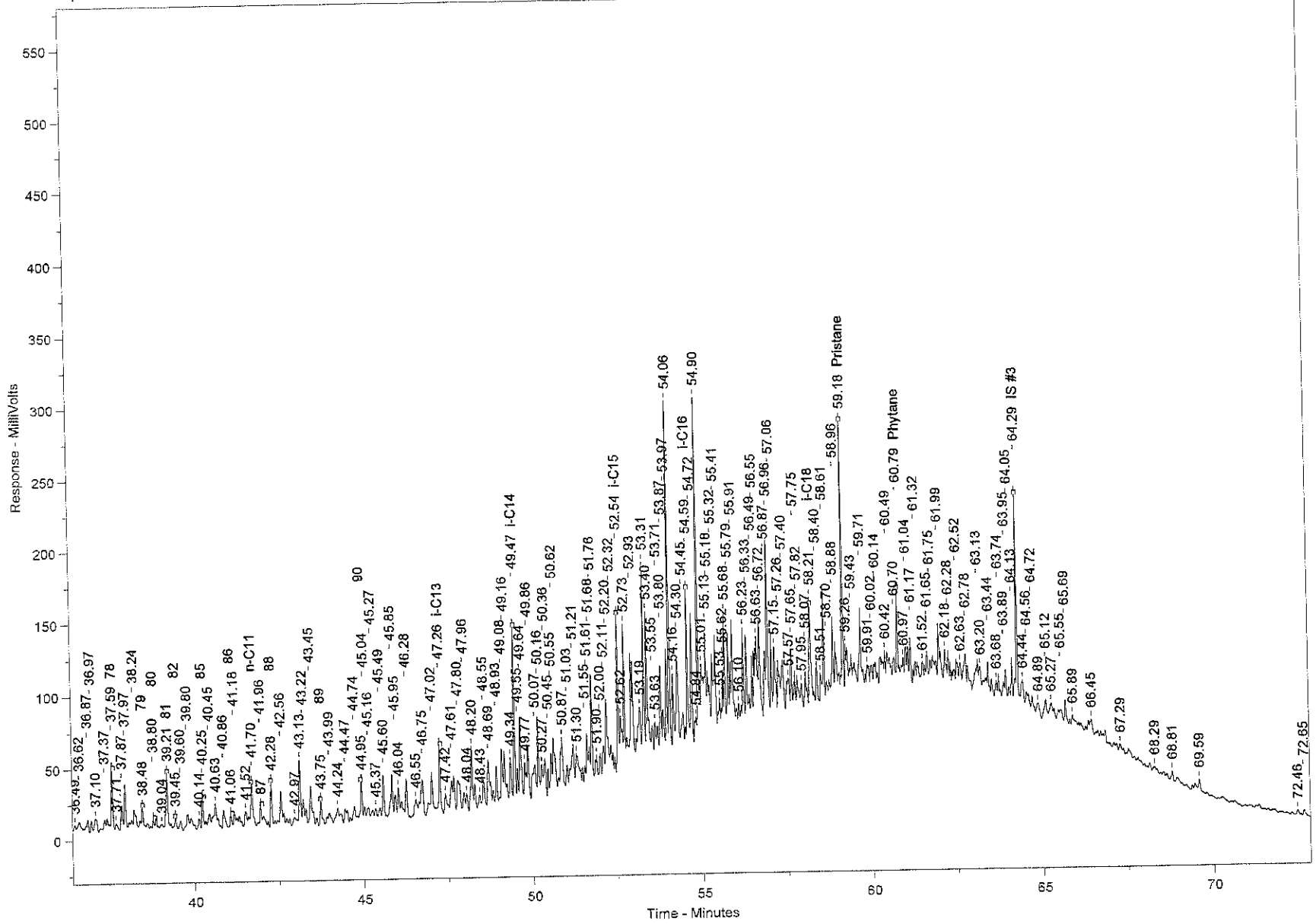

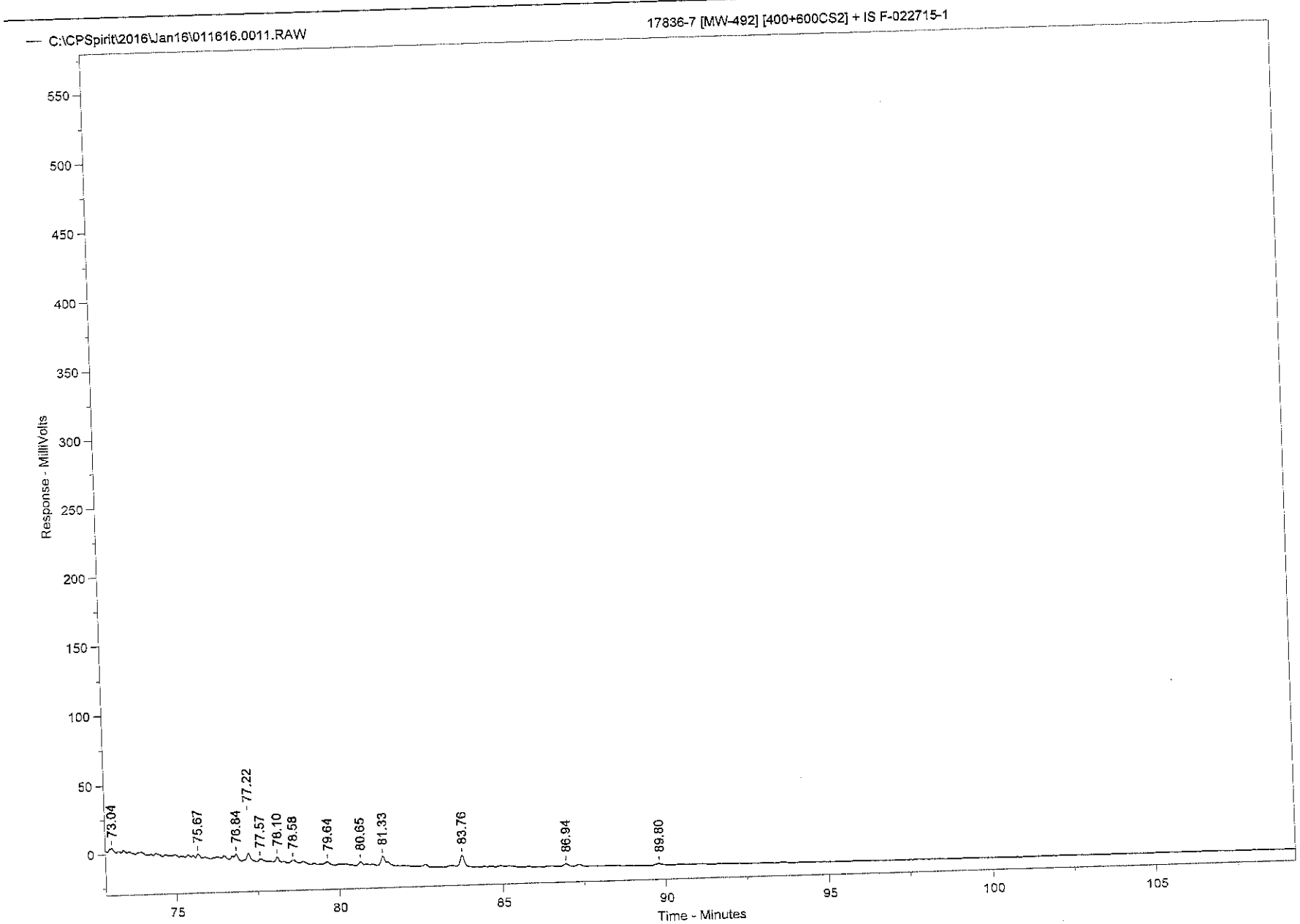

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Sample Name = **17836-7 [MW-492] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0011.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 4:02:04 PM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
4	5.94	0.0290	9718.10
8	6.80	0.2006	67197.92
11	7.27	0.2226	74560.80
CS2	8.04	1.3031	436584.30
15	8.17	0.1024	34298.46
	9.05	0.1009	33814.57
17	9.10	0.2332	78134.80
18	9.25	0.4473	149859.90
19	9.83	0.3579	119920.10
20	10.61	0.4906	164352.80
25	11.87	0.1078	36099.91
26	11.99	0.7784	260790.80
27	12.21	0.1701	56978.74
	12.52	0.1092	36576.89
28	13.35	0.0687	23003.71
29	13.70	0.0912	30552.15
30	13.92	1.9527	654223.00
31	14.51	0.3258	109140.50
32	14.61	0.3575	119763.10
	14.78	0.3680	123280.00
33	15.07	0.4937	165397.10
	15.47	0.4980	166844.00
34A	15.66	0.4414	147896.10
34B	15.84	0.7539	252586.50
IS #1	16.50	1.3027	436446.00
36	16.71	0.4770	159802.50
37	18.06	4.3276	1449855.00
	18.27	0.4352	145789.10
38	18.86	0.2405	80588.43
39	19.08	0.2262	75774.40
	19.47	0.2494	83560.76
	19.57	0.0774	25920.46
	19.98	0.3153	105640.80
40	20.18	0.0579	19382.59
	20.47	0.0559	18732.21
42	20.99	0.3908	130928.40
43	21.36	0.2481	83111.59
44	21.46	0.1078	36119.03
45	21.58	0.0756	25334.34
	21.77	0.0415	13895.83
46B	21.88	0.1664	55742.91
46A	22.00	1.1291	378277.90
	22.13	0.4271	143091.50
	22.51	0.3898	130585.90
48	22.75	0.0835	27981.54
	22.90	0.0684	22930.45
	22.99	0.1940	64996.07
	23.14	0.0560	18775.33
	23.34	0.6154	206170.50
	23.71	0.1905	63813.79
49	23.83	0.3872	129721.90
	24.32	0.0860	28815.45
	24.71	0.0722	24195.93
	25.06	0.0747	25016.55
	25.33	0.0794	26613.94

Peak Name	Ret. Time	Area %	Area
51	25.40	0.1848	61908.26
52	25.75	0.7262	243280.40
	26.10	0.4222	141459.70
	26.19	0.1232	41272.04
	26.27	0.1911	64011.56
53	26.51	0.0719	24097.69
	26.96	0.1468	49167.95
54	27.10	0.1583	53044.93
	27.54	0.1434	48030.45
55	27.89	0.1623	54376.77
	28.03	0.0392	13120.99
56	28.45	0.1556	52146.50
58	28.58	0.1294	43348.59
59	29.01	0.1384	46372.54
61	29.31	0.0912	30557.86
	29.39	0.2107	70578.39
	29.59	0.2509	84048.53
	30.22	0.1727	57856.07
62	30.41	1.3670	457993.80
IS #2	30.59	0.2888	96755.93
	30.76	0.1248	41805.13
	31.01	0.0356	11921.84
63	31.27	0.2121	71049.55
	31.37	0.1889	63277.01
64	31.48	0.0930	31146.14
	31.66	0.1374	46024.54
	31.91	0.0882	29535.82
	32.01	0.2483	83178.81
	32.15	0.1076	36036.20
	32.45	0.2045	68501.46
	32.54	0.0863	28919.79
	32.82	0.1974	66147.50
66	32.90	0.2075	69504.02
	33.11	0.0409	13705.10
	33.25	0.0613	20547.47
	33.40	0.1390	46568.23
68	33.68	0.3596	120490.90
69	33.90	0.1317	44135.66
	34.07	0.1970	65998.18
	34.23	0.0484	16208.33
	34.41	0.1462	48982.68
	34.65	0.3295	110401.10
	34.85	0.1755	58801.78
	35.03	0.0543	18186.82
	35.25	0.2175	72860.77
	35.34	0.1048	35105.61
	35.42	0.1836	61509.02
	35.60	0.0431	14440.74
	35.92	0.0843	28237.81
	36.04	0.2062	69080.02
	36.22	0.1697	56853.55
	36.49	0.0709	23742.38
	36.62	0.1579	52909.57
	36.87	0.0801	26852.14
	36.97	0.0716	24003.97
	37.10	0.1638	54882.96
	37.37	0.0377	12639.93
	37.59	0.3639	121913.60
78	37.71	0.0505	16923.39
	37.87	0.1681	56321.70
	37.97	0.2550	85432.92
	38.24	0.1376	46095.83
	38.48	0.0968	32430.58
79	38.80	0.0335	11238.10
80	39.04	0.0467	15652.89
	39.21	0.4332	145141.10
81	39.45	0.1014	33987.18
82			

Peak Name	Ret. Time	Area %	Area
	39.60	0.0843	28245.75
	39.80	0.0935	31322.69
	40.14	0.0787	26377.96
	40.25	0.2120	71017.43
85	40.45	0.1444	48378.47
	40.63	0.3951	132368.80
	40.86	0.1635	54791.39
	41.08	0.0612	20505.21
86	41.18	0.0510	17071.87
	41.52	0.1368	45816.83
	41.70	0.3854	129130.50
n-C11	41.96	0.0835	27974.73
87	42.28	0.2613	87534.63
88	42.56	0.1732	58015.63
	42.97	0.1195	40048.37
	43.13	0.4379	146714.10
	43.22	0.1848	61898.58
	43.45	0.3716	124498.50
	43.75	0.2024	67805.07
89	43.99	0.1589	53220.34
	44.24	0.0920	30818.63
	44.47	0.1619	54240.36
	44.74	0.1420	47574.14
	44.95	0.2896	97022.59
90	45.04	0.0858	28749.89
	45.16	0.1177	39419.96
	45.27	0.0847	28378.15
	45.37	0.0746	24977.54
	45.49	0.0841	28189.63
	45.60	0.2910	97482.24
	45.85	0.3164	105991.00
	45.95	0.1269	42501.09
	46.04	0.1219	40827.71
	46.28	0.2293	76830.05
	46.55	0.1934	64801.91
	46.75	0.3704	124096.60
	47.02	0.5163	172981.70
i-C13	47.26	0.4881	163538.80
	47.42	0.2140	71679.18
	47.61	0.2931	98180.57
	47.80	0.4154	139186.10
	47.96	0.1549	51899.42
	48.04	0.1160	38857.92
	48.20	0.4888	163758.50
	48.43	0.1249	41839.04
	48.55	0.2566	85953.34
	48.69	0.5111	171216.90
	48.93	0.2658	89034.24
	49.08	0.4368	146325.10
	49.16	0.3377	113154.50
	49.34	0.3635	121774.90
i-C14	49.47	0.9286	311115.20
	49.55	0.1876	62855.00
	49.64	0.6080	203701.90
	49.77	0.3368	112848.60
	49.86	0.3582	120021.30
	50.07	0.4995	167343.90
	50.16	0.4654	155909.40
	50.27	0.2655	88941.07
	50.36	0.3036	101713.00
	50.45	0.1413	47328.34
	50.55	0.2742	91876.49
	50.62	0.5495	184094.80
	50.87	0.5456	182789.20
	51.03	0.1478	49515.38
	51.21	0.4901	164211.60
	51.30	0.3868	129603.10

Peak Name	Ret. Time	Area %	Area
	51.55	0.0798	26731.64
	51.61	0.2656	88993.71
	51.68	0.1978	66257.44
	51.76	0.5159	172849.10
	51.90	0.1614	54060.56
	52.00	0.1134	37985.32
	52.11	0.1976	66200.17
	52.20	0.6477	217012.00
	52.32	0.2175	72858.35
i-C15	52.54	0.7639	255918.20
	52.62	0.3997	133900.20
	52.73	0.5441	182282.30
	52.93	0.8647	289708.90
	53.19	0.5014	167982.50
	53.31	0.9451	316641.70
	53.40	0.8589	287768.20
	53.55	0.1632	54692.82
	53.63	0.1699	56909.84
	53.71	0.1309	43857.43
	53.80	0.4593	153866.60
	53.87	0.2622	87849.92
	53.97	0.5325	178411.20
	54.06	1.5884	532156.90
	54.16	0.3997	133898.60
	54.30	0.7500	251269.60
	54.45	0.3917	131242.40
i-C16	54.59	0.7494	251081.90
	54.72	0.8063	270130.20
	54.84	0.2065	69178.52
	54.90	1.7598	589590.90
	55.01	0.9291	311257.50
	55.13	0.4999	167463.40
	55.18	0.7018	235124.20
	55.32	0.6533	218879.40
	55.41	0.5790	193986.50
	55.53	0.1738	58219.01
	55.62	0.3570	119616.10
	55.68	0.5898	197586.80
	55.79	0.9158	306829.50
	55.91	0.6738	225752.00
	56.10	0.1468	49194.04
	56.23	0.6665	223299.50
	56.33	0.5326	178450.10
	56.49	0.3487	116816.80
	56.55	0.2948	98754.47
	56.63	0.8802	294885.80
	56.72	0.6385	213929.50
	56.87	0.4664	156245.50
	56.96	1.1196	375094.30
	57.06	0.3619	121243.50
	57.15	0.6318	211660.50
	57.26	0.4906	164372.10
	57.40	0.5119	171509.40
	57.57	0.4247	142284.80
	57.65	0.3716	124511.60
	57.75	0.1878	62912.37
	57.82	0.2688	90042.88
	57.95	0.2008	67285.68
	58.07	0.2368	79321.02
i-C18	58.21	0.8309	278377.90
	58.40	0.2512	84156.99
	58.51	0.1697	56870.11
	58.61	0.5388	180506.90
	58.70	0.1342	44961.54
	58.88	0.4854	162638.80
	58.96	0.4074	136481.80
Pristane	59.18	1.2772	427910.80

Peak Name	Ret. Time	Area %	Area
	59.26	0.4799	160792.60
	59.43	0.4877	163401.30
	59.71	0.6202	207800.30
	59.91	0.1581	52951.84
	60.02	0.1207	40428.11
	60.14	0.1379	46195.33
	60.42	0.3997	133898.20
	60.49	0.0766	25671.99
	60.70	0.1481	49607.31
	60.79	0.4424	148207.00
Phytane	60.97	0.1023	34261.66
	61.04	0.4024	134801.60
	61.17	0.2179	73014.27
	61.32	0.0735	24640.11
	61.52	0.1279	42859.58
	61.65	0.1138	38110.75
	61.75	0.0457	15313.02
	61.99	0.4103	137448.70
	62.18	0.2176	72895.26
	62.28	0.2042	68396.31
	62.52	0.1836	61526.97
	62.63	0.1817	60868.48
	62.78	0.5151	172578.70
	63.13	0.3236	108424.60
	63.20	0.1408	47181.53
	63.44	0.0794	26616.47
	63.68	0.1031	34537.34
	63.74	0.1633	54714.78
	63.89	0.1328	44496.82
	63.95	0.2001	67041.41
	64.05	0.1287	43134.36
	64.13	0.2325	77899.27
	64.29	1.2327	413004.30
IS #3	64.44	0.3331	111600.50
	64.56	0.2808	94085.30
	64.72	0.1702	57036.03
	64.89	0.1711	57329.93
	65.12	0.2309	77367.33
	65.27	0.2314	77540.70
	65.55	0.2899	97110.55
	65.69	0.2056	68885.40
	65.89	0.2466	82634.27
	66.45	0.2193	73474.68
	67.29	0.0910	30503.46
	68.29	0.0788	26387.01
	68.81	0.0683	22892.21
	69.59	0.0626	20959.25
	72.46	0.0424	14207.13
	72.65	0.0712	23865.66
	73.04	0.0750	25127.34
	75.67	0.0493	16516.40
	76.84	0.1298	43497.29
	77.22	0.1325	44394.14
	77.57	0.0804	26929.38
	78.10	0.0652	21827.39
	78.58	0.0610	20429.79
	79.64	0.0579	19406.75
	80.65	0.0510	17097.33
	81.33	0.2223	74468.05
	83.76	0.2075	69505.53
	86.94	0.0559	18724.82
	89.80	0.0497	16651.79

Total Area = 3.350273E+07 Total Height = 1.023089E+07 Total Amount = 0

1/16/2016

ZymaX ID	17836-8
Sample ID	RW-26

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.30

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.01
Aromatics / Total Paraffins (n+iso+cyc)	0.54
Aromatics / Naphthenes	1.20

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	83.94
3-Methylhexane / n-Heptane	6.33
Methylcyclohexane / n-Heptane	47.44
Isoparaffins + Naphthenes / Paraffins	13.75

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	4.32
% Isoparaffinic	30.68
% Aromatic	34.41
% Naphthenic	28.75
% Olefinic	1.84

1/16/2016

ZymaX ID		17836-8
Sample ID		RW-26
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.14
18	2-Methylpentane	0.40
19	3-Methylpentane	0.49
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.18
26	Methylcyclopentane	0.44
27	2,4-Dimethylpentane	0.33
28	Benzene	0.00
29	5-Methyl-1-hexene	0.22
30	Cyclohexane	0.79
31	2-Methylhexane/TAME	0.85
32	2,3-Dimethylpentane	1.11
33	3-Methylhexane	1.94
34A	1-trans-3-Dimethylcyclopentane	1.46
34B	1-cis-3-Dimethylcyclopentane	2.85
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

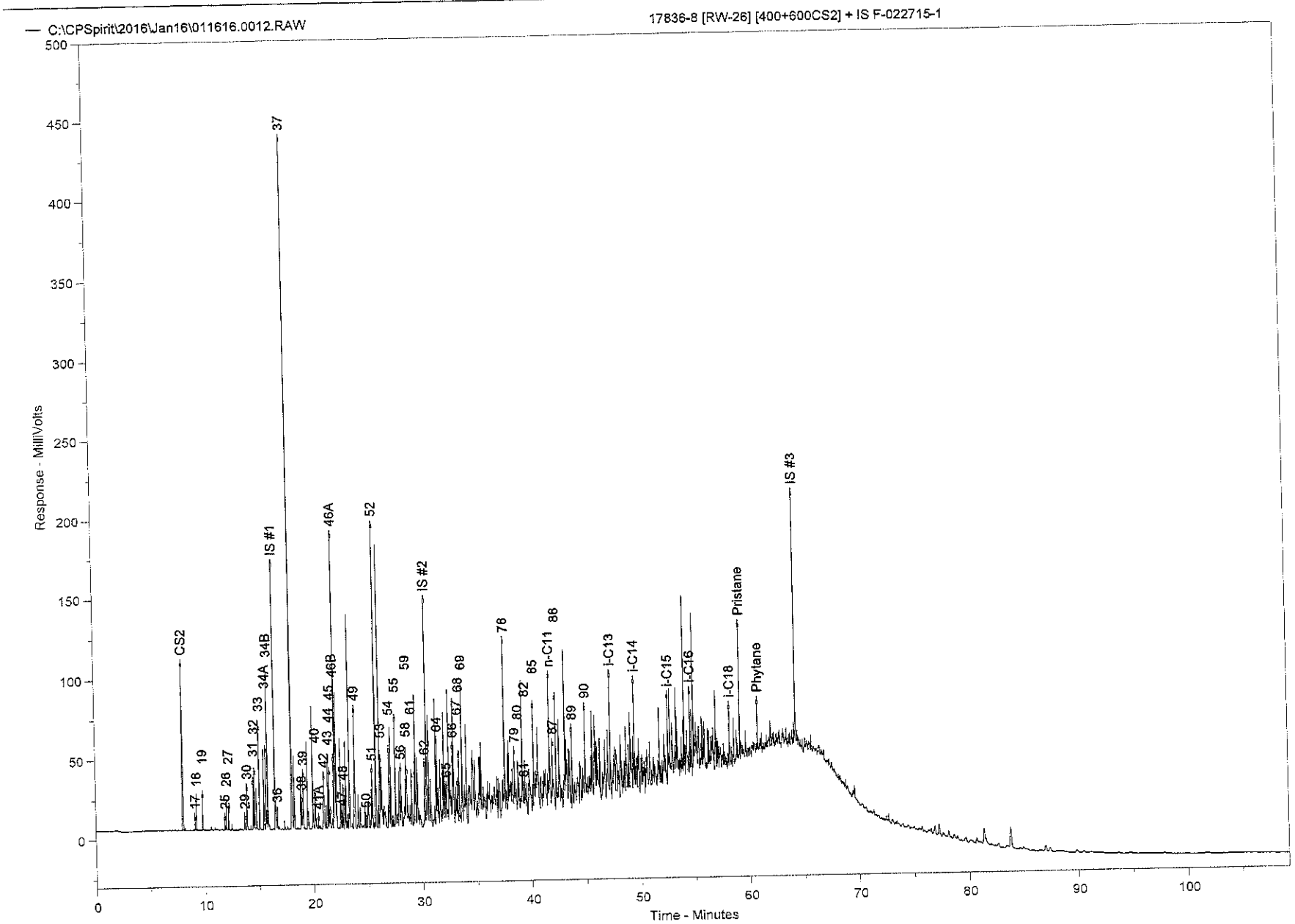
1/16/2016

ZymaX ID		17836-8
Sample ID		RW-26
		Relative Area %
36	n-Heptane	0.31
37	Methylcyclohexane	14.54
38	2,5-Dimethylhexane	0.54
39	2,4-Dimethylhexane	1.23
40	2,3,4-Trimethylpentane	0.83
41	Toluene/2,3,3-Trimethylpentane	0.20
42	2,3-Dimethylhexane	2.33
43	2-Methylheptane	1.33
44	4-Methylheptane	1.09
45	3,4-Dimethylhexane	0.50
46A	3-Ethyl-3-methylpentane	7.74
46B	1,4-Dimethylcyclohexane	1.31
47	3-Methylheptane	0.25
48	2,2,5-Trimethylhexane	0.75
49	n-Octane	2.54
50	2,2-Dimethylheptane	0.19
51	2,4-Dimethylheptane	1.49
52	Ethylcyclohexane	7.37
53	2,6-Dimethylheptane	1.32
54	Ethylbenzene	1.77
55	m+p Xylenes	2.48
56	4-Methyloctane	0.86
57	2-Methyloctane	0.00
58	3-Ethylheptane	1.26
59	3-Methyloctane	0.83
60	o-Xylene	0.00
61	1-Nonene	1.44
62	n-Nonane	1.48
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	1.92
65	2,4,5-Trimethylheptane	0.99
66	n-Propylbenzene	2.25
67	1-Methyl-3-ethylbenzene	0.98
68	1-Methyl-4-ethylbenzene	1.80
69	1,3,5-Trimethylbenzene	3.86
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-8
Sample ID		RW-26
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	4.30
79	1,3-Diethylbenzene	2.61
80	1,4-Diethylbenzene	1.09
81	n-Butylbenzene	0.71
82	1,3-Dimethyl-5-ethylbenzene	1.61
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	2.40
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.86
88	1,2,3,5-Tetramethylbenzene	2.53
89	1,2,3,4-Tetramethylbenzene	2.14
90	Naphthalene	2.82
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report



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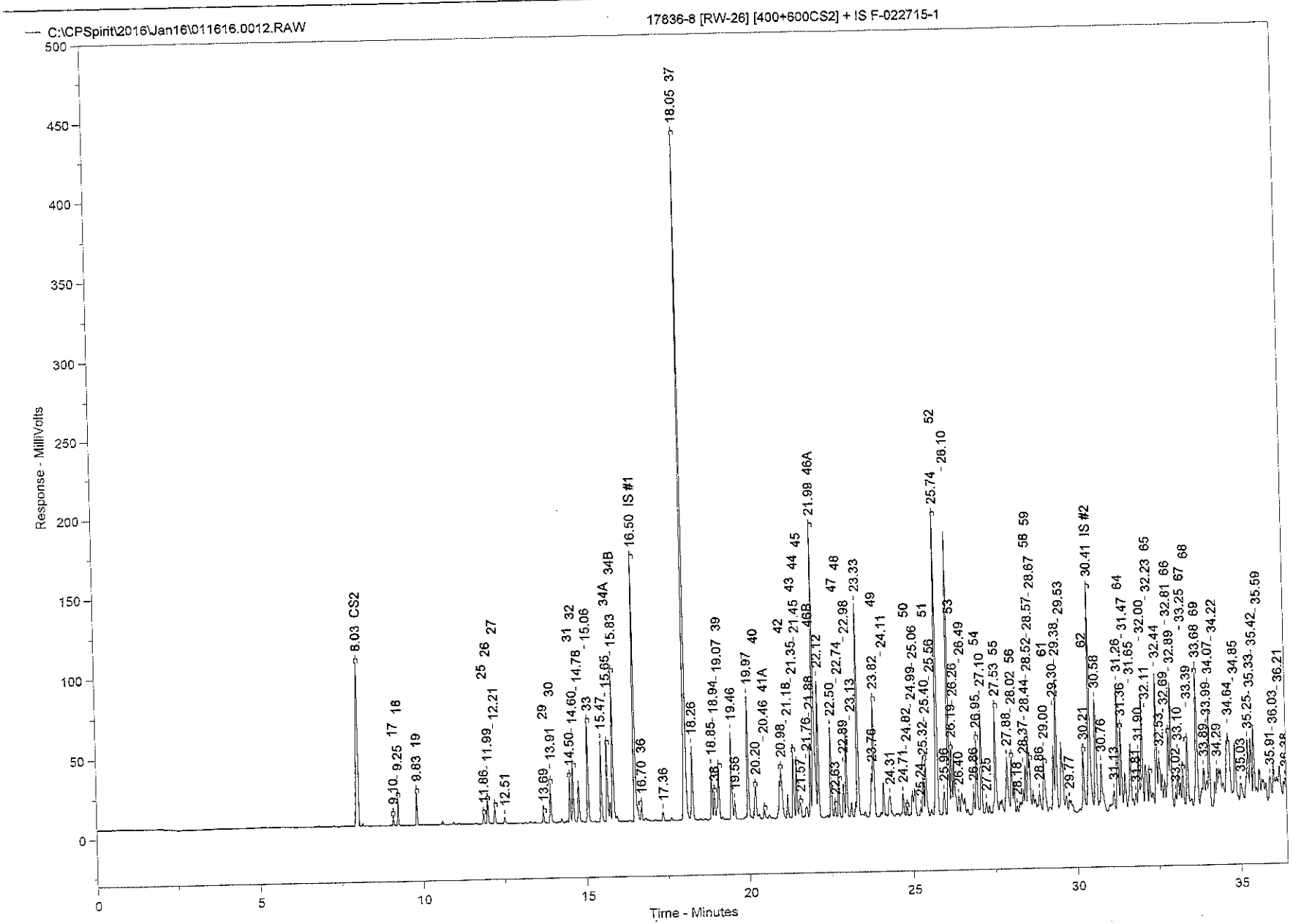

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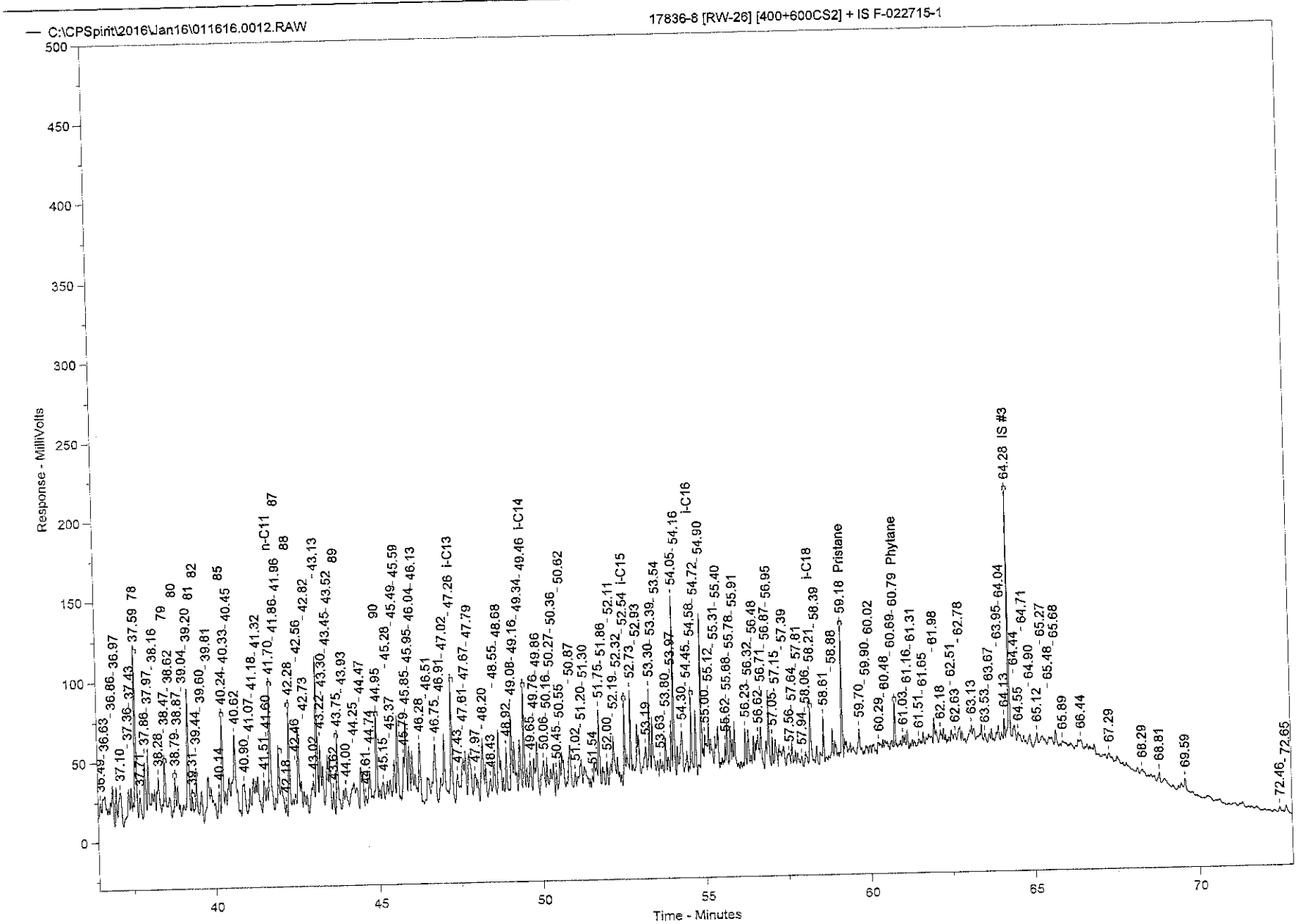

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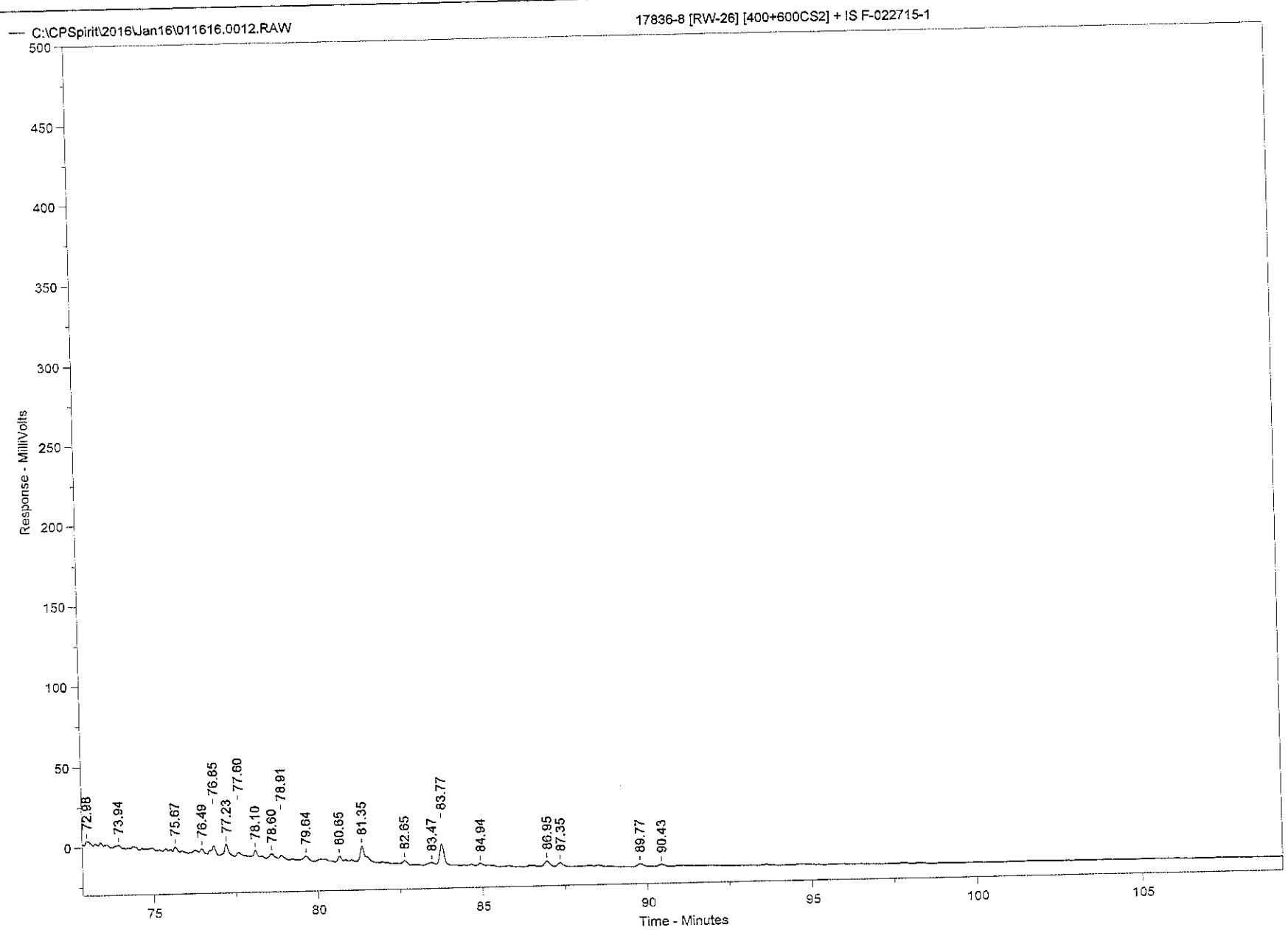

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Sample Name = **17836-8 [RW-26] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0012.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 6:05:04 PM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.03	1.0824	394903.60
17	9.10	0.0312	11383.72
18	9.25	0.0917	33439.22
19	9.83	0.1123	40986.57
25	11.86	0.0417	15215.77
26	11.99	0.1003	36581.00
27	12.21	0.0767	27999.75
	12.51	0.0317	11554.93
29	13.69	0.0501	18267.19
30	13.91	0.1826	66624.11
31	14.50	0.1943	70900.83
32	14.60	0.2545	92842.59
	14.78	0.2022	73750.65
33	15.06	0.4457	162616.70
	15.47	0.3623	132179.90
34A	15.65	0.3360	122584.70
34B	15.83	0.6543	238695.50
IS #1	16.50	1.2336	450048.60
36	16.70	0.0704	25691.58
	17.36	0.0430	15701.68
37	18.05	3.3409	1218863.00
	18.26	0.4010	146309.50
	18.85	0.2380	86818.27
38	18.94	0.1242	45320.73
39	19.07	0.2831	103301.10
	19.46	0.4015	146466.10
	19.56	0.0877	31995.81
	19.97	0.5662	206564.10
40	20.20	0.1896	69171.66
41A	20.46	0.0452	16475.12
42	20.98	0.5345	195007.60
	21.18	0.1150	41952.77
43	21.35	0.3053	111366.90
44	21.45	0.2499	91189.22
45	21.57	0.1153	42054.15
	21.76	0.0823	30027.00
46B	21.88	0.3008	109728.00
46A	21.99	1.7795	649221.10
	22.12	0.6246	227863.60
	22.50	0.4222	154029.80
47	22.63	0.0579	21113.19
48	22.74	0.1719	62726.85
	22.89	0.1488	54285.84
	22.98	0.4105	149747.20
	23.13	0.0698	25474.65
	23.33	1.0517	383708.00
	23.76	0.2450	89382.89
49	23.82	0.5827	212588.20
	24.11	0.1695	61846.96
	24.31	0.1732	63194.76
	24.71	0.1238	45150.75
50	24.82	0.0434	15816.92
	24.99	0.1382	50412.59
	25.06	0.1708	62328.86
	25.24	0.0432	15775.70

Peak Name	Ret. Time	Area %	Area
	25.32	0.1849	67469.60
51	25.40	0.3416	124629.40
	25.56	0.0315	11509.96
52	25.74	1.6931	617690.30
	25.96	0.1369	49941.24
	26.10	1.3264	483904.80
53	26.19	0.3029	110494.80
	26.26	0.3665	133704.40
	26.40	0.0683	24925.14
	26.49	0.0849	30990.21
	26.86	0.1203	43873.19
54	26.95	0.4075	148672.10
	27.10	0.4800	175124.00
	27.25	0.0582	21219.22
55	27.53	0.5693	207699.60
	27.88	0.3581	130649.80
56	28.02	0.1971	71911.56
	28.18	0.0236	8607.61
	28.37	0.0554	20210.92
	28.44	0.1595	58173.06
58	28.52	0.2896	105655.80
59	28.57	0.1899	69290.46
	28.67	0.0492	17947.16
	28.86	0.0787	28703.62
61	29.00	0.3307	120644.90
	29.30	0.3480	126955.00
	29.38	0.6256	228251.50
	29.53	0.5643	205864.20
	29.77	0.1427	52074.99
62	30.21	0.3402	124126.80
IS #2	30.41	1.3977	509941.30
	30.58	0.7322	267113.60
	30.76	0.3363	122694.70
	31.13	0.1922	70117.71
	31.26	0.6846	249776.60
64	31.36	0.4413	160991.00
	31.47	0.2706	98724.08
	31.65	0.4882	178127.50
	31.81	0.1106	40367.66
	31.90	0.3129	114167.80
	32.00	0.5880	214535.30
	32.11	0.3845	140276.30
65	32.23	0.2269	82763.27
	32.44	0.6609	241118.70
	32.53	0.3808	138940.00
	32.69	0.1599	58322.24
66	32.81	0.5169	188565.90
	32.89	0.6833	249278.30
	33.02	0.0820	29905.39
	33.10	0.1999	72912.77
67	33.25	0.2251	82107.90
68	33.39	0.4131	150709.10
69	33.68	0.8875	323803.90
	33.89	0.3948	144037.50
	33.99	0.1858	67797.04
	34.07	0.4897	178669.80
	34.22	0.0677	24715.54
	34.29	0.0698	25470.01
	34.64	0.7536	274947.60
	34.85	0.3660	133519.00
	35.03	0.1315	47976.09
	35.25	0.3772	137625.90
	35.33	0.2747	100203.60
	35.42	0.3220	117467.80
	35.59	0.1178	42962.03
	35.91	0.1901	69353.40
	36.03	0.2695	98336.02

Peak Name	Ret. Time	Area %	Area
	36.21	0.2768	100984.10
	36.38	0.2205	80442.21
	36.49	0.1763	64317.93
	36.63	0.5463	199325.00
	36.86	0.3490	127338.00
	36.97	0.2114	77107.06
	37.10	0.3740	136438.10
	37.36	0.3083	112480.00
	37.43	0.2161	78831.01
78	37.59	0.9890	360825.70
	37.71	0.2555	93210.05
	37.86	0.4320	157607.50
	37.97	0.4850	176934.00
	38.16	0.2266	82665.89
	38.28	0.4915	179332.20
79	38.47	0.5990	218516.60
	38.62	0.2307	84150.80
80	38.79	0.2513	91690.33
	38.87	0.2229	81334.05
	39.04	0.2041	74453.98
	39.20	0.8698	317321.60
81	39.31	0.1622	59173.84
82	39.44	0.3711	135381.80
	39.60	0.2513	91673.67
	39.81	0.2197	80148.24
	40.14	0.1652	60255.78
85	40.24	0.5521	201408.70
	40.33	0.1342	48970.23
	40.45	0.3118	113750.00
	40.62	0.8758	319518.10
	40.90	0.3264	119076.40
	41.07	0.1787	65204.20
	41.18	0.2480	90494.41
	41.32	0.2590	94492.80
	41.51	0.2151	78464.77
	41.60	0.1389	50687.37
n-C11	41.70	0.8180	298416.00
	41.86	0.0373	13613.13
87	41.96	0.1971	71911.91
	42.18	0.0358	13044.26
88	42.28	0.5816	212176.50
	42.46	0.1554	56703.26
	42.56	0.7301	266374.10
	42.73	0.1617	58979.26
	42.82	0.1271	46364.95
	43.02	0.4150	151411.90
	43.13	0.8851	322894.30
	43.22	0.4405	160713.90
	43.30	0.2728	99539.71
	43.45	0.4716	172060.20
	43.52	0.3102	113173.00
	43.62	0.1225	44700.89
89	43.75	0.4913	179236.80
	43.93	0.1406	51278.46
	44.00	0.2431	88682.07
	44.25	0.4051	147810.00
	44.47	0.2651	96705.60
	44.61	0.0973	35505.34
	44.74	0.3308	120671.40
90	44.95	0.6476	236261.30
	45.15	0.2513	91683.40
	45.28	0.2533	92428.50
	45.37	0.2194	80031.73
	45.49	0.3677	134159.60
	45.59	0.6418	234151.70
	45.79	0.3493	127421.90
	45.85	0.4764	173788.90

Peak Name	Ret. Time	Area %	Area
	45.95	0.4176	152352.10
	46.04	0.3570	130238.90
	46.13	0.3280	119657.20
	46.28	0.4168	152056.20
	46.51	0.3157	115167.60
	46.75	0.6666	243200.50
	46.91	0.2249	82057.76
	47.02	0.6024	219780.60
i-C13	47.26	0.7468	272439.50
	47.43	0.3408	124325.60
	47.61	0.3623	132167.60
	47.67	0.2946	107495.70
	47.79	0.5499	200623.80
	47.97	0.3778	137830.50
	48.20	0.5093	185807.10
	48.43	0.1908	69597.91
	48.55	0.3254	118716.40
	48.68	0.6227	227181.30
	48.92	0.3470	126594.50
	49.08	0.4920	179486.80
	49.16	0.4520	164891.00
	49.34	0.4344	158481.40
i-C14	49.46	0.5371	195966.00
	49.65	0.2985	108905.50
	49.76	0.3013	109931.70
	49.86	0.3155	115110.50
	50.06	0.4316	157473.40
	50.16	0.2081	75910.04
	50.27	0.1994	72763.11
	50.36	0.2104	76767.00
	50.45	0.1074	39175.36
	50.55	0.1927	70295.41
	50.62	0.3909	142616.90
	50.87	0.4167	152020.10
	51.02	0.1095	39961.09
	51.20	0.3196	116596.60
	51.30	0.2511	91607.64
	51.54	0.0317	11568.44
	51.75	0.2800	102138.00
	51.86	0.1063	38785.38
	52.00	0.0979	35722.57
	52.11	0.1524	55585.04
	52.19	0.3493	127441.60
	52.32	0.1563	57019.76
i-C15	52.54	0.3941	143796.10
	52.73	0.5369	195891.50
	52.93	0.5784	211035.70
	53.19	0.3309	120731.70
	53.30	0.4537	165518.80
	53.39	0.4463	162836.00
	53.54	0.1225	44678.76
	53.63	0.1229	44834.43
	53.80	0.2201	80314.77
	53.97	0.2844	103760.30
	54.05	0.7125	259925.10
	54.16	0.1433	52284.09
	54.30	0.4342	158400.40
	54.45	0.1876	68446.46
i-C16	54.58	0.3449	125813.60
	54.72	0.3453	125992.30
	54.90	0.6356	231873.60
	55.00	0.1736	63328.51
	55.12	0.1300	47438.77
	55.31	0.1740	63492.93
	55.40	0.1858	67784.27
	55.62	0.0715	26087.78
	55.68	0.1759	64179.85

Peak Name	Ret. Time	Area %	Area
	55.78	0.1491	54383.28
	55.91	0.1921	70090.06
	56.23	0.1495	54526.42
	56.32	0.1737	63375.21
	56.48	0.1253	45700.36
	56.62	0.3501	127713.80
	56.71	0.2173	79269.12
	56.87	0.1477	53872.38
	56.95	0.3899	142231.30
	57.05	0.1086	39630.62
	57.15	0.2086	76109.10
	57.39	0.1794	65465.06
	57.56	0.1621	59139.08
	57.64	0.1295	47229.40
	57.81	0.0994	36257.31
	57.94	0.0636	23221.12
	58.06	0.1124	41011.78
i-C18	58.21	0.3780	137890.40
	58.39	0.0973	35491.74
	58.61	0.1303	47539.47
	58.88	0.1105	40302.30
Pristane	59.18	0.4694	171236.40
	59.70	0.1844	67280.57
	59.90	0.0615	22438.67
	60.02	0.0463	16902.04
	60.29	0.1336	48730.77
	60.48	0.1594	58140.93
	60.69	0.0961	35047.03
Phytane	60.79	0.2209	80602.70
	61.03	0.0880	32087.37
	61.16	0.0819	29862.55
	61.31	0.0279	10188.14
	61.51	0.0574	20939.71
	61.65	0.0525	19142.30
	61.98	0.0724	26413.94
	62.18	0.0670	24429.18
	62.51	0.0591	21575.62
	62.63	0.0525	19163.57
	62.78	0.1091	39799.36
	63.13	0.0939	34242.04
	63.53	0.0383	13990.93
	63.67	0.0345	12603.51
	63.95	0.1301	47452.76
	64.04	0.0569	20755.33
	64.13	0.1026	37440.07
IS #3	64.28	1.0229	373203.40
	64.44	0.1721	62787.45
	64.55	0.1438	52458.57
	64.71	0.0880	32105.33
	64.90	0.1103	40249.34
	65.12	0.1347	49151.84
	65.27	0.1406	51292.51
	65.48	0.1852	67552.09
	65.68	0.1307	47699.95
	65.89	0.1418	51715.30
	66.44	0.1386	50572.46
	67.29	0.0729	26600.40
	68.29	0.0670	24447.88
	68.81	0.0579	21126.39
	69.59	0.0508	18524.88
	72.46	0.0487	17752.88
	72.65	0.0721	26314.17
	72.98	0.0721	26312.45
	73.94	0.0596	21732.01
	75.67	0.0485	17711.87
	76.49	0.0434	15826.76
	76.85	0.0588	21466.10

Peak Name	Ret. Time	Area %	Area
	77.23	0.1727	63009.59
	77.60	0.1105	40320.91
	78.10	0.0983	35864.86
	78.60	0.1024	37363.04
	78.91	0.0703	25631.29
	79.64	0.0714	26047.79
	80.65	0.0795	28993.11
	81.35	0.1492	54434.61
	82.65	0.0545	19882.53
	83.47	0.0718	26197.23
	83.77	0.3784	138068.00
	84.94	0.0990	36111.87
	86.95	0.0935	34110.89
	87.35	0.0680	24809.41
	89.77	0.0642	23414.42
	90.43	0.0409	14938.46

Total Area = 3.648311E+07 Total Height = 1.02526E+07 Total Amount = 0

1/16/2016

ZymaX ID	17836-9
Sample ID	RW-31

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.53

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.11
Aromatics / Total Paraffins (n+iso+cyc)	0.74
Aromatics / Naphthenes	2.22

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	11.02

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.32

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	4.73
% Isoparaffinic	33.30
% Aromatic	41.79
% Naphthenic	18.82
% Olefinic	1.36

1/16/2016

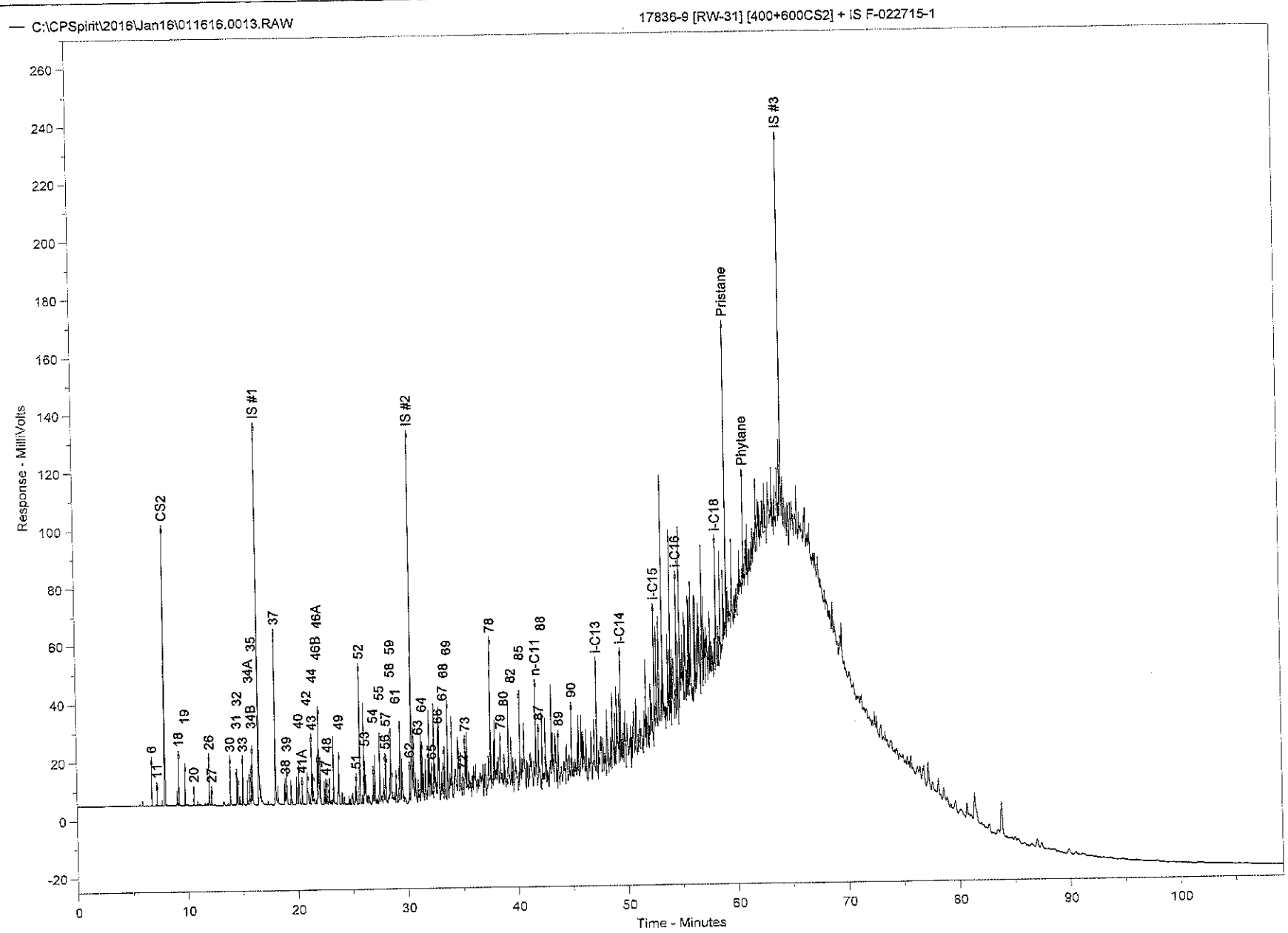
ZymaX ID		17836-9
Sample ID		RW-31
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.67
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.28
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	1.11
19	3-Methylpentane	0.86
20	Hexane	0.34
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	1.37
27	2,4-Dimethylpentane	0.38
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	1.57
31	2-Methylhexane/TAME	0.96
32	2,3-Dimethylpentane	0.74
33	3-Methylhexane	1.50
34A	1-trans-3-Dimethylcyclopentane	0.84
34B	1-cis-3-Dimethylcyclopentane	1.18
35	2,2,4-Trimethylpentane	2.17
I.S. #1	à,à,à-Trifluorotoluene	0.00

1/16/2016

ZymaX ID		17836-9
Sample ID		RW-31
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	6.73
38	2,5-Dimethylhexane	0.68
39	2,4-Dimethylhexane	1.41
40	2,3,4-Trimethylpentane	1.36
41	Toluene/2,3,3-Trimethylpentane	0.74
42	2,3-Dimethylhexane	1.69
43	2-Methylheptane	2.11
44	4-Methylheptane	0.67
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	4.20
46B	1,4-Dimethylcyclohexane	1.42
47	3-Methylheptane	0.64
48	2,2,5-Trimethylhexane	0.60
49	n-Octane	2.65
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	1.05
52	Ethylcyclohexane	5.71
53	2,6-Dimethylheptane	0.81
54	Ethylbenzene	1.66
55	m+p Xylenes	2.62
56	4-Methyloctane	1.37
57	2-Methyloctane	1.39
58	3-Ethylheptane	2.28
59	3-Methyloctane	0.49
60	o-Xylene	0.00
61	1-Nonene	1.36
62	n-Nonane	1.46
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.72
64	3,3,5-Trimethylheptane	2.04
65	2,4,5-Trimethylheptane	1.25
66	n-Propylbenzene	3.20
67	1-Methyl-3-ethylbenzene	0.99
68	1-Methyl-4-ethylbenzene	1.83
69	1,3,5-Trimethylbenzene	4.65
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-9
Sample ID		RW-31
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.85
73	1,2,4-Trimethylbenzene	2.37
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	5.66
79	1,3-Diethylbenzene	1.42
80	1,4-Diethylbenzene	0.59
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	2.31
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	3.76
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	1.44
88	1,2,3,5-Tetramethylbenzene	2.40
89	1,2,3,4-Tetramethylbenzene	2.38
90	Naphthalene	3.01
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00



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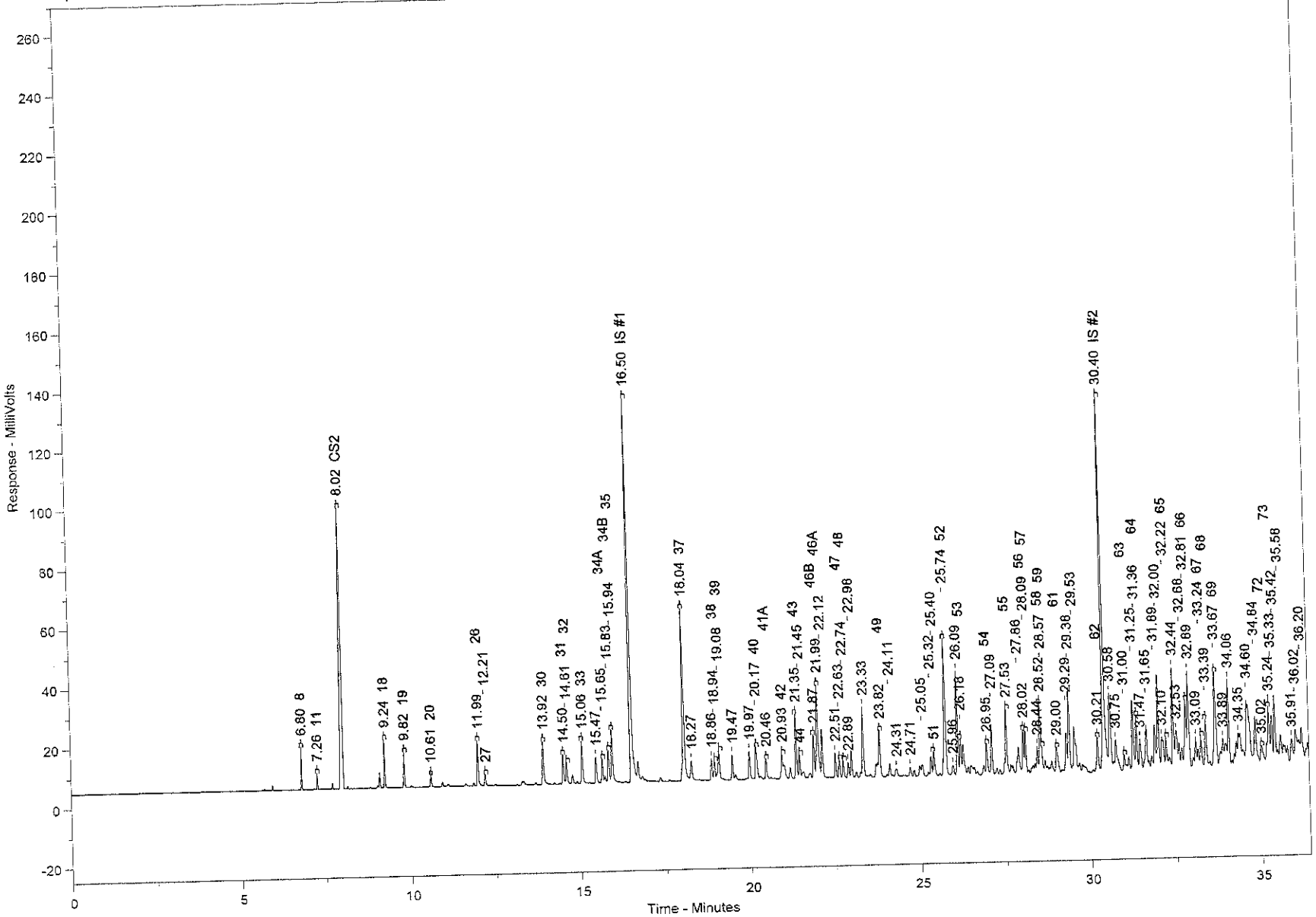
17836-9 [RW-31] [400+600CS2] + IS F-022715-1



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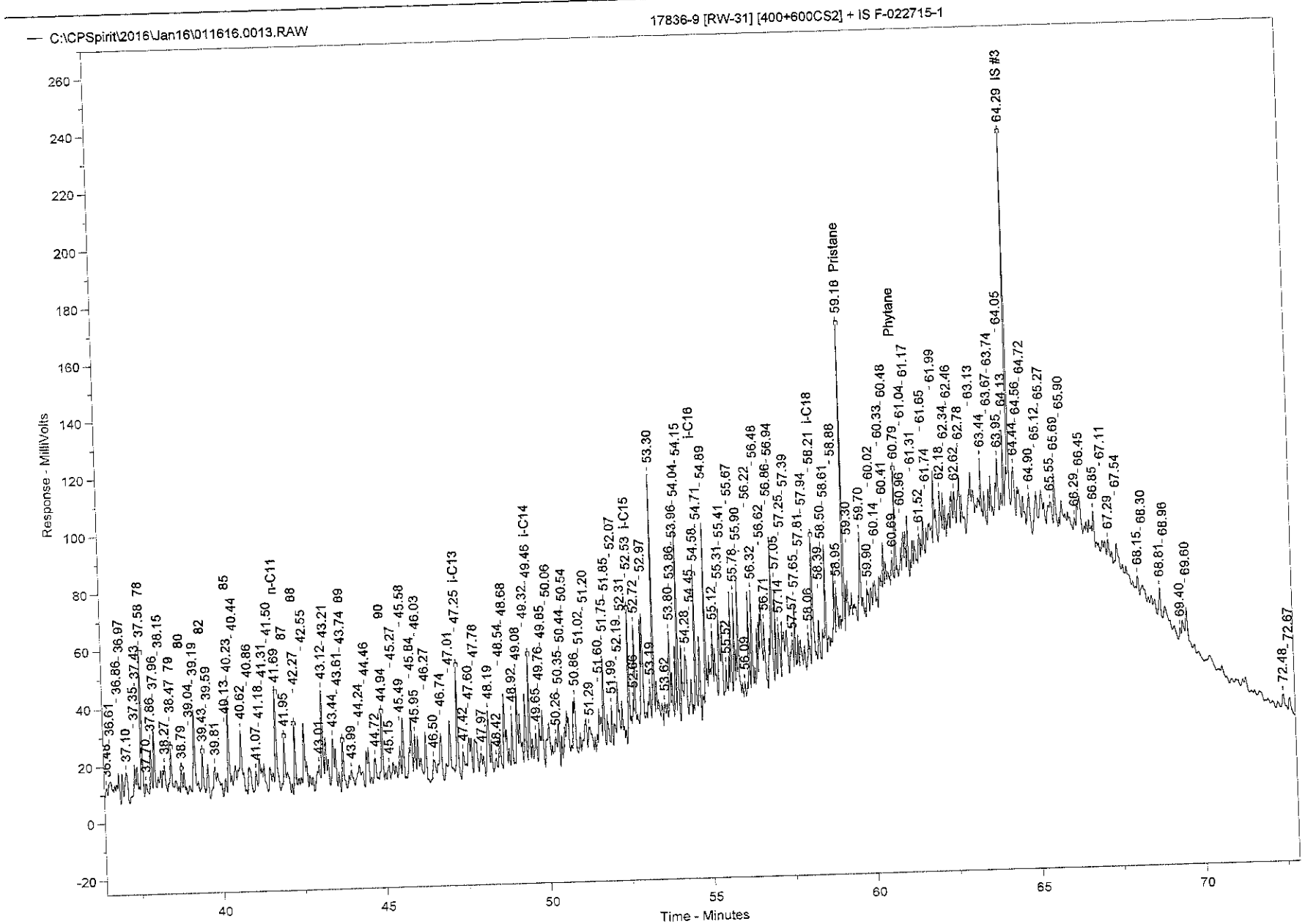

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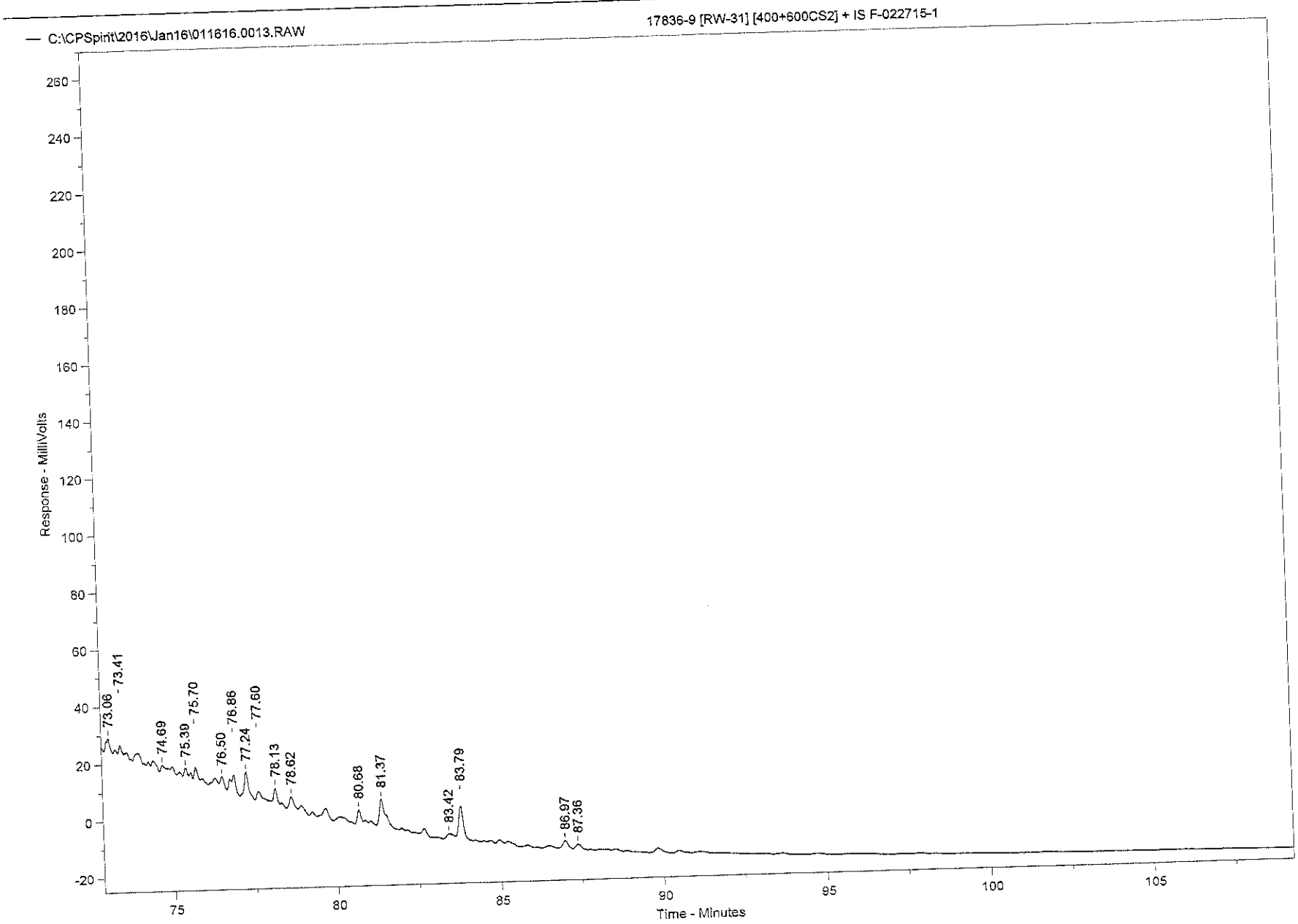

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Sample Name = **17836-9 [RW-31] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0013.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 8:08:07 PM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
8	6.80	0.0972	18260.68
11	7.26	0.0405	7601.78
CS2	8.02	1.7765	333741.20
18	9.24	0.1614	30329.35
19	9.82	0.1251	23501.02
20	10.61	0.0491	9217.94
26	11.99	0.1986	37312.09
27	12.21	0.0556	10437.39
30	13.92	0.2272	42689.96
31	14.50	0.1395	26207.29
32	14.61	0.1067	20048.18
33	15.06	0.2168	40730.57
	15.47	0.1325	24900.67
34A	15.65	0.1213	22793.68
34B	15.83	0.1708	32089.24
35	15.94	0.3136	58908.25
IS #1	16.50	1.9507	366477.80
37	18.04	0.9743	183035.90
	18.27	0.1308	24565.55
	18.86	0.1028	19318.27
38	18.94	0.0987	18550.21
39	19.08	0.2045	38414.05
	19.47	0.1139	21397.83
	19.97	0.1374	25810.23
40	20.17	0.1964	36894.61
41A	20.46	0.1078	20253.20
42	20.93	0.2444	45923.44
43	21.35	0.3054	57380.60
44	21.45	0.0976	18327.35
46B	21.87	0.2059	38686.13
46A	21.99	0.6081	114246.00
	22.12	0.2497	46917.18
	22.51	0.1210	22728.34
47	22.63	0.0933	17529.97
48	22.74	0.0864	16236.30
	22.89	0.0700	13150.65
	22.98	0.1343	25237.27
	23.33	0.3249	61042.36
49	23.82	0.3837	72080.46
	24.11	0.0771	14484.12
	24.31	0.0692	12992.55
	24.71	0.0539	10126.88
	25.05	0.1339	25152.97
	25.32	0.0969	18208.65
51	25.40	0.1520	28555.90
52	25.74	0.8260	155175.20
	25.96	0.0602	11307.43
	26.09	0.4721	88692.66
53	26.18	0.1175	22078.74
54	26.95	0.2407	45211.76
	27.09	0.2502	47011.65
55	27.53	0.3794	71269.98
	27.88	0.1739	32676.69
56	28.02	0.1990	37380.68
57	28.09	0.2008	37731.95

Peak Name	Ret. Time	Area %	Area
	28.44	0.0888	16688.58
58	28.52	0.3306	62101.66
59	28.57	0.0710	13339.01
61	29.00	0.1969	36997.43
	29.29	0.2136	40122.95
	29.38	0.4046	76017.12
	29.53	0.3105	58327.18
	30.21	0.2117	39769.94
62	30.40	2.2252	418052.60
IS #2	30.58	0.5796	108884.00
	30.75	0.2431	45673.11
	31.00	0.1049	19702.20
63	31.25	0.3950	74211.15
	31.36	0.2955	55519.75
64	31.47	0.2009	37742.46
	31.65	0.3256	61161.11
	31.89	0.2394	44983.00
	32.00	0.4960	93190.40
	32.10	0.2792	52443.53
	32.22	0.1808	33963.29
65	32.44	0.4987	93682.20
	32.53	0.2869	53899.68
	32.68	0.1004	18860.22
	32.81	0.4632	87012.93
66	32.89	0.5314	99839.40
	33.09	0.1118	21005.64
	33.24	0.1439	27030.99
67	33.39	0.2656	49898.65
68	33.67	0.6731	126444.50
69	33.89	0.2675	50250.69
	34.06	0.4392	82516.30
	34.35	0.5282	99229.67
	34.60	0.7768	145933.20
	34.84	0.3525	66224.18
	35.02	0.1226	23036.50
72	35.24	0.3432	64471.42
73	35.33	0.2302	43254.40
	35.42	0.3367	63264.40
	35.58	0.1015	19070.47
	35.91	0.1749	32855.36
	36.02	0.4150	77969.15
	36.20	0.2567	48223.48
	36.48	0.1387	26053.86
	36.61	0.3672	68992.09
	36.86	0.1762	33099.06
	36.97	0.1787	33576.62
	37.10	0.3498	65722.11
	37.35	0.1814	34071.50
	37.43	0.2177	40898.18
	37.58	0.8198	154019.90
78	37.70	0.1000	18782.89
	37.86	0.2798	52568.19
	37.96	0.3631	68218.89
	38.15	0.1406	26406.69
	38.27	0.2610	49041.51
	38.47	0.2050	38519.91
79	38.79	0.0851	15982.17
80	39.04	0.0839	15756.33
	39.19	0.6097	114548.50
	39.43	0.3347	62878.13
82	39.59	0.2432	45697.07
	39.81	0.1585	29775.24
	40.13	0.1308	24564.65
	40.23	0.5447	102340.30
85	40.44	0.2810	52796.76
	40.62	0.7380	138655.40
	40.86	0.2909	54645.30

Peak Name	Ret. Time	Area %	Area
	41.07	0.1560	29312.67
	41.18	0.2557	48044.40
	41.31	0.2239	42072.35
	41.50	0.1947	36573.70
	41.69	0.7112	133607.10
n-C11	41.95	0.2086	39189.98
87	42.27	0.3481	65393.67
88	42.55	0.2838	53318.28
	43.01	0.3445	64727.88
	43.12	0.6317	118683.90
	43.21	0.3567	67005.05
	43.44	0.4277	80349.17
	43.61	0.1151	21619.32
	43.74	0.3450	64816.77
89	43.99	0.2331	43782.96
	44.24	0.1225	23019.46
	44.46	0.0996	18707.31
	44.72	0.2242	42127.94
	44.94	0.4364	81982.16
90	45.15	0.1260	23676.04
	45.27	0.1446	27160.31
	45.49	0.2210	41516.45
	45.58	0.3779	70992.70
	45.84	0.4626	86899.30
	45.95	0.2079	39065.67
	46.03	0.1569	29476.77
	46.27	0.2676	50275.51
	46.50	0.2244	42149.94
	46.74	0.4034	75776.85
	47.01	0.6706	125989.00
	47.25	0.7026	131987.30
i-C13	47.42	0.2155	40490.36
	47.60	0.3222	60522.83
	47.78	0.3880	72893.92
	47.97	0.1001	18804.42
	48.19	0.5248	98601.72
	48.42	0.1075	20186.63
	48.54	0.2538	47673.96
	48.68	0.6220	116862.50
	48.92	0.2515	47241.70
	49.08	0.3240	60872.05
	49.32	0.4257	79984.18
	49.46	0.5122	96231.92
i-C14	49.65	0.2489	46760.07
	49.76	0.3258	61201.36
	49.85	0.3253	61104.26
	50.06	0.5505	103422.80
	50.26	0.2829	53143.73
	50.35	0.2725	51187.00
	50.44	0.1046	19649.43
	50.54	0.0609	11440.15
	50.86	0.4692	88145.96
	51.02	0.1019	19136.73
	51.20	0.2811	52808.68
	51.29	0.3252	61093.25
	51.60	0.2775	52124.30
	51.75	0.4545	85391.74
	51.85	0.2397	45024.89
	51.99	0.1723	32367.62
	52.07	0.1595	29958.52
	52.19	0.4908	92212.96
	52.31	0.2403	45139.92
	52.53	0.6503	122176.10
i-C15	52.66	0.1387	26060.39
	52.72	0.3949	74191.89
	52.97	0.8964	168398.40
	53.19	0.2368	44487.23

Peak Name	Ret. Time	Area %	Area
	53.30	0.9553	179473.30
	53.62	0.1369	25726.24
	53.80	0.4965	93273.71
	53.86	0.2829	53146.24
	53.96	0.3929	73811.54
	54.04	0.8461	158952.50
	54.15	0.4342	81580.49
	54.28	0.6733	126499.60
	54.45	0.3956	74314.27
i-C16	54.58	0.6495	122023.00
	54.71	0.4941	92821.38
	54.89	0.9679	181833.20
	55.12	0.2326	43698.71
	55.31	0.5104	95880.32
	55.41	0.3562	66921.34
	55.52	0.1236	23227.78
	55.67	0.5300	99567.47
	55.78	0.5854	109977.70
	55.90	0.4896	91977.79
	56.09	0.0597	11209.98
	56.22	0.4050	76083.94
	56.32	0.4550	85473.12
	56.48	0.3267	61385.61
	56.62	0.9783	183796.00
	56.71	0.3913	73518.05
	56.86	0.2715	51002.40
	56.94	0.8531	160271.40
	57.05	0.3357	63069.59
	57.14	0.4847	91059.73
	57.25	0.2734	51358.51
	57.39	0.4356	81836.23
	57.57	0.3736	70180.27
	57.65	0.3574	67146.12
	57.81	0.2360	44334.71
	57.94	0.1545	29030.22
	58.06	0.2461	46240.73
i-C18	58.21	0.8765	164672.40
	58.39	0.2163	40632.98
	58.50	0.1846	34682.43
	58.61	0.4272	80266.42
	58.88	0.3424	64326.76
	58.95	0.4727	88810.25
Pristane	59.18	1.1934	224198.90
	59.30	0.3241	60886.63
	59.70	0.6678	125449.90
	59.90	0.2075	38975.07
	60.02	0.1746	32805.00
	60.14	0.3071	57693.65
	60.33	0.2871	53928.57
	60.41	0.1684	31628.13
	60.48	0.1017	19115.29
	60.69	0.1932	36295.82
Phytane	60.79	0.5137	96507.65
	60.96	0.1966	36935.79
	61.04	0.2931	55058.48
	61.17	0.2656	49901.80
	61.31	0.3997	75087.47
	61.52	0.1616	30358.44
	61.65	0.1675	31461.47
	61.74	0.0722	13564.75
	61.99	0.4979	93537.02
	62.18	0.3384	63582.81
	62.34	0.1011	19001.17
	62.46	0.0950	17849.73
	62.62	0.1578	29647.97
	62.78	0.3665	68855.96
	63.13	0.3259	61220.40

Peak Name	Ret. Time	Area %	Area
	63.44	0.1673	31438.06
	63.67	0.2155	40478.21
	63.74	0.3104	58307.18
	63.95	0.6918	129966.00
	64.05	0.2801	52616.41
	64.13	0.4656	87472.49
	64.29	2.1760	408799.80
IS #3	64.44	0.7072	132863.50
	64.56	0.6018	113056.40
	64.72	0.3302	62041.80
	64.90	0.4099	77000.46
	65.12	0.4531	85123.30
	65.27	0.7182	134922.40
	65.55	0.5900	110842.80
	65.69	0.4617	86729.34
	65.90	0.4760	89432.49
	66.29	0.1156	21709.11
	66.45	0.3407	64006.89
	66.85	0.1345	25265.69
	67.11	0.0442	8306.22
	67.29	0.1084	20373.87
	67.54	0.1569	29467.12
	68.15	0.0855	16068.81
	68.30	0.1789	33602.10
	68.81	0.2034	38217.77
	68.96	0.2503	47028.03
	69.40	0.0825	15498.93
	69.60	0.3029	56897.82
	72.48	0.1663	31246.04
	72.67	0.1708	32092.31
	73.06	0.2045	38425.89
	73.41	0.0783	14713.72
	74.69	0.0894	16792.76
	75.39	0.1041	19559.49
	75.70	0.2453	46092.46
	76.50	0.2010	37757.53
	76.86	0.4018	75494.49
	77.24	0.4268	80174.96
	77.60	0.2110	39631.38
	78.13	0.1853	34815.61
	78.62	0.2002	37615.09
	80.68	0.2946	55353.47
	81.37	0.6915	129918.10
	83.42	0.1554	29202.67
	83.79	0.6411	120441.40
	86.97	0.1685	31654.63
	87.36	0.1162	21831.85

Total Area = 1.878678E+07 Total Height = 5258620 Total Amount = 1

1/16/2016

ZymaX ID	17836-10
Sample ID	RW-29

Evaporation

n-Pentane / n-Heptane	0.33
2-Methylpentane / 2-Methylheptane	1.48

Waterwashing

Benzene / Cyclohexane	0.19
Toluene / Methylcyclohexane	0.39
Aromatics / Total Paraffins (n+iso+cyc)	0.71
Aromatics / Naphthenes	2.27

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	45.92
3-Methylhexane / n-Heptane	0.89
Methylcyclohexane / n-Heptane	3.67
Isoparaffins + Naphthenes / Paraffins	6.82

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.76

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	7.39
% Isoparaffinic	32.38
% Aromatic	40.89
% Naphthenic	18.05
% Olefinic	1.28

1/16/2016

ZymaX ID		17836-10
Sample ID		RW-29
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	1.01
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.67
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.17
15	2,2-Dimethylbutane	0.16
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.87
18	2-Methylpentane	1.86
19	3-Methylpentane	1.32
20	Hexane	1.89
21	trans-2-Hexene	0.13
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.13
25	3-Methyl-trans-2-pentene	0.20
26	Methylcyclopentane	2.52
27	2,4-Dimethylpentane	0.89
28	Benzene	0.58
29	5-Methyl-1-hexene	0.19
30	Cyclohexane	3.09
31	2-Methylhexane/TAME	1.51
32	2,3-Dimethylpentane	1.24
33	3-Methylhexane	1.80
34A	1-trans-3-Dimethylcyclopentane	0.90
34B	1-cis-3-Dimethylcyclopentane	1.31
35	2,2,4-Trimethylpentane	5.59
I.S. #1	à,à,à-Trifluorotoluene	0.00

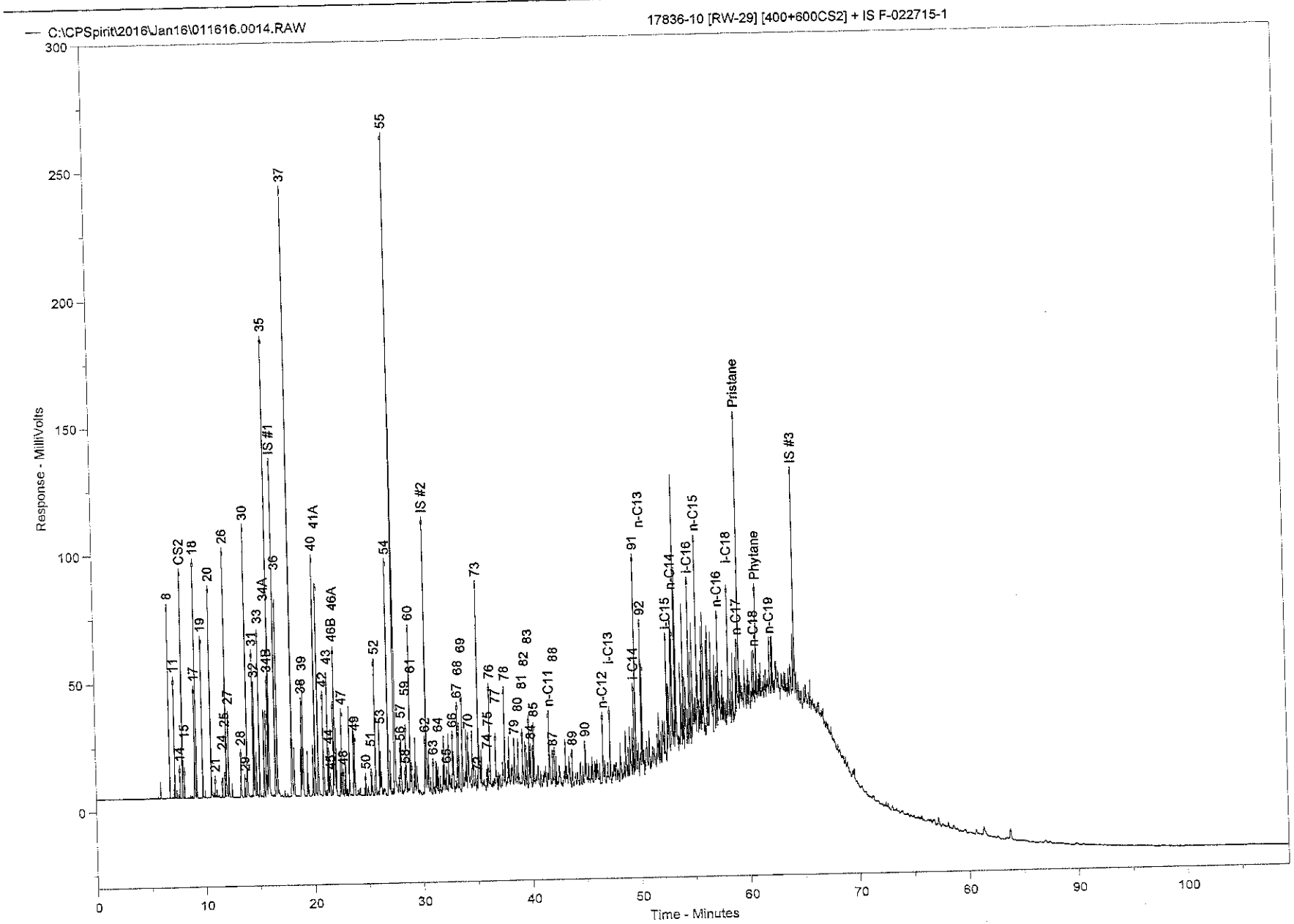
1/16/2016

ZymaX ID		17836-10
Sample ID		RW-29
		Relative Area %
36	n-Heptane	2.02
37	Methylcyclohexane	7.40
38	2,5-Dimethylhexane	1.06
39	2,4-Dimethylhexane	1.33
40	2,3,4-Trimethylpentane	2.80
41	Toluene/2,3,3-Trimethylpentane	2.89
42	2,3-Dimethylhexane	1.65
43	2-Methylheptane	1.26
44	4-Methylheptane	0.48
45	3,4-Dimethylhexane	0.31
46A	3-Ethyl-3-methylpentane	2.20
46B	1,4-Dimethylcyclohexane	1.00
47	3-Methylheptane	0.95
48	2,2,5-Trimethylhexane	0.24
49	n-Octane	0.71
50	2,2-Dimethylheptane	0.18
51	2,4-Dimethylheptane	0.22
52	Ethylcyclohexane	1.83
53	2,6-Dimethylheptane	0.46
54	Ethylbenzene	3.18
55	m+p Xylenes	11.83
56	4-Methyloctane	0.50
57	2-Methyloctane	0.52
58	3-Ethylheptane	0.17
59	3-Methyloctane	0.83
60	o-Xylene	2.02
61	1-Nonene	0.46
62	n-Nonane	0.83
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.34
64	3,3,5-Trimethylheptane	0.29
65	2,4,5-Trimethylheptane	0.19
66	n-Propylbenzene	0.79
67	1-Methyl-3-ethylbenzene	0.93
68	1-Methyl-4-ethylbenzene	0.87
69	1,3,5-Trimethylbenzene	1.69
70	3,3,4-Trimethylheptane	0.35

1/16/2016

ZymaX ID		17836-10
Sample ID		RW-29
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.13
73	1,2,4-Trimethylbenzene	2.45
74	Isobutylbenzene	0.22
75	sec-Butylbenzene	0.41
76	n-Decane	1.28
77	1,2,3-Trimethylbenzene	0.62
78	Indan	1.15
79	1,3-Diethylbenzene	0.85
80	1,4-Diethylbenzene	0.38
81	n-Butylbenzene	0.78
82	1,3-Dimethyl-5-ethylbenzene	0.59
83	1,4-Dimethyl-2-ethylbenzene	1.04
84	1,3-Dimethyl-4-ethylbenzene	0.68
85	1,2-Dimethyl-4-ethylbenzene	0.74
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.42
88	1,2,3,5-Tetramethylbenzene	0.49
89	1,2,3,4-Tetramethylbenzene	0.51
90	Naphthalene	0.64
91	2-Methyl-naphthalene	2.41
92	1-Methyl-naphthalene	1.41

Chrom Perfect Chromatogram Report



Page 1 of 1

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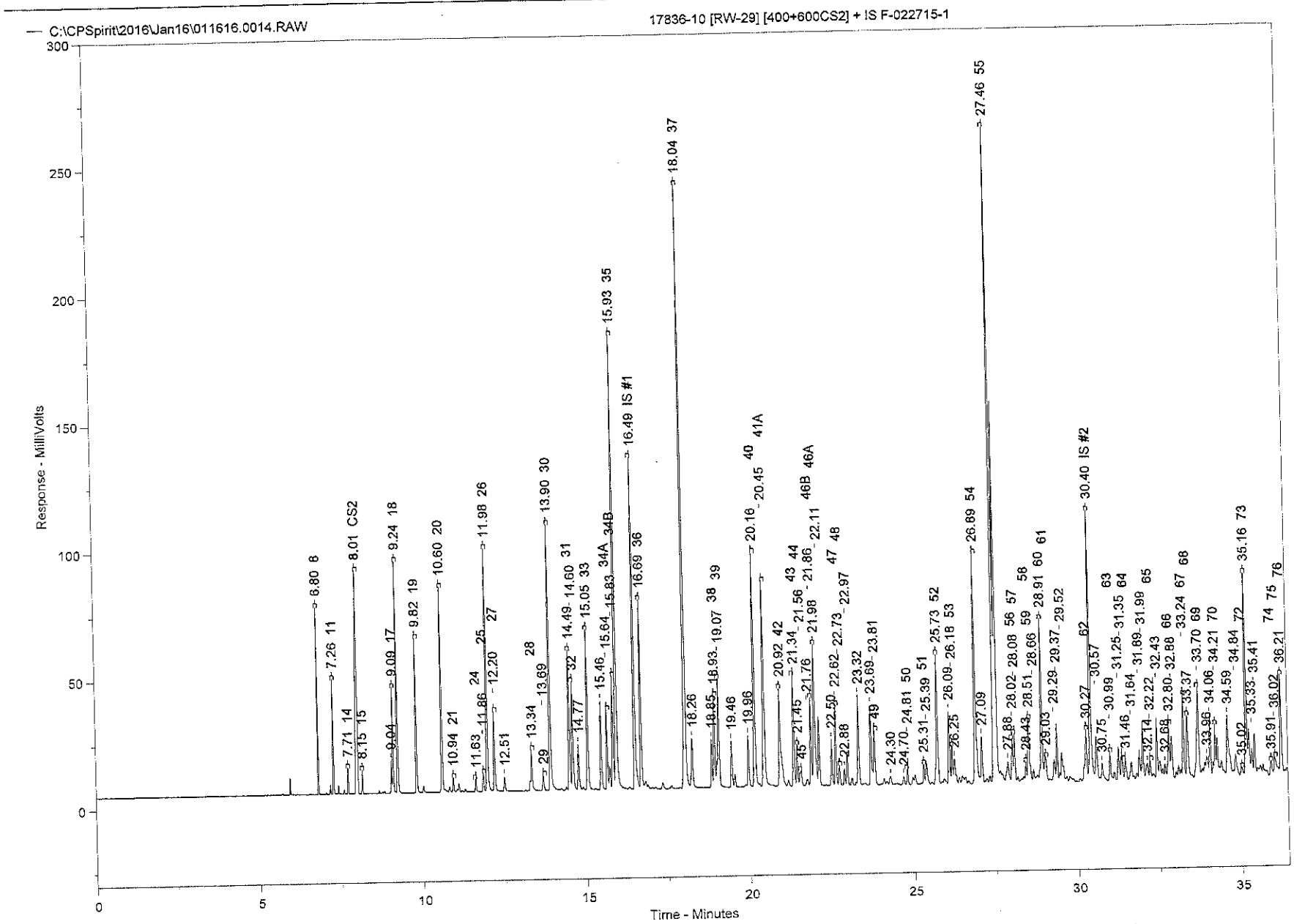

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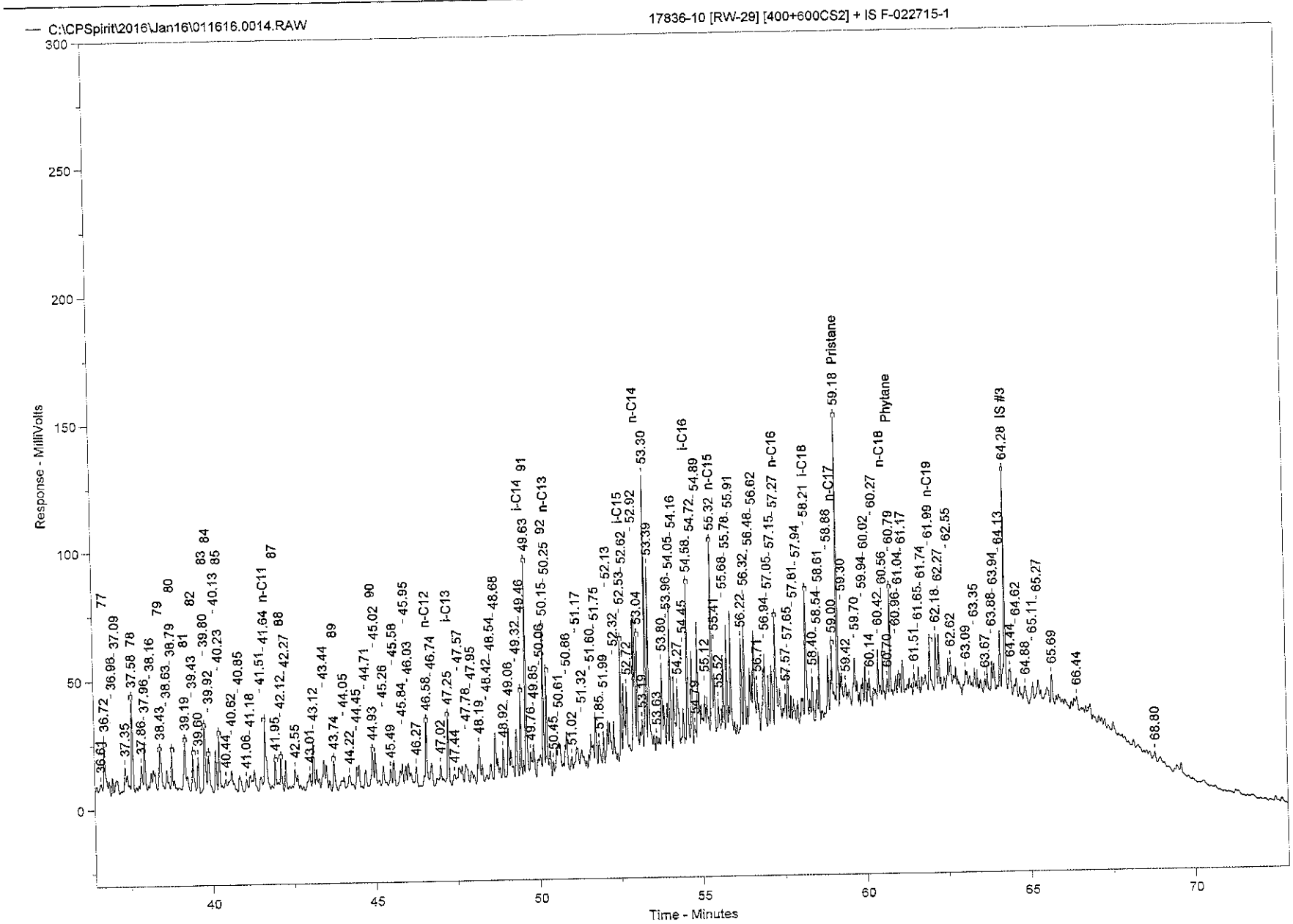

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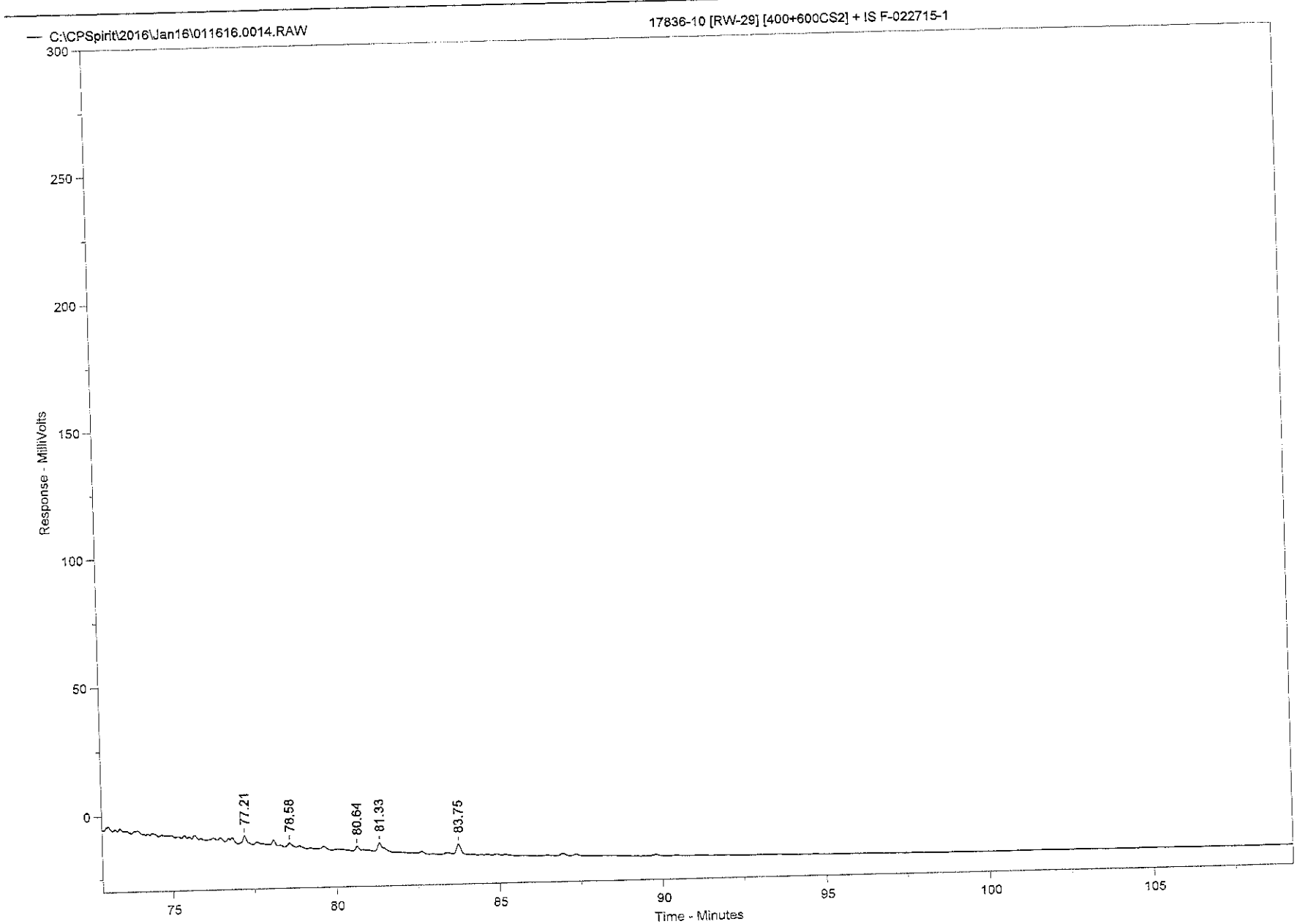

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Sample Name = **17836-10 [RW-29] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0014.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/17/2016 10:11:21 PM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
8	6.80	0.4351	91894.07
11	7.26	0.2875	60714.05
14	7.71	0.0736	15542.97
CS2	8.01	1.3489	284872.70
15	8.15	0.0683	14419.25
	9.04	0.1038	21918.00
17	9.09	0.3755	79291.99
18	9.24	0.8004	169022.00
19	9.82	0.5689	120139.50
20	10.60	0.8122	171523.90
21	10.94	0.0573	12103.00
24	11.63	0.0543	11458.24
25	11.86	0.0843	17793.62
26	11.98	1.0817	228436.70
27	12.20	0.3808	80421.59
	12.51	0.0750	15847.22
28	13.34	0.2477	52308.96
29	13.69	0.0829	17503.61
30	13.90	1.3266	280162.80
31	14.49	0.6486	136968.20
32	14.60	0.5338	112719.00
	14.77	0.2215	46778.31
33	15.05	0.7712	162868.10
	15.46	0.4285	90485.37
34A	15.64	0.3859	81493.49
34B	15.83	0.5611	118485.50
35	15.93	2.4004	506922.50
IS #1	16.49	1.6422	346799.30
36	16.69	0.8662	182923.50
37	18.04	3.1773	670976.40
	18.26	0.3109	65663.89
	18.85	0.2314	48875.41
38	18.93	0.4537	95814.84
39	19.07	0.5718	120743.00
	19.46	0.2119	44742.69
	19.96	0.2453	51807.60
40	20.16	1.2046	254397.20
41A	20.45	1.2397	261801.90
42	20.92	0.7082	149560.40
43	21.34	0.5408	114213.90
44	21.45	0.2041	43110.97
45	21.56	0.1322	27927.53
	21.76	0.0526	11106.92
46B	21.86	0.4307	90955.80
46A	21.98	0.9439	199325.70
	22.11	0.3445	72751.60
	22.50	0.2344	49508.12
47	22.62	0.4080	86159.99
48	22.73	0.1033	21808.81
	22.88	0.0803	16964.44
	22.97	0.1702	35953.58
	23.32	0.4339	91638.30
	23.69	0.4482	94656.42
49	23.81	0.3040	64198.14
	24.30	0.0558	11779.16

Peak Name	Ret. Time	Area %	Area
	24.70	0.0474	10009.68
50	24.81	0.0787	16626.75
51	25.31	0.0960	20263.98
	25.39	0.1440	30419.17
52	25.73	0.7878	166360.90
	26.09	0.3627	76603.87
53	26.18	0.1971	41625.86
	26.25	0.1563	33015.57
54	26.89	1.3644	288126.50
	27.09	0.2416	51030.14
55	27.46	5.0825	1073321.00
	27.88	0.1523	32169.72
56	28.02	0.2137	45137.70
57	28.08	0.2251	47541.90
58	28.43	0.0746	15755.87
59	28.51	0.3584	75679.67
	28.66	0.0566	11947.74
60	28.91	0.8667	183024.00
61	29.03	0.1981	41836.47
	29.29	0.1218	25718.22
	29.37	0.2820	59555.01
	29.52	0.1890	39918.71
62	30.27	0.3577	75548.64
IS #2	30.40	1.5834	334389.10
	30.57	0.3324	70187.39
	30.75	0.1217	25700.05
63	30.99	0.1445	30510.19
	31.25	0.1913	40395.68
	31.35	0.1763	37237.32
64	31.46	0.1235	26083.94
	31.64	0.1293	27312.71
	31.89	0.1330	28090.92
	31.99	0.2772	58549.34
	32.14	0.1046	22094.94
65	32.22	0.0804	16980.33
	32.43	0.2522	53260.55
	32.68	0.0493	10400.93
66	32.80	0.3394	71670.61
	32.88	0.2402	50722.13
67	33.24	0.4002	84523.98
68	33.37	0.3748	79157.11
69	33.70	0.7258	153281.80
	33.96	0.2035	42980.76
	34.06	0.2872	60660.68
70	34.21	0.1508	31853.36
	34.59	0.4737	100041.10
	34.84	0.1555	32839.49
72	35.02	0.0568	11991.28
73	35.16	1.0510	221942.30
	35.33	0.1366	28852.70
	35.41	0.1980	41810.21
74	35.91	0.0942	19888.29
75	36.02	0.1749	36928.24
76	36.21	0.5479	115715.50
	36.61	0.0503	10628.46
77	36.72	0.2660	56182.50
	36.96	0.0952	20114.01
	37.09	0.1682	35511.14
	37.35	0.0836	17657.99
78	37.58	0.4929	104083.40
	37.86	0.1341	28323.80
	37.96	0.2470	52156.32
	38.16	0.0498	10519.70
79	38.43	0.3654	77161.34
	38.63	0.1432	30242.52
80	38.79	0.1640	34627.65
81	39.19	0.3354	70828.52

Peak Name	Ret. Time	Area %	Area
82	39.43	0.2535	53525.81
	39.60	0.1974	41685.87
83	39.80	0.4470	94398.52
84	39.92	0.2913	61525.50
	40.13	0.2242	47345.78
85	40.23	0.3174	67022.05
	40.44	0.0968	20443.45
	40.62	0.2344	49503.95
	40.85	0.1473	31113.77
	41.06	0.0566	11945.53
	41.18	0.0664	14016.16
	41.51	0.1166	24623.26
n-C11	41.64	0.6268	132374.80
87	41.95	0.1788	37764.70
88	42.12	0.2097	44275.03
	42.27	0.1610	34007.02
	42.55	0.0864	18240.24
	43.01	0.1401	29585.80
	43.12	0.2239	47283.96
	43.44	0.1466	30951.36
89	43.74	0.2183	46090.70
	44.05	0.1429	30179.89
	44.22	0.0889	18780.17
	44.45	0.0688	14535.64
	44.71	0.1315	27775.17
90	44.93	0.2756	58194.60
	45.02	0.2209	46650.02
	45.26	0.1594	33663.59
	45.49	0.1308	27631.97
	45.58	0.1830	38637.02
	45.84	0.2588	54651.81
	45.95	0.1422	30022.31
	46.03	0.2805	59227.75
	46.27	0.1432	30236.94
n-C12	46.58	0.4379	92477.89
	46.74	0.1953	41251.32
	47.02	0.2772	58542.40
i-C13	47.25	0.4141	87456.84
	47.44	0.1026	21667.21
	47.57	0.1718	36285.37
	47.78	0.1993	42097.54
	47.95	0.0667	14076.46
	48.19	0.3245	68537.12
	48.42	0.0564	11903.88
	48.54	0.1316	27788.09
	48.68	0.3869	81705.34
	48.92	0.1388	29317.05
	49.08	0.2018	42622.21
	49.32	0.2749	58052.31
i-C14	49.46	0.3721	78575.90
91	49.63	1.0367	218931.70
	49.76	0.1914	40415.52
	49.85	0.1871	39513.12
	50.06	0.2405	50792.91
92	50.15	0.6067	128129.10
n-C13	50.25	0.3869	81710.29
	50.45	0.0663	13994.46
	50.61	0.5120	108128.70
	50.86	0.3333	70381.76
	51.02	0.0785	16571.17
	51.17	0.2234	47187.55
	51.32	0.1980	41812.59
	51.60	0.3639	76841.35
	51.75	0.2780	58712.88
	51.85	0.1613	34060.20
	51.99	0.1359	28703.37
	52.13	0.1227	25911.87

Peak Name	Ret. Time	Area %	Area
	52.32	0.1552	32769.48
i-C15	52.53	0.5065	106961.70
	52.62	0.5098	107670.30
	52.72	0.4427	93490.42
	52.92	1.2348	260770.50
n-C14	53.04	0.5073	107141.70
	53.19	0.1960	41383.89
	53.30	1.2177	257145.70
	53.39	0.9569	202085.00
	53.63	0.1053	22245.12
	53.80	0.7081	149542.20
	53.96	0.2370	50045.94
	54.05	0.6211	131159.90
	54.16	0.3871	81738.15
	54.27	0.5046	106562.20
	54.45	0.2352	49671.31
i-C16	54.58	0.7221	152486.40
	54.72	0.4438	93716.55
	54.79	0.0897	18945.19
	54.89	0.7076	149438.80
	55.12	0.1438	30367.51
n-C15	55.32	0.8946	188925.50
	55.41	0.2648	55927.53
	55.52	0.1619	34190.23
	55.68	0.2926	61800.54
	55.78	0.4003	84545.65
	55.91	0.4680	98840.87
	56.22	0.4056	85662.95
	56.32	0.5098	107651.60
	56.48	0.5320	112346.50
	56.62	0.6899	145684.20
	56.71	0.3351	70762.84
	56.94	0.7110	150158.20
	57.05	0.1952	41212.07
	57.15	0.4489	94803.09
n-C16	57.27	0.7721	163057.40
	57.57	0.3034	64070.56
	57.65	0.2839	59957.19
	57.81	0.1836	38766.13
	57.94	0.1554	32824.27
i-C18	58.21	0.8033	169643.60
	58.40	0.2166	45748.68
	58.54	0.2023	42723.90
	58.61	0.2476	52277.94
	58.88	0.2497	52732.13
n-C17	59.00	0.5815	122810.10
Pristane	59.18	1.1746	248046.20
	59.30	0.3756	79325.92
	59.42	0.4593	96998.38
	59.70	0.5509	116345.40
	59.94	0.2196	46367.71
	60.02	0.2026	42787.15
	60.14	0.2708	57184.13
	60.27	0.1914	40419.86
	60.42	0.2163	45687.72
n-C18	60.56	0.2195	46351.31
	60.70	0.1501	31689.75
Phytane	60.79	0.4718	99629.07
	60.96	0.1276	26940.59
	61.04	0.1316	27800.46
	61.17	0.1543	32576.19
	61.51	0.1751	36976.23
	61.65	0.1241	26210.53
	61.74	0.0521	10997.83
n-C19	61.99	0.2970	62728.02
	62.18	0.2495	52689.81
	62.27	0.1959	41369.90

Peak Name	Ret. Time	Area %	Area
	62.55	0.1504	31759.58
	62.62	0.1605	33902.24
	63.09	0.1398	29512.63
	63.35	0.0840	17731.17
	63.67	0.0561	11840.23
	63.88	0.1353	28582.85
	63.94	0.1434	30273.46
	64.13	0.2151	45414.57
IS #3	64.28	1.0336	218276.30
	64.44	0.2278	48113.57
	64.62	0.1720	36331.84
	64.88	0.1508	31839.88
	65.11	0.1265	26716.81
	65.27	0.1096	23146.62
	65.69	0.1756	37076.17
	66.44	0.2196	46366.76
	68.80	0.0604	12752.42
	77.21	0.1313	27717.58
	78.58	0.0653	13798.78
	80.64	0.0536	11325.99
	81.33	0.1938	40935.19
	83.75	0.1775	37474.23

Total Area = 2.111812E+07 Total Height = 6886237 Total Amount = 1

1/16/2016

ZymaX ID	17836-11
Sample ID	RW-169

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	8.21
Aromatics / Naphthenes	72.24

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	2.34

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	3.22
% Isoparaffinic	6.29
% Aromatic	88.14
% Naphthenic	1.22
% Olefinic	1.13

1/16/2016

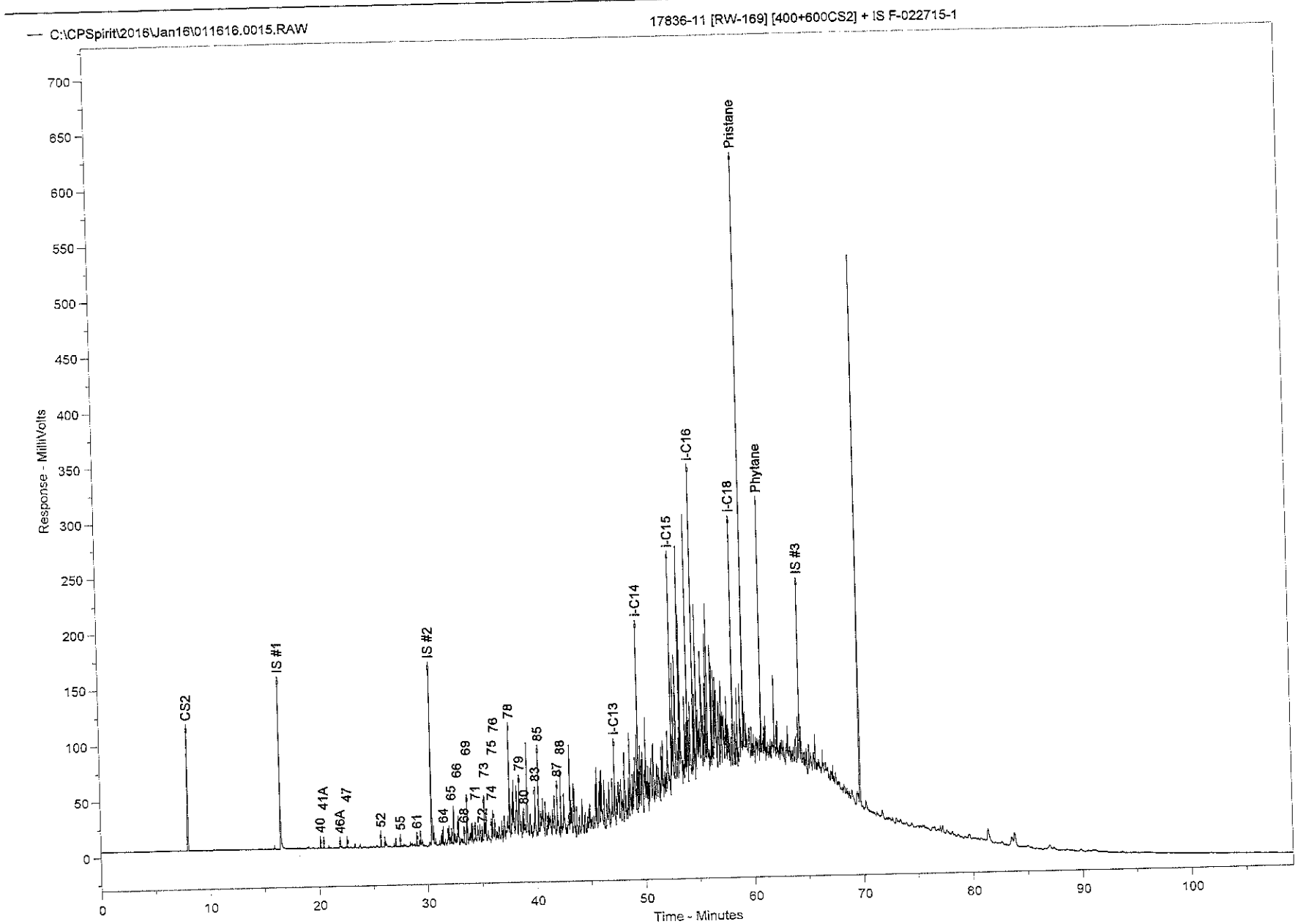
ZymaX ID		17836-11
Sample ID		RW-169
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

1/16/2016

ZymaX ID		17836-11
Sample ID		RW-169
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.58
41	Toluene/2,3,3-Trimethylpentane	0.50
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.51
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.43
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	1.22
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.63
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	1.13
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	1.57
65	2,4,5-Trimethylheptane	1.83
66	n-Propylbenzene	2.75
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	1.39
69	1,3,5-Trimethylbenzene	7.63
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-11
Sample ID		RW-169
		Relative Area %
71	1-Methyl-2-ethylbenzene	1.26
72	3-Methylnonane	1.37
73	1,2,4-Trimethylbenzene	4.96
74	Isobutylbenzene	2.48
75	sec-Butylbenzene	4.51
76	n-Decane	3.22
77	1,2,3-Trimethylbenzene	0.00
78	Indan	14.46
79	1,3-Diethylbenzene	13.45
80	1,4-Diethylbenzene	3.97
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	7.75
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	9.01
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	6.79
88	1,2,3,5-Tetramethylbenzene	6.60
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00



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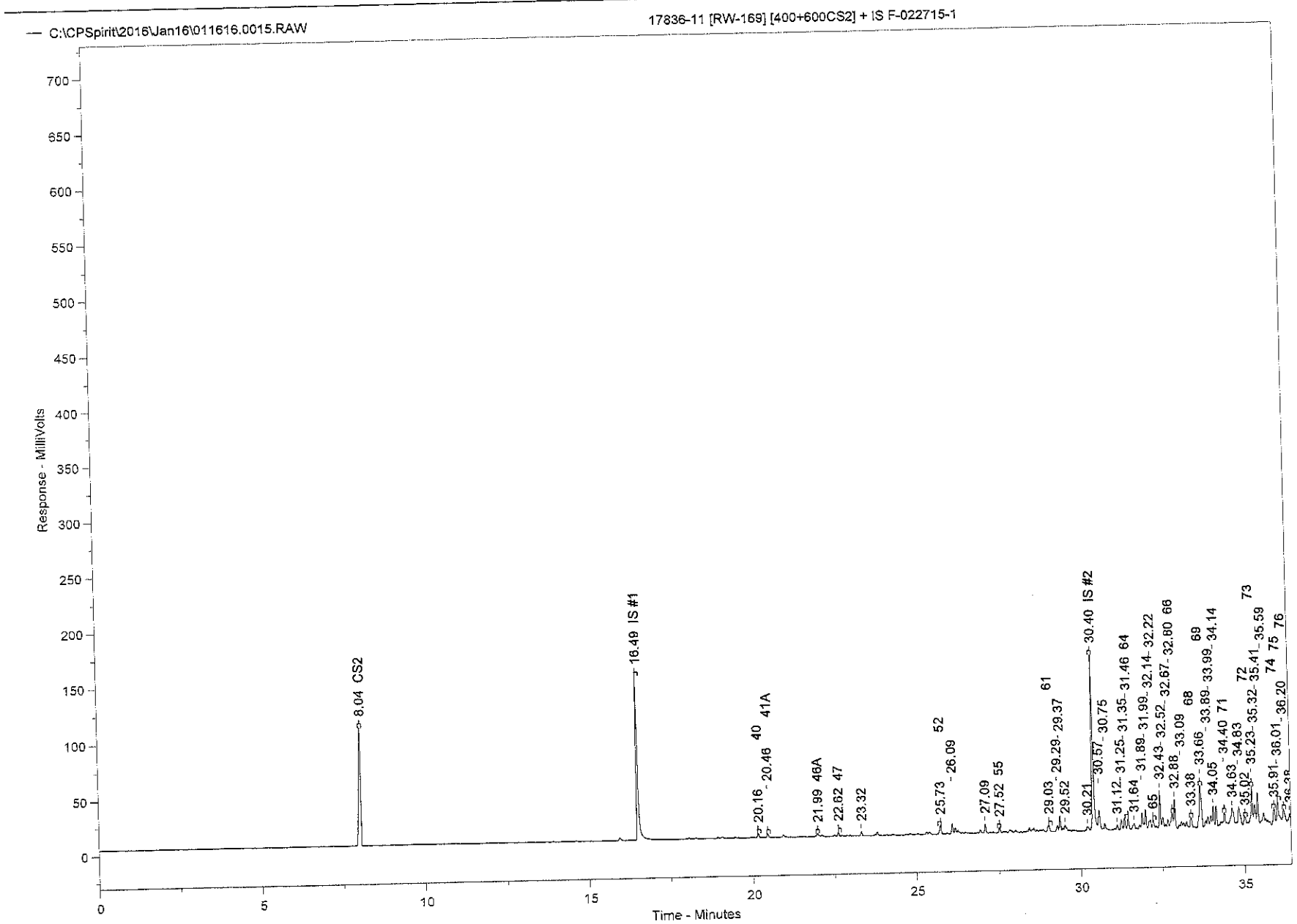

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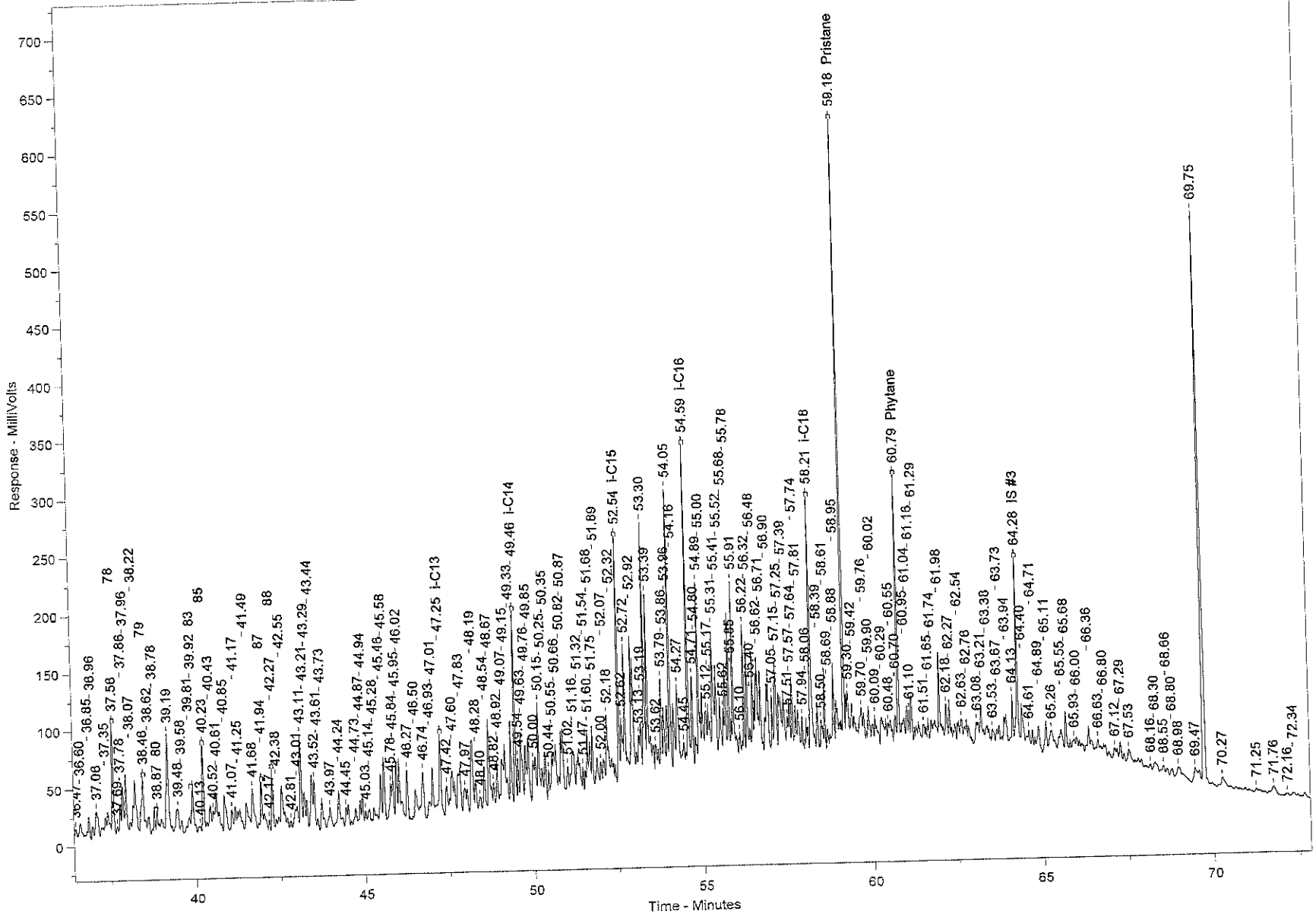
17836-11 [RW-169] [400+600CS2] + IS F-022715-1



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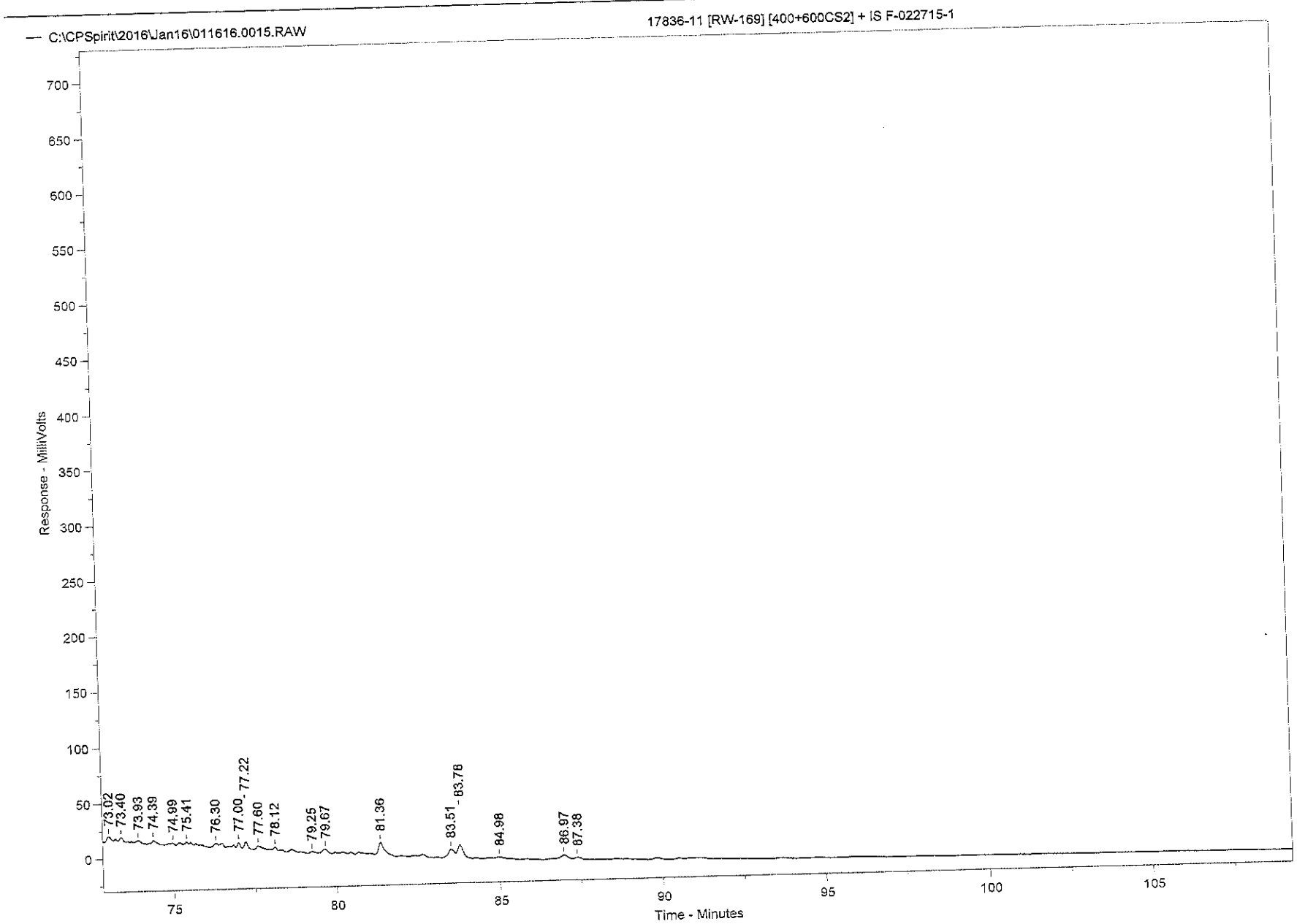

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Sample Name = **17836-11 [RW-169] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0015.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/18/2016 12:15:12 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.04	1.0954	433656.30
IS #1	16.49	1.2462	493372.30
40	20.16	0.0334	13207.28
41A	20.46	0.0287	11369.76
46A	21.99	0.0295	11696.53
47	22.62	0.0245	9714.92
	23.32	0.0255	10076.13
52	25.73	0.0701	27758.88
	26.09	0.0575	22760.87
	27.09	0.0551	21822.11
55	27.52	0.0364	14394.69
61	29.03	0.0650	25741.29
	29.29	0.0419	16593.56
	29.37	0.0952	37696.41
	29.52	0.0564	22330.12
	30.21	0.0482	19070.29
IS #2	30.40	1.2659	501164.00
	30.57	0.1968	77926.72
	30.75	0.0661	26156.25
	31.12	0.0378	14984.34
	31.25	0.0732	28990.32
	31.35	0.0884	34997.65
64	31.46	0.0904	35799.26
	31.64	0.0663	26254.29
	31.89	0.1639	64885.91
	31.99	0.1299	51439.54
	32.14	0.1072	42434.69
65	32.22	0.1053	41695.95
	32.43	0.2443	96728.70
	32.52	0.0959	37965.84
	32.67	0.0647	25621.35
66	32.80	0.1579	62530.43
	32.88	0.2052	81256.73
	33.09	0.0405	16050.18
68	33.38	0.0797	31549.38
69	33.66	0.4383	173510.60
	33.89	0.1294	51241.37
	33.99	0.0814	32227.29
	34.05	0.1284	50836.46
	34.14	0.1215	48097.68
71	34.40	0.0725	28694.21
	34.63	0.2092	82807.13
	34.83	0.1848	73174.60
72	35.02	0.0785	31083.44
73	35.23	0.2850	112837.70
	35.32	0.1474	58366.06
	35.41	0.1971	78026.09
	35.59	0.0628	24864.69
74	35.91	0.1428	56518.19
75	36.01	0.2593	102642.50
76	36.20	0.1849	73202.73
	36.38	0.0783	31010.92
	36.47	0.0944	37391.84
	36.60	0.2255	89283.32
	36.85	0.1405	55603.38

Peak Name	Ret. Time	Area %	Area
	36.96	0.0892	35299.59
	37.08	0.3468	137301.90
	37.35	0.3189	126238.60
	37.58	0.8309	328956.40
78	37.69	0.0858	33948.20
	37.78	0.2230	88272.70
	37.86	0.4043	160065.00
	37.96	0.4726	187091.20
	38.07	0.1154	45680.64
	38.22	0.7740	306416.80
	38.46	0.7729	305986.40
79	38.62	0.1718	68024.69
	38.78	0.1568	62092.47
	38.87	0.2280	90281.05
80	39.19	0.9963	394431.80
	39.48	0.3419	135375.50
	39.58	0.0989	39164.23
	39.81	0.1902	75283.38
	39.92	0.4452	176265.90
83	40.13	0.0561	22224.04
	40.23	0.5179	205036.00
85	40.43	0.1292	51153.48
	40.52	0.0828	32781.95
	40.61	0.1566	62011.80
	40.85	0.3638	144042.80
	41.07	0.1114	44085.66
	41.17	0.0883	34960.76
	41.25	0.0292	11546.48
	41.49	0.3455	136780.60
	41.68	0.4703	186172.90
	41.94	0.3904	154540.70
87	42.17	0.0558	22100.68
	42.27	0.3795	150234.40
88	42.38	0.0287	11350.32
	42.55	0.2323	91966.80
	42.81	0.0421	16660.83
	43.01	0.3476	137619.30
	43.11	0.6614	261844.90
	43.21	0.2746	108723.20
	43.29	0.1888	74761.77
	43.44	0.5238	207372.00
	43.52	0.3318	131352.60
	43.61	0.0781	30917.24
	43.73	0.3011	119206.20
	43.97	0.2360	93411.93
	44.24	0.2347	92897.09
	44.45	0.0703	27814.16
	44.73	0.1487	58864.32
	44.87	0.1668	66043.80
	44.94	0.1767	69946.27
	45.03	0.0774	30649.63
	45.14	0.1433	56735.45
	45.28	0.0994	39356.10
	45.48	0.3577	141629.00
	45.58	0.4569	180880.90
	45.78	0.2740	108466.30
	45.84	0.2603	103042.10
	45.95	0.3108	123030.50
	46.02	0.2950	116806.60
	46.27	0.3311	131070.70
	46.50	0.3091	122364.80
	46.74	0.4722	186942.10
	46.93	0.1826	72288.50
	47.01	0.5087	201410.50
i-C13	47.25	0.7218	285762.60
	47.42	0.2691	106550.20
	47.60	0.5444	215526.10

Peak Name	Ret. Time	Area %	Area
	47.83	0.6265	248024.50
	47.97	0.4054	160501.30
	48.19	0.7790	308407.40
	48.28	0.2216	87747.70
	48.40	0.1322	52325.21
	48.54	0.3488	138099.60
	48.67	0.7707	305124.30
	48.82	0.1548	61276.85
	48.92	0.3256	128888.30
	49.07	0.4905	194185.20
	49.15	0.4234	167629.00
	49.33	0.5568	220424.20
	49.46	1.0523	416617.80
i-C14	49.54	0.2476	98012.24
	49.63	0.6784	268562.00
	49.76	0.4936	195425.80
	49.85	0.4290	169852.20
	50.00	0.3491	138212.20
	50.15	0.6214	246026.20
	50.25	0.2437	96468.47
	50.35	0.3395	134416.00
	50.44	0.1625	64315.95
	50.55	0.3511	138979.40
	50.66	0.3683	145815.80
	50.82	0.3607	142808.00
	50.87	0.4372	173075.00
	51.02	0.2222	87966.40
	51.16	0.6156	243730.60
	51.32	0.5368	212499.40
	51.47	0.0973	38508.49
	51.54	0.1019	40355.73
	51.60	0.2923	115705.50
	51.68	0.3159	125046.30
	51.75	0.3164	125266.70
	51.89	0.2320	91866.28
	52.00	0.1295	51275.21
	52.07	0.1777	70341.98
	52.18	0.6085	240912.90
	52.32	0.2005	79390.33
	52.54	1.1483	454592.70
i-C15	52.62	0.4510	178562.00
	52.72	0.5751	227664.20
	52.92	1.1423	452216.10
	53.13	0.1476	58447.32
	53.19	0.2230	88295.74
	53.30	1.2354	489094.40
	53.39	0.9674	382978.90
	53.62	0.2646	104765.10
	53.79	0.5190	205464.20
	53.86	0.4212	166737.10
	53.96	0.3878	153520.20
	54.05	1.3703	542485.10
	54.16	0.4558	180467.70
	54.27	0.7695	304645.50
	54.45	0.2540	100559.00
	54.59	1.5959	631795.10
i-C16	54.71	0.5862	232063.20
	54.80	0.2088	82678.77
	54.89	1.0727	424687.40
	55.00	0.4663	184602.50
	55.12	0.4419	174946.40
	55.17	0.5688	225183.50
	55.31	1.0030	397085.30
	55.41	0.5523	218658.50
	55.52	0.5228	206988.00
	55.62	0.2372	93896.19
	55.68	0.5487	217238.00

Peak Name	Ret. Time	Area %	Area
	55.78	0.7208	285353.20
	55.85	0.1875	74238.98
	55.91	1.0395	411515.20
	56.10	0.1446	57254.95
	56.22	0.6567	259991.20
	56.32	0.6185	244875.20
	56.40	0.1498	59294.71
	56.48	0.7369	291718.70
	56.62	0.8766	347048.30
	56.71	0.4807	190304.20
	56.90	0.8620	341274.90
	57.05	0.2083	82450.68
	57.15	0.6862	271647.50
	57.25	0.1169	46281.21
	57.39	0.1980	78374.91
	57.51	0.1399	55383.53
	57.57	0.2575	101938.90
	57.64	0.3502	138642.60
	57.74	0.1886	74671.07
	57.81	0.2502	99066.82
	57.94	0.1542	61064.28
	58.06	0.2165	85722.60
i-C18	58.21	1.6511	653676.30
	58.39	0.2727	107964.50
	58.50	0.2472	97854.24
	58.61	0.3440	136188.70
	58.69	0.1733	68625.73
	58.88	0.4777	189123.60
	58.95	0.5273	208765.50
Pristane	59.18	2.9459	1166268.00
	59.30	0.4110	162706.70
	59.42	0.1575	62350.35
	59.70	0.2706	107136.30
	59.76	0.1571	62189.62
	59.90	0.2212	87555.50
	60.02	0.1392	55095.91
	60.09	0.2945	116577.80
	60.29	0.3720	147266.10
	60.48	0.1363	53969.79
	60.55	0.2417	95692.63
	60.70	0.2437	96483.43
Phytane	60.79	1.3362	528987.80
	60.95	0.2842	112522.20
	61.04	0.2269	89810.87
	61.10	0.1491	59017.24
	61.16	0.2473	97885.37
	61.29	0.1479	58546.29
	61.51	0.1844	72983.22
	61.65	0.0915	36219.66
	61.74	0.0695	27513.49
	61.98	0.4799	189994.00
	62.18	0.2138	84650.27
	62.27	0.2262	89558.99
	62.54	0.1386	54855.23
	62.63	0.1678	66435.95
	62.78	0.0768	30413.96
	63.08	0.3366	133240.90
	63.21	0.4124	163258.60
	63.38	0.3566	141190.00
	63.53	0.1867	73900.46
	63.67	0.1638	64844.65
	63.73	0.2182	86389.01
	63.94	0.4743	187757.50
	64.13	0.4416	174837.40
IS #3	64.28	1.2337	488418.10
	64.40	0.4889	193548.20
	64.61	0.1608	63664.71

Peak Name	Ret. Time	Area %	Area
	64.71	0.1545	61171.01
	64.89	0.2813	111351.60
	65.11	0.2625	103931.90
	65.26	0.4120	163115.20
	65.55	0.3046	120605.60
	65.68	0.2546	100797.60
	65.93	0.0723	28622.77
	66.00	0.0676	26753.26
	66.36	0.2299	91022.53
	66.63	0.1583	62681.90
	66.80	0.1546	61192.73
	67.12	0.0931	36838.65
	67.29	0.1173	46443.52
	67.53	0.1522	60235.92
	68.16	0.0351	13911.09
	68.30	0.1393	55148.13
	68.55	0.0716	28333.58
	68.66	0.0584	23110.92
	68.80	0.0768	30391.82
	68.98	0.3024	119711.70
	69.47	0.2205	87291.64
	69.75	3.7896	1500290.00
	70.27	0.1176	46563.11
	71.25	0.0230	9110.23
	71.76	0.1044	41328.43
	72.16	0.0336	13297.53
	72.34	0.0373	14766.45
	73.02	0.1335	52832.52
	73.40	0.1444	57149.95
	73.93	0.0977	38690.21
	74.39	0.0939	37163.40
	74.99	0.0591	23415.60
	75.41	0.0242	9574.56
	76.30	0.0375	14852.24
	77.00	0.0640	25356.41
	77.22	0.1132	44810.64
	77.60	0.1179	46678.36
	78.12	0.0460	18199.43
	79.25	0.0591	23416.19
	79.67	0.1190	47113.24
	81.36	0.3513	139069.60
	83.51	0.2677	105978.20
	83.78	0.3919	155160.50
	84.98	0.1127	44630.00
	86.97	0.1364	53980.96
	87.38	0.0673	26635.39

Total Area = 3.95894E+07 Total Height = 1.17262E+07 Total Amount = 0

1/16/2016

ZymaX ID	17836-12
Sample ID	MW-188

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.00
Aromatics / Naphthenes	0.00

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.00
% Isoparaffinic	0.00
% Aromatic	100.00
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

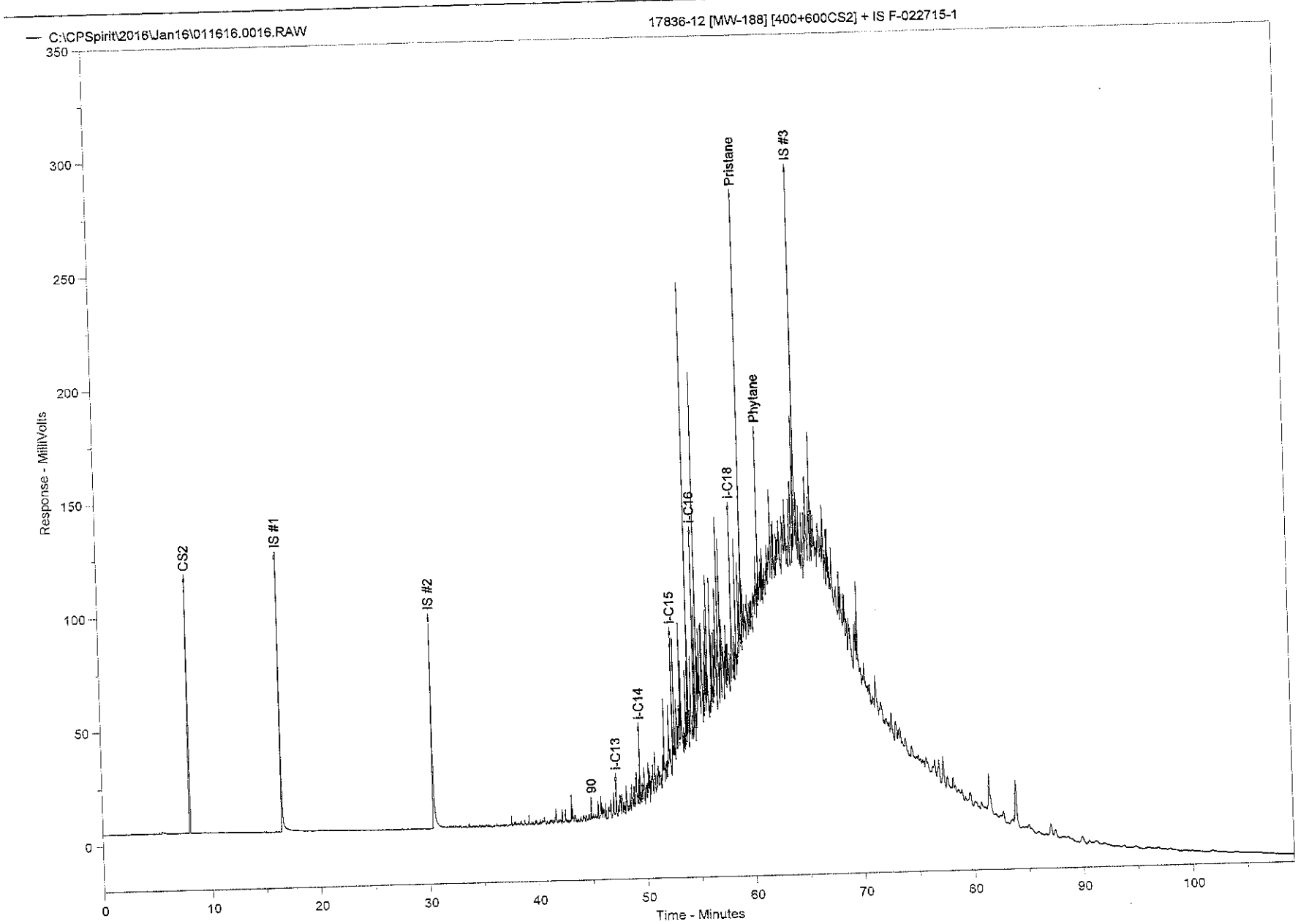
ZymaX ID		17836-12
Sample ID		MW-188
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

1/16/2016

ZymaX ID		17836-12
Sample ID		MW-188
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	0.00
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-12
Sample ID		MW-188
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	0.00
79	1,3-Diethylbenzene	0.00
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	0.00
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.00
88	1,2,3,5-Tetramethylbenzene	0.00
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	100.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00



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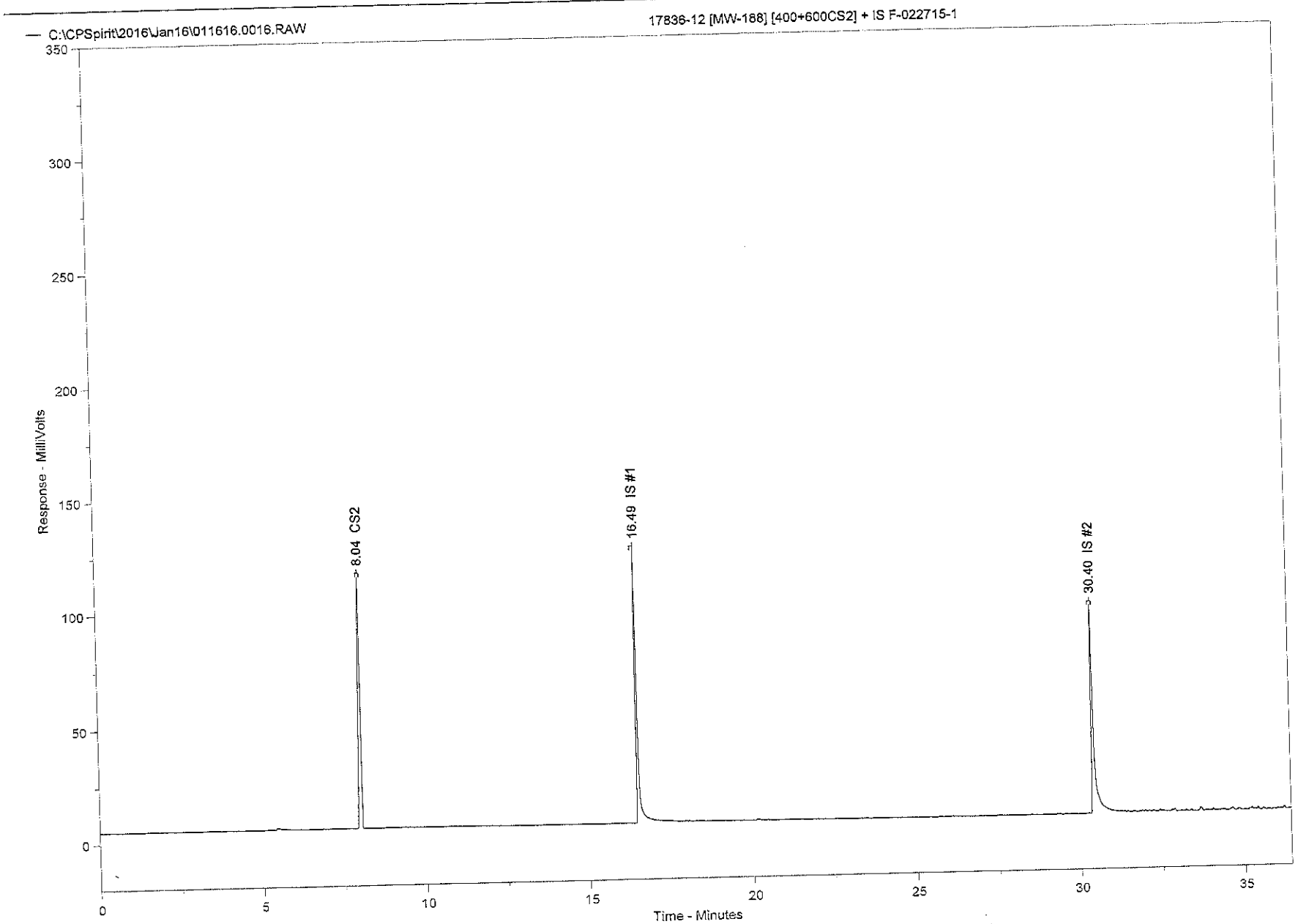
Chrom Perfect Chromatogram Report



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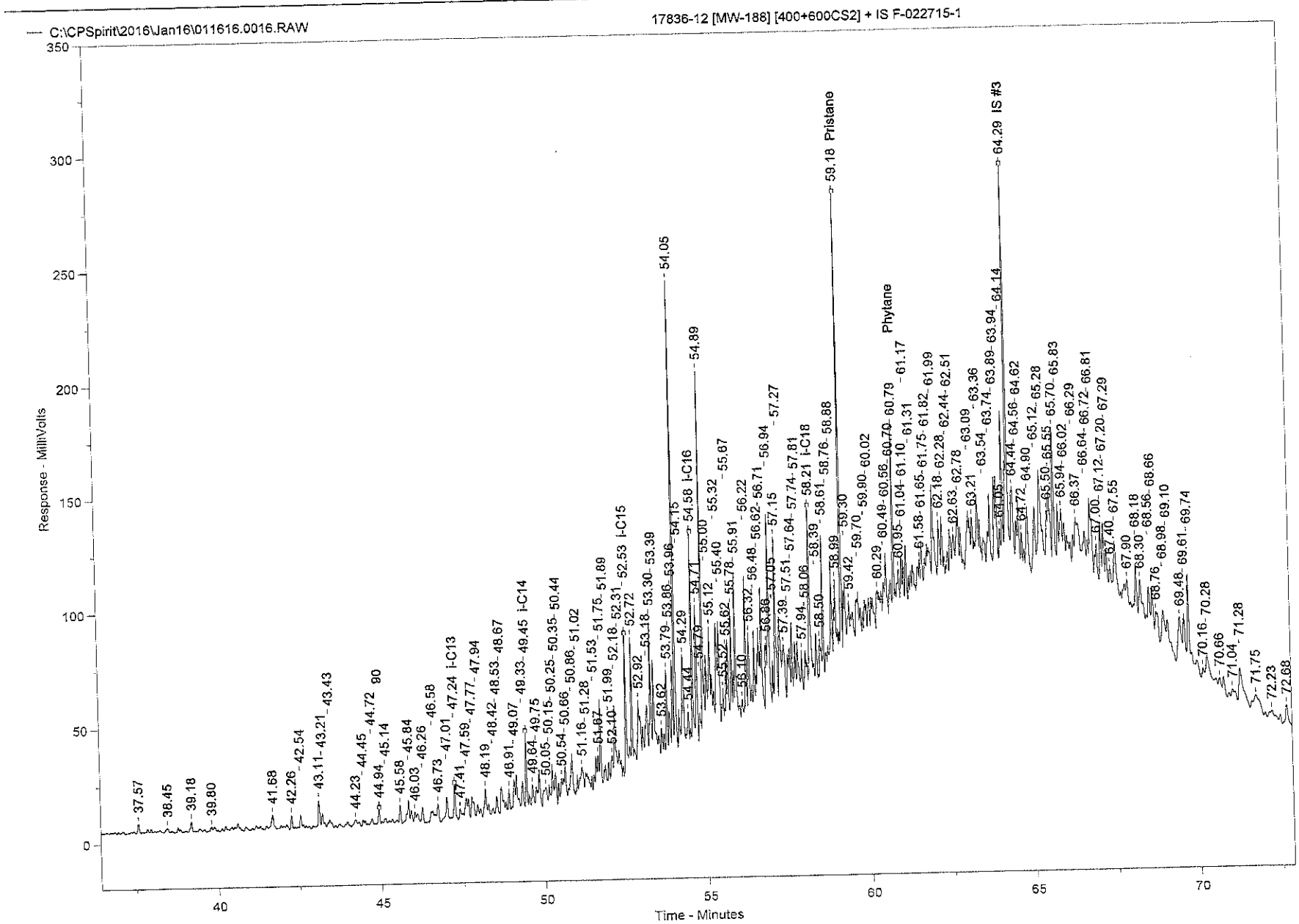
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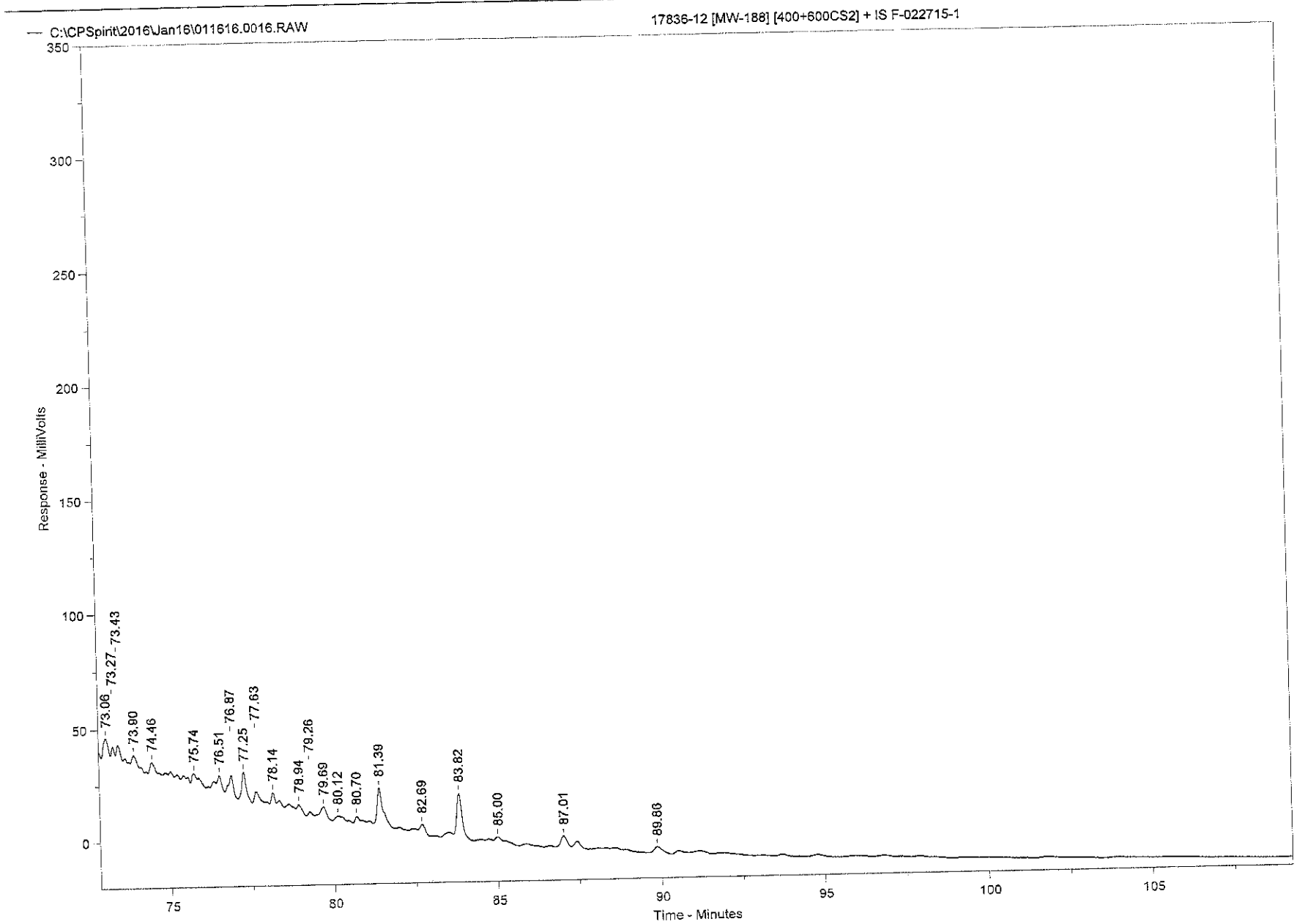
17836-12 [MW-188] [400+600CS2] + IS F-022715-1
Response - MilliVolts
Time - Minutes
Pristane
Phytane
IS #3
i-C13
i-C14
i-C15
i-C16
i-C18



Printed on 1/22/2016 2:02:53 PM

Sample Name = **17836-12 [MW-188] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0016.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/18/2016 2:18:29 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.04	2.3252	465590.40
IS #1	16.49	2.2335	447218.20
IS #2	30.40	2.2730	455122.00
	37.57	0.0668	13376.77
	38.45	0.0456	9137.69
	39.18	0.0746	14933.43
	39.80	0.0837	16756.87
	41.68	0.1513	30289.68
	42.26	0.0853	17071.73
	42.54	0.0712	14259.83
	43.11	0.1839	36826.20
	43.21	0.1269	25408.53
	43.43	0.1159	23205.87
	44.23	0.0494	9887.80
	44.45	0.0784	15693.47
	44.72	0.0694	13892.96
90	44.94	0.1029	20597.46
	45.14	0.0465	9308.12
	45.58	0.1159	23205.76
	45.84	0.0816	16330.82
	46.03	0.0409	8187.73
	46.26	0.1052	21059.98
	46.58	0.2083	41703.75
	46.73	0.1635	32733.52
	47.01	0.1784	35723.57
i-C13	47.24	0.2602	52105.37
	47.41	0.0846	16940.23
	47.59	0.1840	36850.26
	47.77	0.2286	45779.48
	47.94	0.0688	13771.73
	48.19	0.2563	51316.69
	48.42	0.0575	11520.80
	48.53	0.1469	29406.63
	48.67	0.2894	57943.99
	48.91	0.1248	24989.49
	49.07	0.1324	26513.81
	49.33	0.1794	35931.03
i-C14	49.45	0.3835	76787.31
	49.64	0.1383	27690.10
	49.75	0.0720	14407.81
	50.05	0.3178	63628.71
	50.15	0.1632	32671.23
	50.25	0.2890	57870.88
	50.35	0.2540	50849.54
	50.44	0.1184	23705.96
	50.54	0.1752	35075.22
	50.66	0.2435	48760.55
	50.86	0.4237	84839.77
	51.02	0.0954	19099.51
	51.16	0.3645	72983.64
	51.28	0.2460	49259.06
	51.53	0.0497	9951.21
	51.67	0.1041	20838.81
	51.75	0.3803	76148.73
	51.89	0.1388	27800.86

Peak Name	Ret. Time	Area %	Area
	51.99	0.0986	19748.07
	52.10	0.1931	38663.95
	52.18	0.6507	130299.80
	52.31	0.2378	47616.05
i-C15	52.53	0.7514	150459.20
	52.72	0.5452	109176.70
	52.92	0.6377	127680.50
	53.18	0.4665	93410.45
	53.30	0.7034	140845.20
	53.39	0.5502	110172.70
	53.62	0.1454	29105.70
	53.79	0.4056	81211.16
	53.86	0.2918	58426.92
	53.96	0.4980	99723.88
	54.05	2.1468	429864.70
	54.15	0.2487	49805.91
	54.29	0.8409	168382.00
	54.44	0.2989	59856.76
i-C16	54.58	1.0313	206496.10
	54.71	0.8751	175233.90
	54.79	0.2092	41890.10
	54.89	1.8918	378806.10
	55.00	0.6055	121242.70
	55.12	1.1604	232344.50
	55.32	0.8553	171269.30
	55.40	0.7093	142016.60
	55.52	0.3078	61634.36
	55.62	0.3957	79239.31
	55.67	0.4815	96420.63
	55.78	0.6501	130172.50
	55.91	0.8762	175437.00
	56.10	0.1823	36509.72
	56.22	0.7489	149956.60
	56.32	0.5463	109384.50
	56.48	0.7742	155029.70
	56.62	0.7982	159831.00
	56.71	0.7074	141646.70
	56.86	0.4839	96896.98
	56.94	1.2697	254240.80
	57.05	0.1710	34233.39
	57.15	1.1429	228856.10
	57.27	0.7549	151151.20
	57.39	0.6252	125189.50
	57.51	0.2568	51427.68
	57.64	0.3815	76383.58
	57.74	0.3109	62258.90
	57.81	0.3685	73783.01
	57.94	0.2158	43213.82
	58.06	0.2707	54200.98
i-C18	58.21	1.3961	279538.60
	58.39	0.2585	51766.28
	58.50	0.2941	58884.26
	58.61	0.5811	116350.60
	58.76	0.2531	50683.89
	58.88	0.6555	131250.60
	58.99	0.6246	125056.10
Pristane	59.18	2.1315	426792.50
	59.30	0.5615	112430.70
	59.42	0.1980	39643.20
	59.70	0.3737	74828.03
	59.90	0.3322	66511.91
	60.02	0.1835	36739.36
	60.29	0.5495	110029.90
	60.49	0.2917	58408.42
	60.56	0.4834	96799.77
	60.70	0.3374	67557.18
Phytane	60.79	0.9852	197275.60

Peak Name	Ret. Time	Area %	Area
	60.95	0.3435	68779.30
	61.04	0.3331	66691.82
	61.10	0.2017	40380.23
	61.17	0.3109	62260.38
	61.31	0.0858	17179.94
	61.58	0.3414	68353.98
	61.65	0.3165	63375.31
	61.75	0.2500	50059.74
	61.82	0.7441	148991.10
	61.99	1.0893	218107.00
	62.18	0.6198	124109.10
	62.28	0.5765	115443.90
	62.44	0.3394	67957.50
	62.51	0.4994	100004.20
	62.63	0.5330	106732.80
	62.78	1.5162	303594.50
	63.09	1.2031	240902.40
	63.21	0.8038	160942.60
	63.36	1.3718	274670.80
	63.54	0.4906	98236.63
	63.74	1.1029	220840.00
	63.89	0.7159	143353.20
	63.94	0.7396	148099.90
	64.05	0.4012	80331.15
	64.14	1.0328	206791.50
IS #3	64.29	3.2474	650230.20
	64.44	1.1162	223495.00
	64.56	0.4335	86796.89
	64.62	0.5525	110628.60
	64.72	0.2877	57604.83
	64.90	0.6874	137642.30
	65.12	0.6363	127404.10
	65.28	1.4231	284952.70
	65.50	0.3611	72307.32
	65.55	0.7441	148998.60
	65.70	0.9413	188481.60
	65.83	0.3267	65410.02
	65.94	0.4075	81598.52
	66.02	0.2016	40370.05
	66.29	0.1112	22256.82
	66.37	0.0936	18733.48
	66.64	0.2577	51600.61
	66.72	0.1429	28617.54
	66.81	0.7202	144213.40
	67.00	0.2956	59192.16
	67.12	0.3942	78941.45
	67.20	0.3973	79553.84
	67.29	0.2834	56744.59
	67.40	0.1848	37007.27
	67.55	0.5881	117758.20
	67.90	0.2033	40699.98
	68.18	0.2993	59931.32
	68.30	0.4969	99502.98
	68.56	0.3467	69424.01
	68.66	0.3922	78539.34
	68.76	0.3550	71079.78
	68.98	0.4171	83526.27
	69.10	0.1814	36318.91
	69.48	0.5985	119834.90
	69.61	0.3637	72815.30
	69.74	0.5303	106189.60
	70.16	0.0910	18224.87
	70.28	0.4316	86424.76
	70.66	0.0701	14038.63
	71.04	0.1512	30275.21
	71.28	0.6645	133050.50
	71.75	0.2830	56671.84

Peak Name	Ret. Time	Area %	Area
	72.23	0.2677	53607.55
	72.68	0.3835	76793.55
	73.06	0.4377	87640.95
	73.27	0.1701	34060.58
	73.43	0.2405	48146.09
	73.90	0.2516	50372.86
	74.46	0.2578	51620.12
	75.74	0.1150	23027.03
	76.51	0.4558	91270.82
	76.87	0.4648	93068.78
	77.25	0.5906	118264.10
	77.63	0.2892	57912.03
	78.14	0.1415	28342.95
	78.94	0.1356	27142.91
	79.26	0.0970	19413.51
	79.69	0.3356	67206.74
	80.12	0.2219	44426.30
	80.70	0.0855	17125.44
	81.39	1.0350	207250.70
	82.69	0.2690	53857.32
	83.82	1.0440	209047.50
	85.00	0.1878	37612.79
	87.01	0.2884	57753.53
	89.86	0.2533	50717.52

Total Area = 2.002331E+07 Total Height = 5300373 Total Amount = 2

1/16/2016

ZymaX ID	17836-13
Sample ID	MW-439

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.00
Aromatics / Naphthenes	0.00

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.00
% Isoparaffinic	0.00
% Aromatic	100.00
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-13
Sample ID		MW-439
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

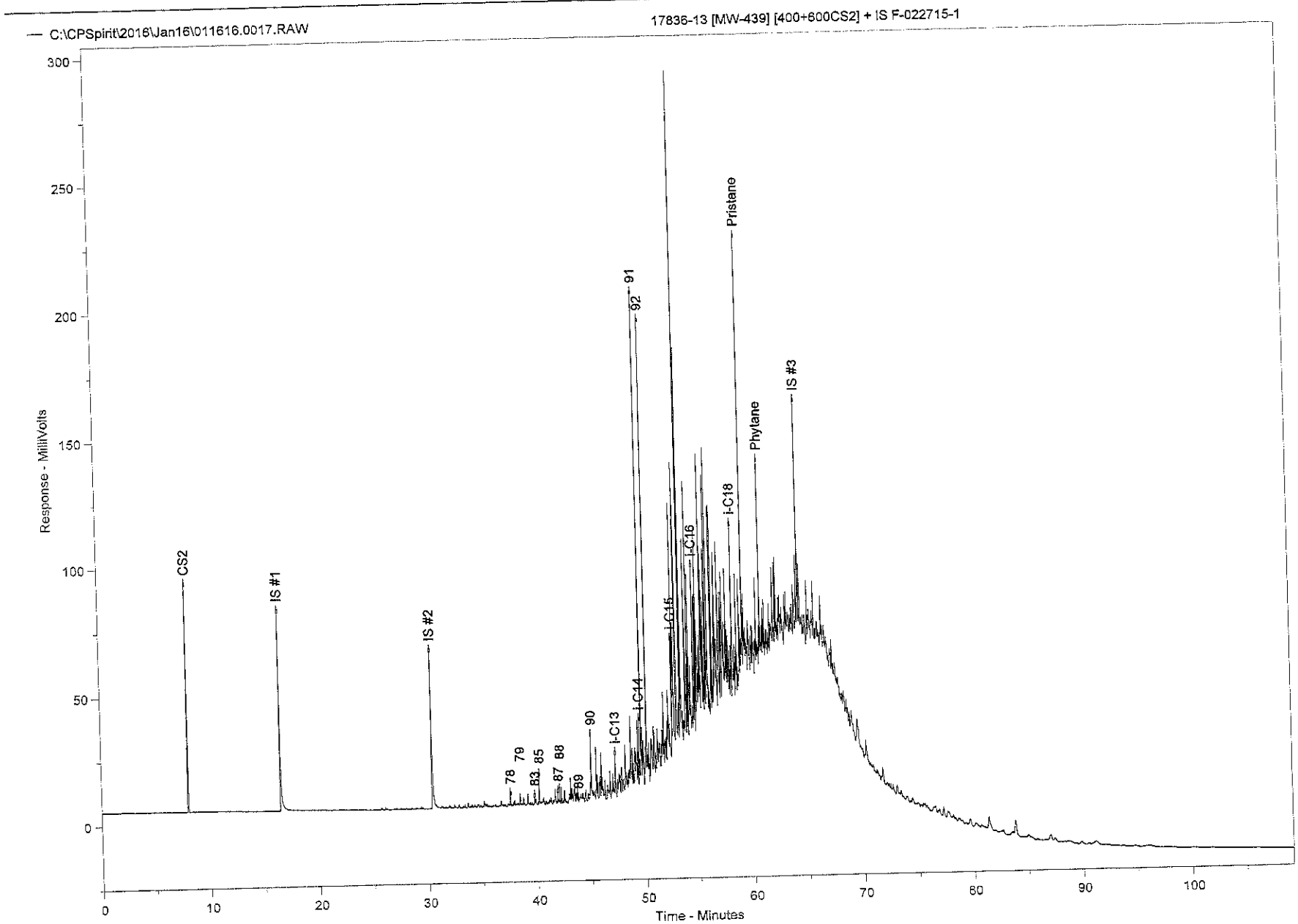
1/16/2016

ZymaX ID		17836-13
Sample ID		MW-439
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	0.00
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-13
Sample ID		MW-439
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	1.22
79	1,3-Diethylbenzene	0.77
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.79
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	3.29
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	1.58
88	1,2,3,5-Tetramethylbenzene	1.52
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	7.62
91	2-Methyl-naphthalene	43.26
92	1-Methyl-naphthalene	39.94

Chrom Perfect Chromatogram Report



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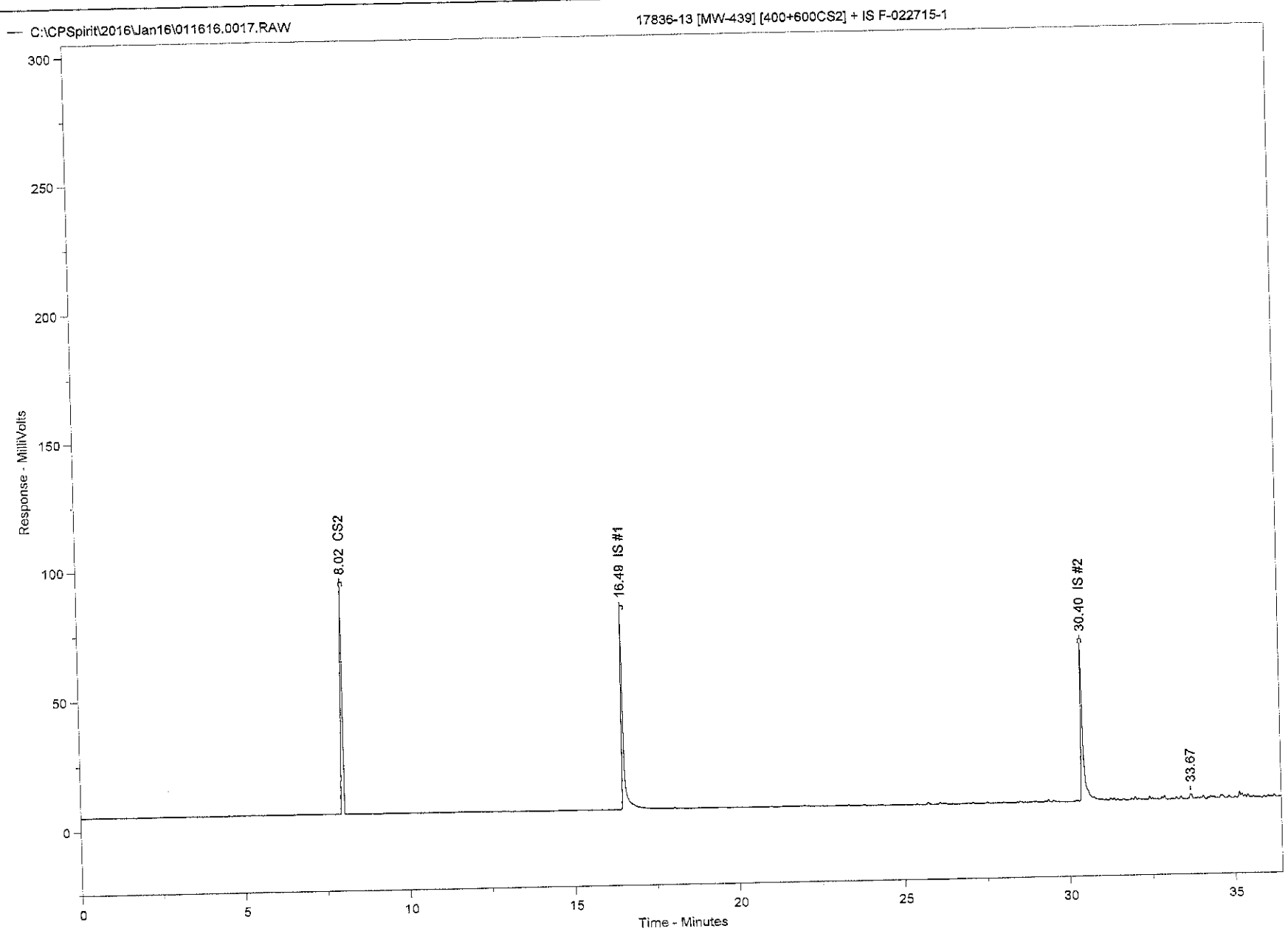

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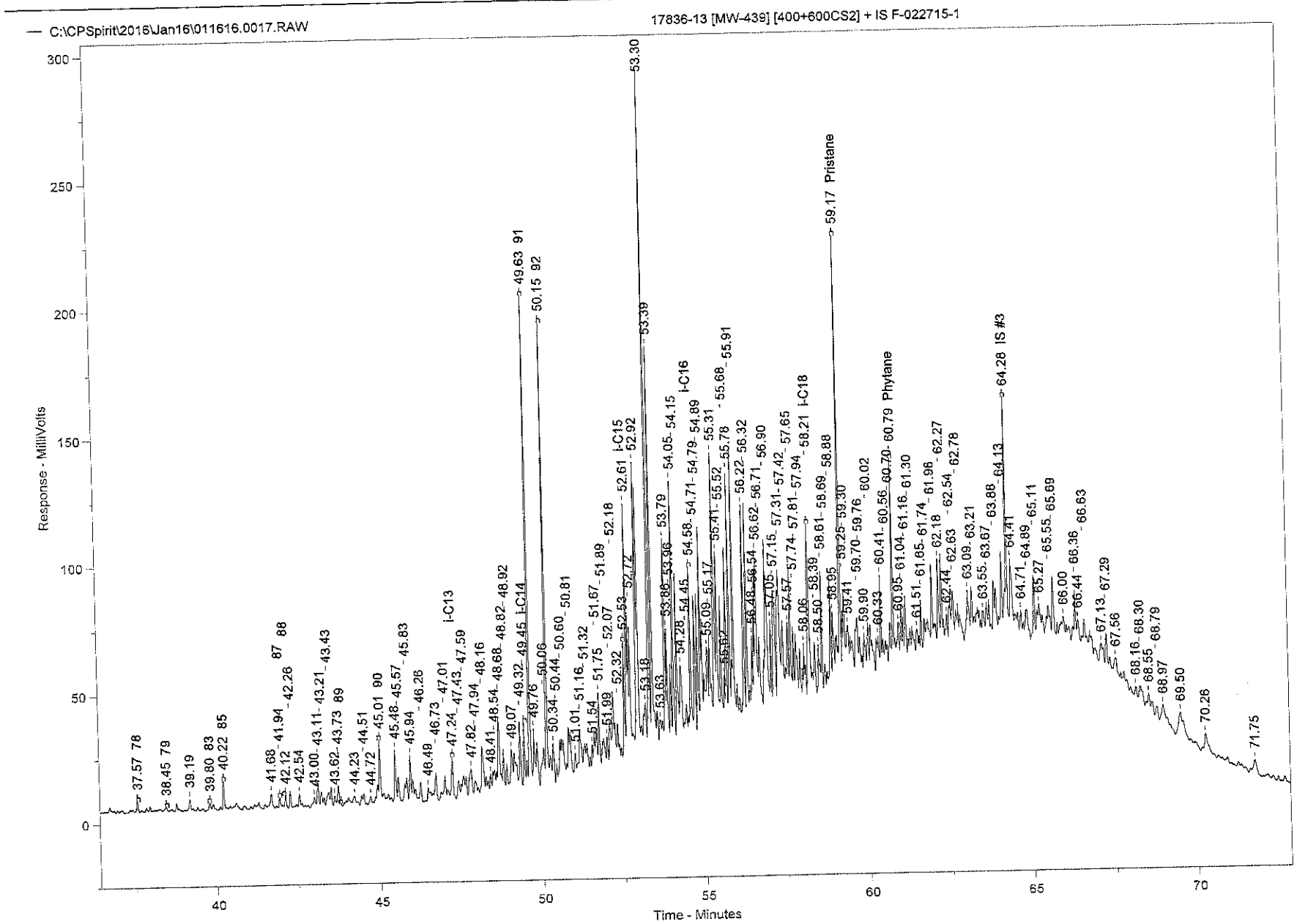
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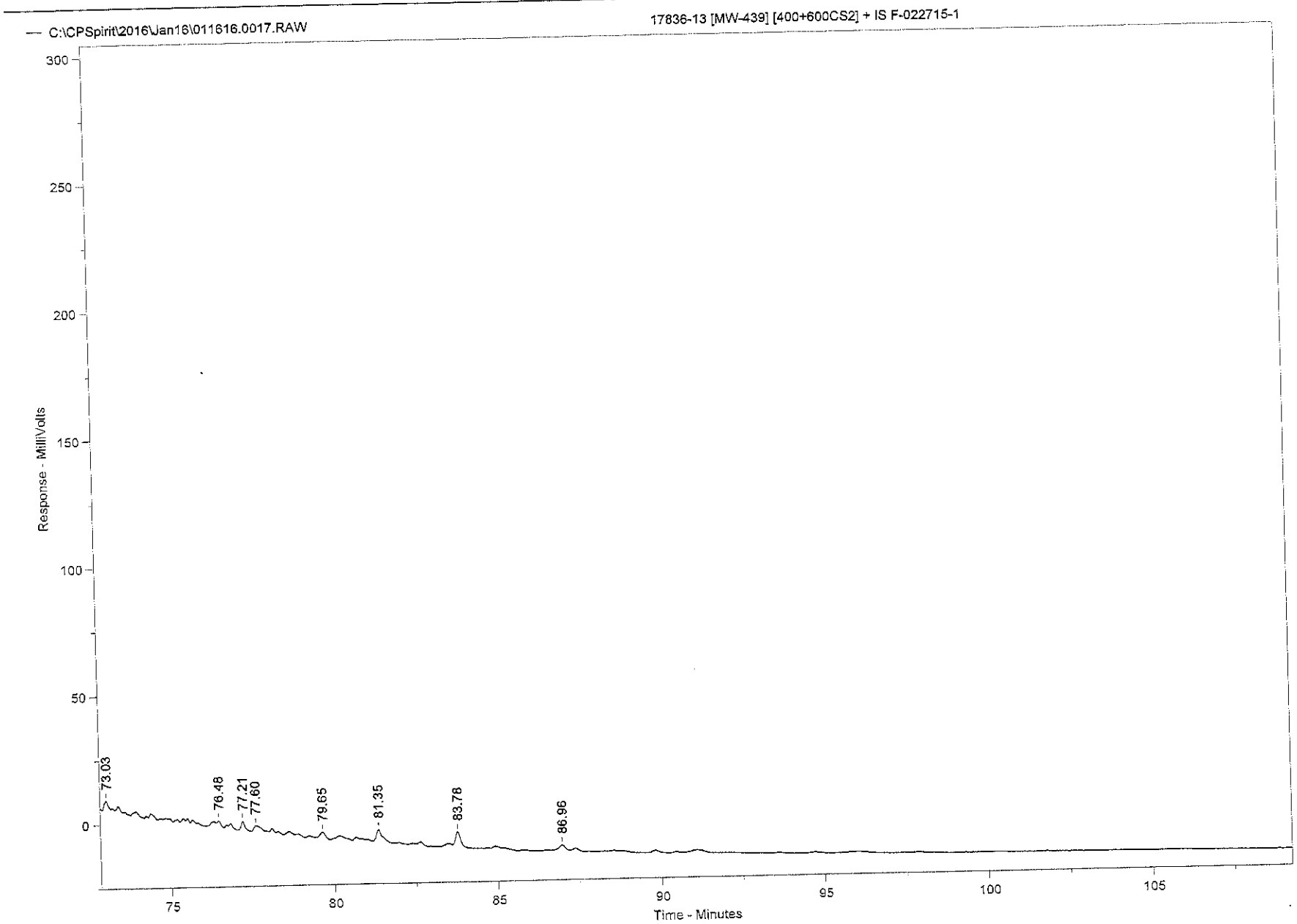
17836-13 [MW-439] [400+600CS2] + IS F-022715-1
Response - MilliVolts
Time - Minutes
Pristane
Phytane
IS #3
i-C13
i-C14
i-C15
i-C16
i-C18



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Sample Name = **17836-13 [MW-439] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0017.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/18/2016 4:21:53 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.02	1.9083	308576.60
IS #1	16.49	1.9497	315270.30
IS #2	30.40	1.7602	284632.30
	33.67	0.0614	9928.93
78	37.57	0.0785	12689.17
79	38.45	0.0494	7986.61
	39.19	0.0803	12980.06
83	39.80	0.0509	8234.70
85	40.22	0.2111	34129.17
	41.68	0.1286	20791.80
87	41.94	0.1011	16349.96
88	42.12	0.0978	15810.60
	42.26	0.1123	18160.79
	42.54	0.0802	12962.53
	43.00	0.1347	21783.28
	43.11	0.2076	33564.02
	43.21	0.1251	20221.51
	43.43	0.1935	31285.75
	43.62	0.0952	15401.06
	43.73	0.1839	29732.69
	44.23	0.1084	17528.74
	44.51	0.1516	24519.55
	44.72	0.0630	10193.79
90	45.01	0.4889	79053.89
	45.48	0.3712	60029.21
	45.57	0.1945	31457.52
	45.83	0.2745	44384.26
	45.94	0.2531	40927.11
	46.26	0.1335	21594.11
	46.49	0.1813	29320.03
	46.73	0.2504	40495.99
	47.01	0.3069	49619.89
i-C13	47.24	0.3895	62978.14
	47.43	0.1682	27195.58
	47.59	0.2192	35441.15
	47.82	0.3513	56804.53
	47.94	0.1368	22124.35
	48.16	0.4825	78025.96
	48.41	0.1071	17311.44
	48.54	0.2410	38970.15
	48.68	0.7062	114195.40
	48.82	0.2181	35262.54
	48.92	0.1280	20693.99
	49.07	0.2103	34011.70
	49.32	0.4185	67667.81
i-C14	49.45	0.3811	61630.00
91	49.63	2.7752	448750.30
	49.76	0.2547	41181.98
	50.06	0.5211	84261.62
92	50.15	2.5624	414344.70
	50.34	0.3138	50742.79
	50.44	0.0782	12637.31
	50.60	0.2287	36973.29
	50.81	0.1168	18890.14
	51.01	0.1136	18371.49

Peak Name	Ret. Time	Area %	Area
	51.16	0.3353	54219.21
	51.32	0.1097	17745.10
	51.54	0.1190	19241.99
	51.67	0.2548	41201.57
	51.75	0.4345	70261.42
	51.89	0.2978	48153.11
	51.99	0.1448	23417.70
	52.07	0.3343	54048.43
	52.18	0.7477	120908.70
	52.32	0.2724	44042.31
i-C15	52.53	0.6815	110204.50
	52.61	2.0446	330619.10
	52.72	0.9575	154823.00
	52.92	3.0155	487600.10
	53.18	0.6042	97701.47
	53.30	3.6155	584620.00
	53.39	2.3902	386495.50
	53.63	0.3806	61543.61
	53.79	1.3833	223672.80
	53.86	0.6620	107041.70
	53.96	0.4795	77530.86
	54.05	1.4205	229687.00
	54.15	1.0195	164850.70
	54.28	0.8533	137975.80
	54.45	0.3274	52946.91
i-C16	54.58	0.9831	158972.70
	54.71	0.8720	141006.50
	54.79	0.7961	128731.30
	54.89	2.0535	332052.30
	55.09	0.7001	113201.90
	55.17	0.7330	118528.40
	55.31	1.8530	299627.50
	55.41	1.0353	167405.70
	55.52	0.6665	107769.10
	55.62	0.1815	29343.22
	55.68	0.8619	139371.00
	55.78	1.2498	202088.50
	55.91	1.5969	258220.00
	56.22	1.1422	184693.30
	56.32	1.0782	174349.40
	56.48	0.4169	67412.93
	56.54	0.4668	75484.44
	56.62	1.4956	241832.40
	56.71	0.5169	83587.56
	56.90	1.8723	302751.20
	57.05	0.4075	65899.16
	57.15	1.2006	194140.40
	57.31	1.7367	280827.70
	57.42	0.7661	123871.70
	57.57	0.5238	84698.47
	57.65	0.8793	142184.30
	57.74	0.3602	58243.10
	57.81	0.5641	91211.95
	57.94	0.3434	55524.67
	58.06	0.5106	82564.27
i-C18	58.21	1.7257	279051.50
	58.39	0.3729	60304.44
	58.50	0.4046	65423.54
	58.61	0.5514	89161.38
	58.69	0.1460	23602.13
	58.88	0.4983	80576.27
	58.95	0.3586	57983.67
Pristane	59.17	2.0893	337832.90
	59.25	0.2448	39584.66
	59.30	0.3706	59931.38
	59.41	0.2787	45061.00
	59.70	0.6080	98319.65

Peak Name	Ret. Time	Area %	Area
	59.76	0.2609	42190.49
	59.90	0.2694	43560.11
	60.02	0.2656	42939.49
	60.33	0.4561	73757.19
	60.41	0.4722	76355.80
	60.56	0.2658	42980.82
	60.70	0.3036	49087.30
Phytane	60.79	1.2895	208511.40
	60.95	0.2646	42785.01
	61.04	0.3436	55559.44
	61.16	0.3424	55359.49
	61.30	0.0837	13530.73
	61.51	0.2423	39177.81
	61.65	0.2325	37602.44
	61.74	0.1130	18279.27
	61.98	0.5608	90686.05
	62.18	0.5068	81950.71
	62.27	0.5509	89086.78
	62.44	0.1859	30059.22
	62.54	0.3349	54154.92
	62.63	0.3590	58045.12
	62.78	0.2456	39710.43
	63.09	0.4689	75823.56
	63.21	0.2520	40754.08
	63.55	0.1457	23556.35
	63.67	0.1239	20037.74
	63.88	0.1910	30886.93
	64.13	0.4045	65401.41
IS #3	64.28	1.5399	248995.40
	64.41	0.8755	141568.10
	64.71	0.1810	29272.02
	64.89	0.3943	63755.67
	65.11	0.4886	79013.30
	65.27	0.6156	99536.41
	65.55	0.6557	106025.20
	65.69	0.5806	93877.30
	66.00	0.4775	77219.29
	66.36	0.4743	76700.63
	66.44	0.2115	34202.91
	66.63	0.0994	16076.48
	67.13	0.2879	46545.79
	67.29	0.2108	34082.31
	67.56	0.1781	28802.61
	68.16	0.0942	15234.64
	68.30	0.2723	44028.62
	68.55	0.0782	12643.19
	68.79	0.1208	19531.80
	68.97	0.1956	31625.81
	69.50	0.1780	28775.92
	70.26	0.2597	41987.54
	71.75	0.1894	30623.58
	73.03	0.1651	26700.29
	76.48	0.2621	42387.57
	77.21	0.1774	28692.71
	77.60	0.2221	35914.94
	79.65	0.1743	28189.08
	81.35	0.3720	60152.04
	83.78	0.3469	56085.82
	86.96	0.1786	28875.23

Total Area = 1.617001E+07 Total Height = 5156603 Total Amount = 0

1/16/2016

ZymaX ID	17836-14
Sample ID	MW-371

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	1.38
Aromatics / Naphthenes	5.12

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	36.82
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	9.74

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	3.82
% Isoparaffinic	26.15
% Aromatic	56.66
% Naphthenic	11.07
% Olefinic	2.29

1/16/2016

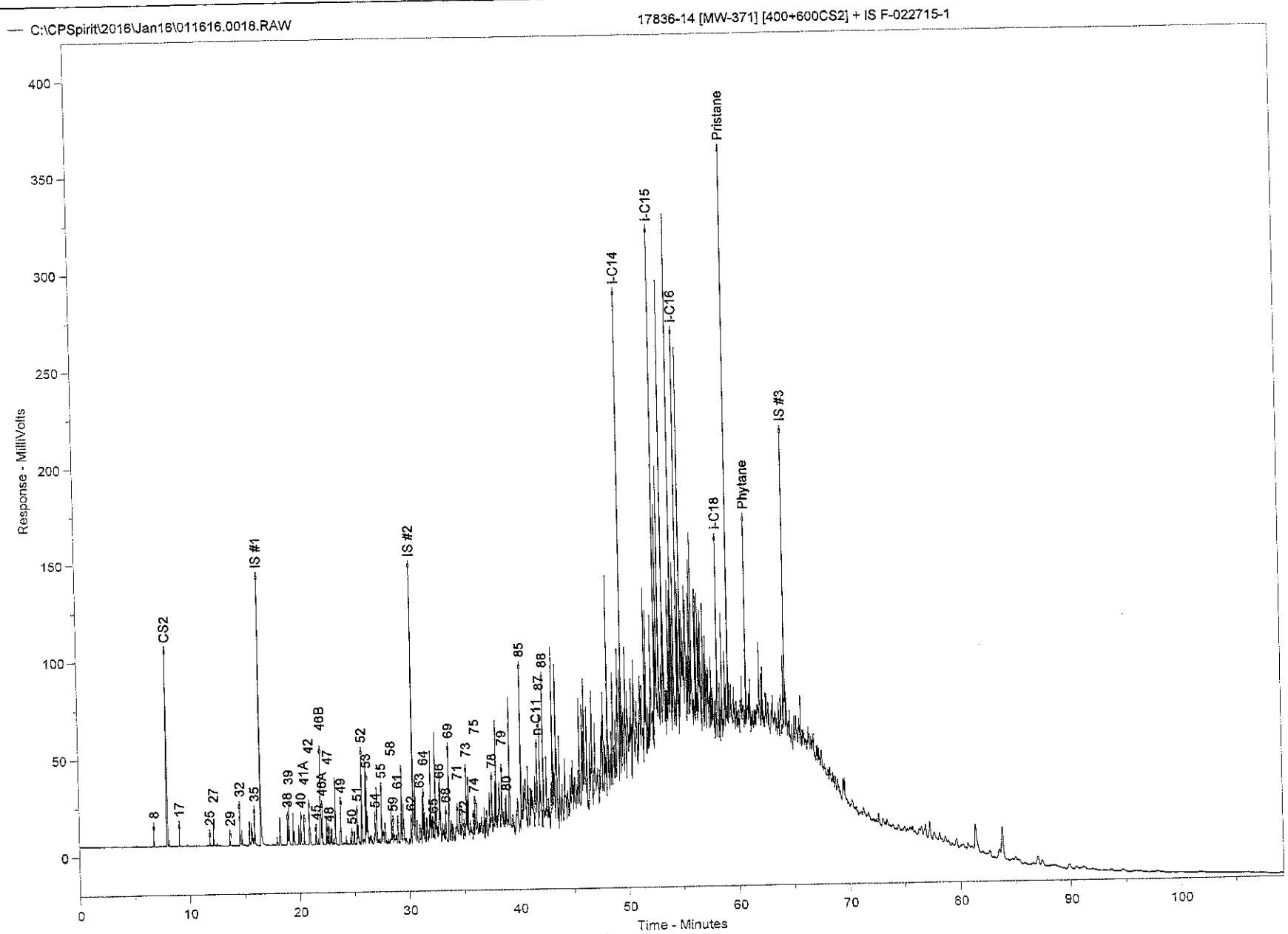
ZymaX ID		17836-14
Sample ID		MW-371
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.34
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.52
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.37
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.68
28	Benzene	0.00
29	5-Methyl-1-hexene	0.41
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	1.77
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	1.47
I.S. #1	à,à,à-Trifluorotoluene	0.00

1/16/2016

ZymaX ID		17836-14
Sample ID		MW-371
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	1.15
39	2,4-Dimethylhexane	2.08
40	2,3,4-Trimethylpentane	1.24
41	Toluene/2,3,3-Trimethylpentane	1.08
42	2,3-Dimethylhexane	2.88
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.97
46A	3-Ethyl-3-methylpentane	1.70
46B	1,4-Dimethylcyclohexane	6.27
47	3-Methylheptane	0.62
48	2,2,5-Trimethylhexane	0.50
49	n-Octane	2.60
50	2,2-Dimethylheptane	0.41
51	2,4-Dimethylheptane	1.35
52	Ethylcyclohexane	4.80
53	2,6-Dimethylheptane	2.15
54	Ethylbenzene	1.64
55	m+p Xylenes	2.42
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	1.23
59	3-Methyloctane	0.91
60	o-Xylene	0.00
61	1-Nonene	1.51
62	n-Nonane	1.22
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.68
64	3,3,5-Trimethylheptane	2.26
65	2,4,5-Trimethylheptane	1.03
66	n-Propylbenzene	3.43
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	1.73
69	1,3,5-Trimethylbenzene	6.59
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-14
Sample ID		MW-371
		Relative Area %
71	1-Methyl-2-ethylbenzene	2.69
72	3-Methylnonane	0.88
73	1,2,4-Trimethylbenzene	3.46
74	Isobutylbenzene	1.33
75	sec-Butylbenzene	3.13
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	2.69
79	1,3-Diethylbenzene	4.80
80	1,4-Diethylbenzene	1.25
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	7.01
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	5.88
88	1,2,3,5-Tetramethylbenzene	6.87
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00



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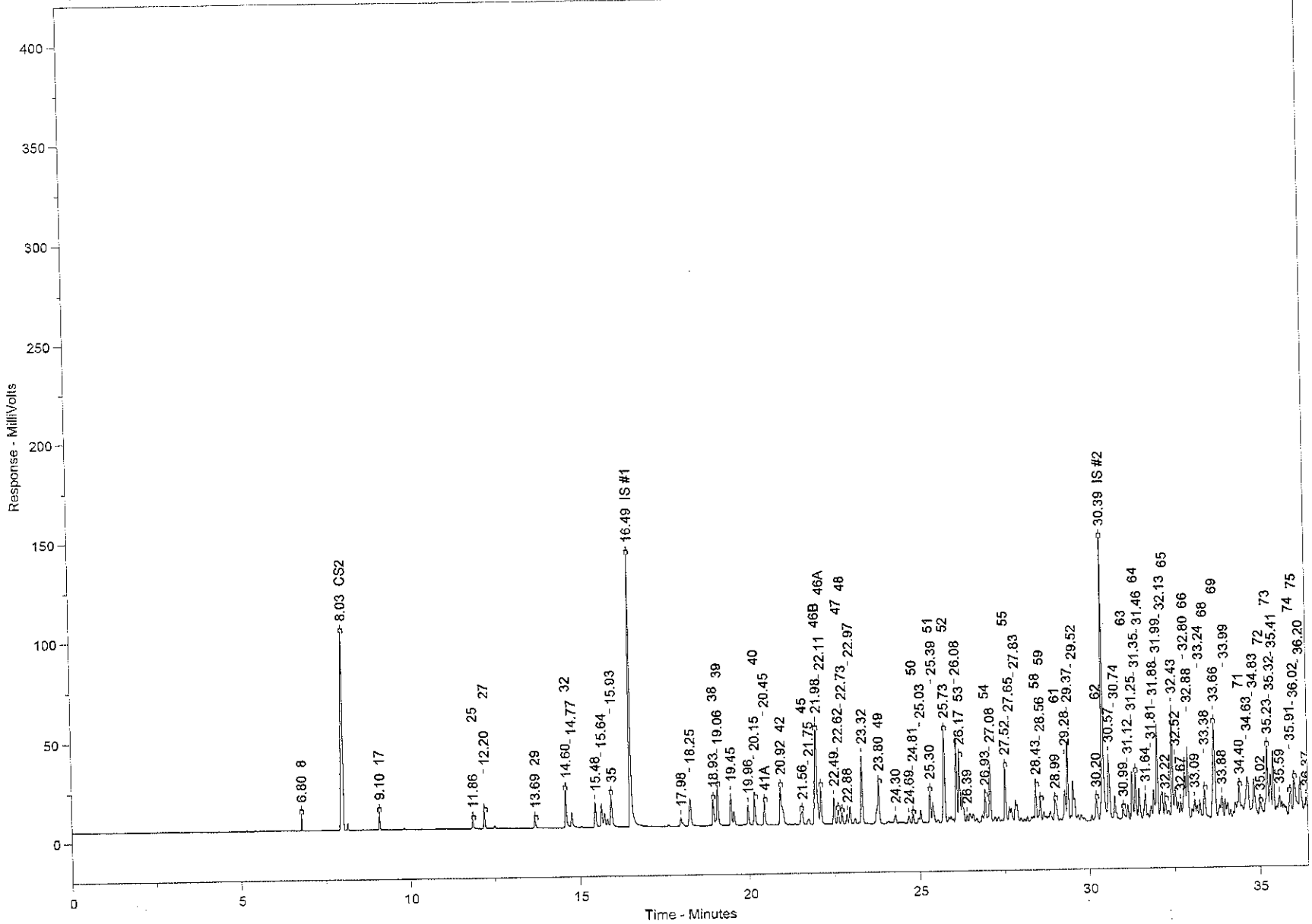
17836-14 [MW-371] [400+600CS2] + IS F-022715-1



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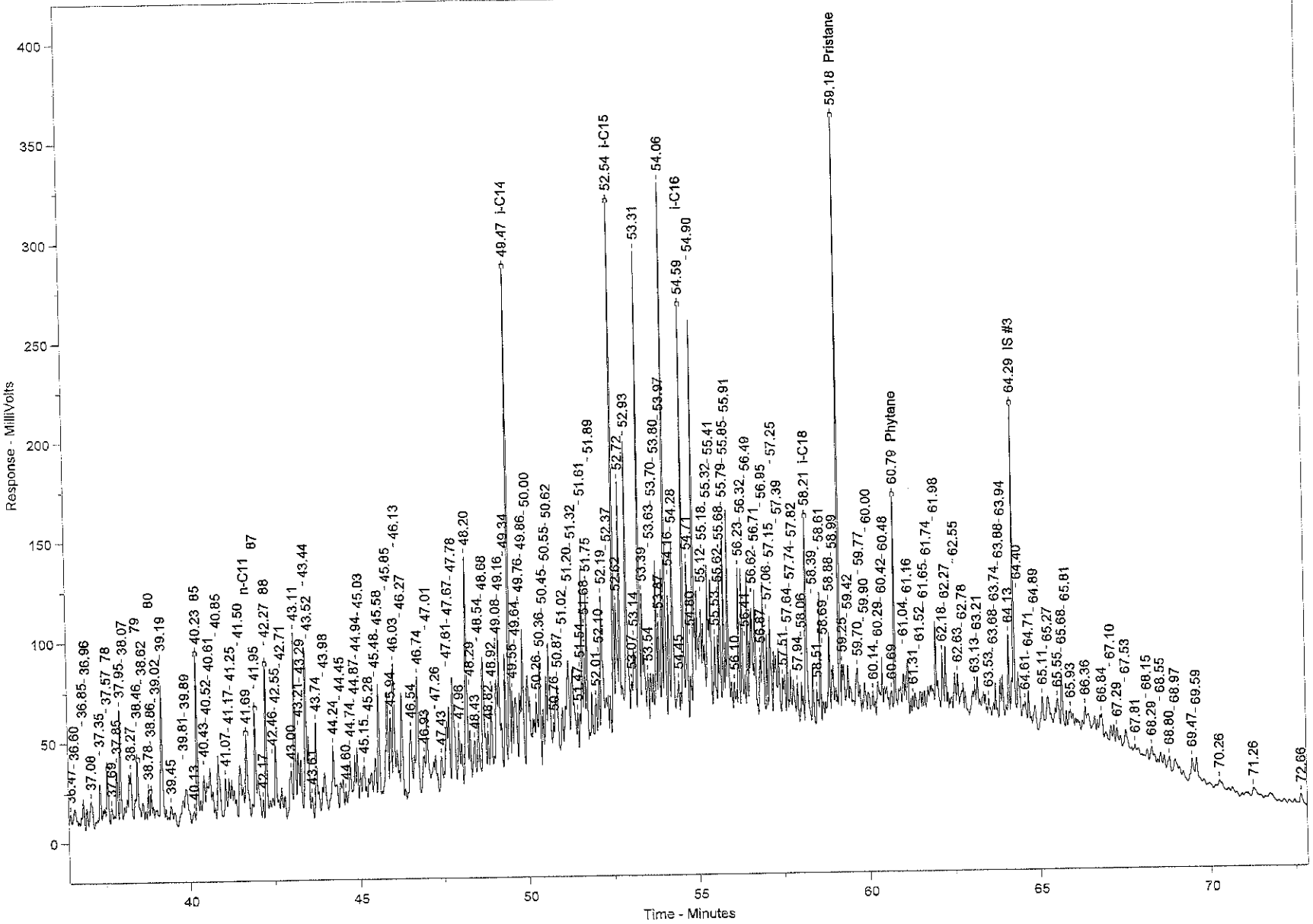
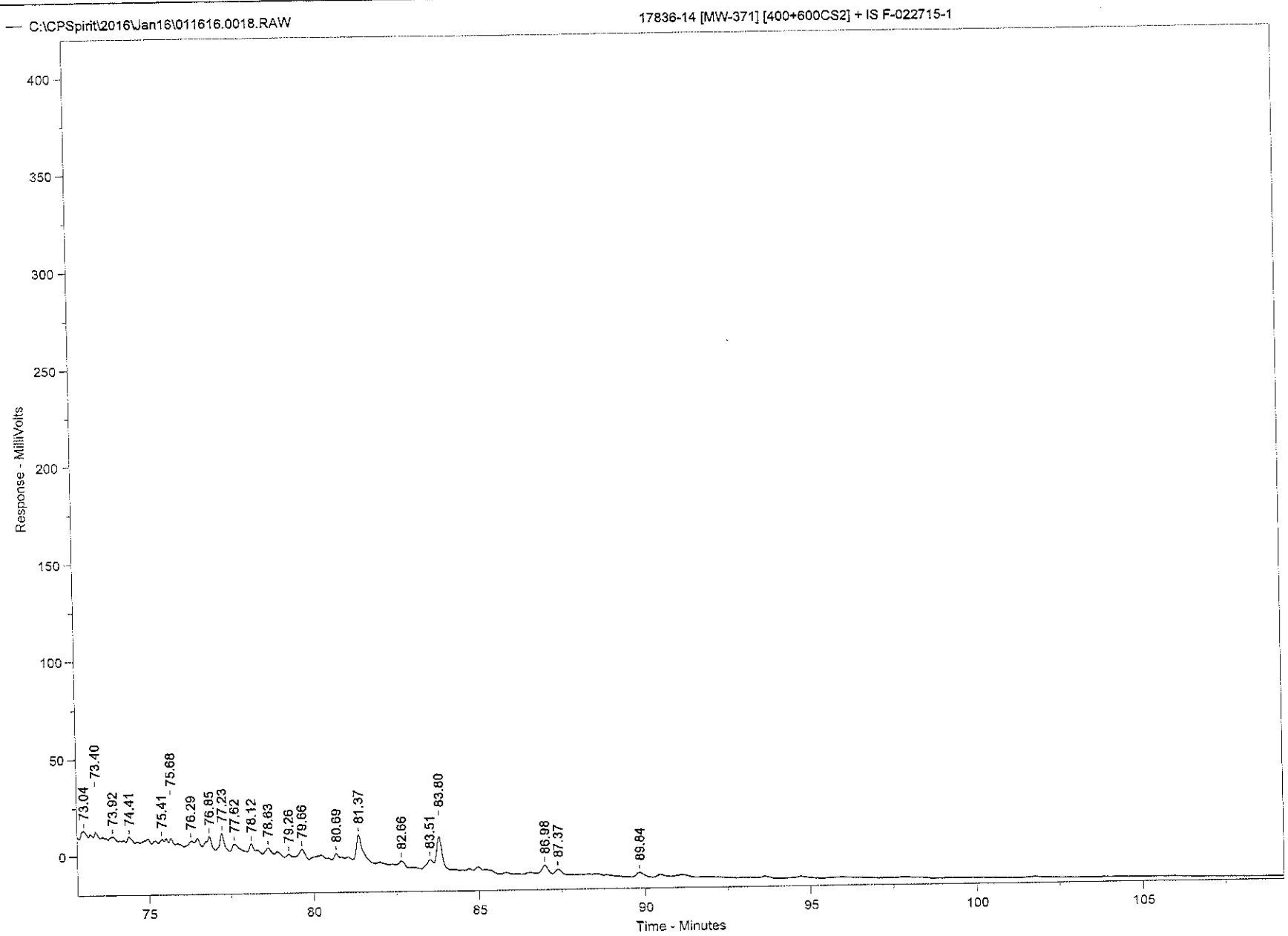
17836-14 [MW-371] [400+600CS2] + IS F-022715-1




C:\CPSpirit\2016\Jan16\011616.0018.RAW
17836-14 [MW-371] [400+600CS2] + IS F-022715-1
Response - MilliVolts
400
350
300
250
200
150
100
50
0
73.04
73.40
73.92
74.41
75.41
75.68
76.29
76.85
77.23
77.62
78.12
78.63
79.26
79.66
80.69
81.37
82.66
83.51
83.80
86.98
87.37
89.84
75
80
85
90
95
100
105
Time - Minutes

Sample Name = **17836-14 [MW-371] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0018.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/18/2016 6:25:28 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
8	6.80	0.0274	11143.31
CS2	8.03	0.9431	383137.80
17	9.10	0.0416	16891.83
25	11.86	0.0298	12114.92
27	12.20	0.0544	22117.68
29	13.69	0.0325	13207.24
32	14.60	0.1413	57397.50
	14.77	0.0644	26180.71
	15.46	0.0877	35632.18
	15.64	0.0629	25560.22
35	15.93	0.1174	47708.32
IS #1	16.49	1.0333	419763.50
	17.98	0.0394	15995.13
	18.25	0.1301	52843.98
38	18.93	0.0917	37251.82
39	19.06	0.1663	67552.04
	19.45	0.0996	40474.49
	19.96	0.0688	27929.73
40	20.15	0.0989	40164.67
41A	20.45	0.0859	34886.90
42	20.92	0.2297	93303.34
45	21.56	0.0778	31585.59
	21.75	0.0276	11231.60
46B	21.98	0.5006	203380.50
46A	22.11	0.1360	55231.87
	22.49	0.0934	37962.12
47	22.62	0.0495	20111.11
48	22.73	0.0400	16240.72
	22.88	0.0328	13334.28
	22.97	0.0585	23778.72
	23.32	0.2298	93337.95
49	23.80	0.2076	84349.46
	24.30	0.0370	15040.55
	24.69	0.0289	11727.50
50	24.81	0.0326	13227.26
	25.03	0.0317	12875.38
51	25.30	0.1076	43718.57
	25.39	0.0909	36934.63
52	25.73	0.3833	155700.60
	26.08	0.2738	111246.80
53	26.17	0.1720	69871.59
	26.39	0.0180	7308.42
54	26.93	0.1308	53124.80
	27.08	0.2155	87556.57
55	27.52	0.1933	78520.30
	27.65	0.0967	39287.55
	27.83	0.1260	51198.91
58	28.43	0.0980	39801.74
59	28.56	0.0729	29621.08
61	28.99	0.1208	49084.14
	29.28	0.1208	49082.84
	29.37	0.2653	107782.80
	29.52	0.1894	76939.29
62	30.20	0.0974	39567.04
IS #2	30.39	1.1199	454942.70

Peak Name	Ret. Time	Area %	Area
	30.57	0.3161	128405.20
	30.74	0.1069	43438.75
63	30.99	0.0546	22164.39
	31.12	0.0556	22589.25
	31.25	0.1824	74101.30
64	31.35	0.1800	73111.63
	31.46	0.1329	53997.95
	31.64	0.1423	57817.31
	31.81	0.0541	21963.12
	31.88	0.1045	42454.61
	31.99	0.3568	144933.40
	32.13	0.1671	67891.60
65	32.22	0.0821	33351.84
	32.43	0.3829	155541.70
	32.52	0.1505	61156.09
	32.67	0.0613	24892.51
66	32.80	0.2740	111320.50
	32.88	0.2714	110239.10
	33.09	0.1076	43697.28
	33.24	0.0752	30551.20
68	33.38	0.1377	55951.63
69	33.66	0.5259	213653.70
	33.88	0.1368	55583.56
	33.99	0.0375	15243.03
71	34.40	0.2147	87202.08
	34.63	0.2877	116866.60
	34.83	0.1956	79468.81
72	35.02	0.0704	28619.07
73	35.23	0.2763	112260.40
	35.32	0.1415	57476.34
	35.41	0.2151	87375.16
	35.59	0.0437	17751.83
74	35.91	0.1058	42970.28
75	36.02	0.2496	101376.90
	36.20	0.2025	82256.37
	36.37	0.0842	34189.96
	36.47	0.0883	35866.11
	36.60	0.2076	84337.59
	36.85	0.1156	46981.08
	36.96	0.0792	32155.08
	37.08	0.1967	79886.39
	37.35	0.1242	50468.45
78	37.57	0.2146	87177.34
	37.69	0.0644	26173.73
	37.85	0.2082	84589.65
	37.95	0.3976	161514.60
	38.07	0.0677	27507.07
	38.27	0.3400	138102.40
79	38.46	0.3828	155487.70
	38.62	0.0866	35200.22
	38.78	0.0972	39504.87
80	38.86	0.0994	40379.58
	39.02	0.0751	30527.11
	39.19	0.6139	249386.60
	39.45	0.0600	24366.67
	39.81	0.1990	80859.48
	39.89	0.3092	125618.30
	40.13	0.0510	20710.13
85	40.23	0.5599	227437.00
	40.43	0.1436	58341.50
	40.52	0.1255	50971.28
	40.61	0.1157	47004.70
	40.85	0.3462	140642.60
	41.07	0.1259	51135.29
	41.17	0.0991	40260.20
	41.25	0.0677	27501.18
	41.50	0.2841	115419.60

Peak Name	Ret. Time	Area %	Area
n-C11	41.69	0.4787	194457.90
87	41.95	0.4691	190577.30
	42.17	0.0495	20094.92
88	42.27	0.5481	222646.80
	42.46	0.0752	30556.43
	42.55	0.3009	122219.80
	42.71	0.0724	29391.52
	43.00	0.3434	139490.10
	43.11	0.7185	291886.90
	43.21	0.3064	124482.70
	43.29	0.2295	93250.40
	43.44	0.8131	330329.80
	43.52	0.2944	119581.80
	43.61	0.0879	35692.90
	43.74	0.4548	184756.00
	43.98	0.3311	134506.30
	44.24	0.5244	213013.00
	44.45	0.0529	21477.88
	44.60	0.0441	17929.07
	44.74	0.2013	81764.92
	44.87	0.1842	74825.45
	44.94	0.1740	70681.95
	45.03	0.0766	31099.76
	45.15	0.1400	56890.51
	45.28	0.0289	11742.45
	45.48	0.1500	60946.91
	45.58	0.4292	174350.30
	45.85	0.5582	226778.20
	45.94	0.3391	137754.40
	46.03	0.5660	229912.50
	46.13	0.2636	107099.70
	46.27	0.4289	174227.70
	46.54	0.3851	156460.70
	46.74	0.7860	319291.60
	46.93	0.2389	97031.27
	47.01	0.4575	185865.40
	47.26	0.3671	149133.50
	47.43	0.2278	92560.47
	47.61	0.3562	144682.50
	47.67	0.3135	127360.80
	47.78	0.7189	292026.80
	47.96	0.2886	117250.60
	48.20	1.0021	407087.30
	48.29	0.2177	88426.48
	48.43	0.2458	99835.47
	48.54	0.3199	129949.40
	48.68	0.7560	307110.60
	48.82	0.1604	65157.37
	48.92	0.3432	139407.90
	49.08	0.5229	212437.50
	49.16	0.7292	296234.90
	49.34	0.4808	195326.40
i-C14	49.47	1.5587	633202.40
	49.55	0.2641	107301.30
	49.64	0.5449	221341.40
	49.76	0.4589	186424.70
	49.86	0.5348	217245.30
	50.00	0.8412	341737.00
	50.26	0.3289	133623.60
	50.36	0.4445	180571.30
	50.45	0.1887	76671.13
	50.55	0.3864	156966.40
	50.62	0.7226	293543.60
	50.76	0.1550	62955.37
	50.87	0.5909	240043.40
	51.02	0.2642	107322.30
	51.20	0.8541	346962.00

Peak Name	Ret. Time	Area %	Area
	51.32	0.7769	315620.80
	51.47	0.1348	54761.29
	51.54	0.1528	62066.38
	51.61	0.5733	232907.50
	51.68	0.3859	156766.20
	51.75	0.5937	241175.40
	51.89	0.2869	116541.60
	52.01	0.2371	96335.56
	52.10	0.3286	133497.50
	52.19	0.8906	361786.70
	52.37	0.3439	139702.00
i-C15	52.54	1.5776	640894.90
	52.62	0.7861	319335.60
	52.72	1.1799	479307.30
	52.93	1.5524	630639.80
	53.07	0.2603	105743.70
	53.14	0.7170	291288.90
	53.31	1.6374	665173.50
	53.39	0.9287	377284.50
	53.54	0.3120	126743.70
	53.63	0.2970	120670.50
	53.70	0.2349	95430.13
	53.80	0.7122	289312.60
	53.87	0.5232	212557.10
	53.97	0.6281	255151.50
	54.06	1.6581	673564.40
	54.16	0.5685	230933.00
	54.28	0.9851	400203.30
	54.45	0.3499	142146.60
i-C16	54.59	1.2768	518689.80
	54.71	0.7153	290580.50
	54.80	0.2924	118782.70
	54.90	2.0107	816834.70
	55.12	0.5673	230473.40
	55.18	0.6556	266318.30
	55.32	0.8575	348344.20
	55.41	0.4916	199695.50
	55.53	0.4344	176456.00
	55.62	0.2474	100498.70
	55.68	0.4757	193253.60
	55.79	0.5629	228662.80
	55.85	0.2329	94598.41
	55.91	0.7070	287205.70
	56.10	0.1496	60781.93
	56.23	0.4664	189450.70
	56.32	0.4811	195423.60
	56.41	0.1497	60823.84
	56.49	0.3831	155623.10
	56.62	0.8225	334118.70
	56.71	0.4074	165486.30
	56.87	0.2335	94865.24
	56.95	0.5166	209861.20
	57.06	0.1777	72180.85
	57.15	0.4149	168536.00
	57.25	0.0826	33542.76
	57.39	0.1389	56415.05
	57.51	0.0486	19732.55
	57.64	0.2214	89943.93
	57.74	0.1254	50957.91
	57.82	0.1687	68541.49
	57.94	0.1298	52710.07
	58.06	0.0575	23361.08
i-C18	58.21	0.8224	334103.00
	58.39	0.1996	81093.91
	58.51	0.1658	67359.71
	58.61	0.3217	130704.20
	58.69	0.1586	64437.31

Peak Name	Ret. Time	Area %	Area
	58.88	0.3734	151680.40
	58.99	0.5148	209138.40
Pristane	59.18	1.6052	652100.10
	59.25	0.3826	155431.10
	59.42	0.4456	181038.50
	59.70	0.3237	131496.70
	59.77	0.1888	76683.12
	59.90	0.1947	79085.34
	60.00	0.1400	56872.31
	60.14	0.1210	49161.34
	60.29	0.2691	109317.00
	60.42	0.1731	70314.15
	60.48	0.3012	122372.00
	60.69	0.1287	52286.61
Phytane	60.79	0.6513	264586.10
	61.04	0.1648	66951.12
	61.16	0.1656	67262.28
	61.31	0.0898	36484.73
	61.52	0.0776	31525.33
	61.65	0.0519	21072.36
	61.74	0.0388	15781.28
	61.98	0.3026	122907.00
	62.18	0.1836	74598.11
	62.27	0.2005	81453.49
	62.55	0.1259	51128.85
	62.63	0.1232	50045.95
	62.78	0.1431	58139.30
	63.13	0.2010	81647.29
	63.21	0.1449	58860.44
	63.53	0.0583	23680.11
	63.68	0.0528	21433.41
	63.74	0.1181	47973.74
	63.88	0.1332	54100.01
	63.94	0.1649	67001.66
	64.13	0.2768	112443.80
IS #3	64.29	1.1074	449882.30
	64.40	0.3250	132013.40
	64.61	0.2122	86214.52
	64.71	0.1791	72767.78
	64.89	0.1548	62890.32
	65.11	0.2022	82141.34
	65.27	0.3039	123468.50
	65.55	0.2561	104038.40
	65.68	0.2010	81663.52
	65.81	0.0361	14667.41
	65.93	0.0607	24647.05
	66.36	0.2760	112119.40
	66.84	0.1674	67986.77
	67.10	0.0459	18654.12
	67.29	0.0516	20945.69
	67.53	0.1194	48489.76
	67.81	0.0202	8210.54
	68.15	0.0368	14954.16
	68.29	0.1095	44492.84
	68.55	0.0383	15564.61
	68.80	0.0711	28883.44
	68.97	0.0668	27135.68
	69.47	0.1536	62383.39
	69.59	0.1352	54906.05
	70.26	0.0624	25357.01
	71.26	0.1083	43979.43
	72.66	0.0677	27493.68
	73.04	0.1163	47226.97
	73.40	0.0903	36678.59
	73.92	0.0711	28900.45
	74.41	0.0652	26480.11
	75.41	0.0350	14227.24

Peak Name	Ret. Time	Area %	Area
	75.68	0.0464	18852.04
	76.29	0.0689	27974.50
	76.85	0.1762	71566.63
	77.23	0.1967	79889.70
	77.62	0.1200	48766.79
	78.12	0.0637	25869.23
	78.63	0.0719	29217.90
	79.26	0.0424	17226.71
	79.66	0.1364	55416.50
	80.69	0.0485	19701.13
	81.37	0.4083	165858.90
	82.66	0.0593	24092.18
	83.51	0.1495	60733.78
	83.80	0.4949	201055.00
	86.98	0.1360	55234.20
	87.37	0.0839	34085.75
	89.84	0.0942	38266.25

Total Area = 4.062363E+07 Total Height = 1.132216E+07 Total Amount = 3

1/16/2016

ZymaX ID	17836-15
Sample ID	MW-326

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.00
Aromatics / Naphthenes	0.00

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.00
% Isoparaffinic	0.00
% Aromatic	0.00
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-15
Sample ID		MW-326
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

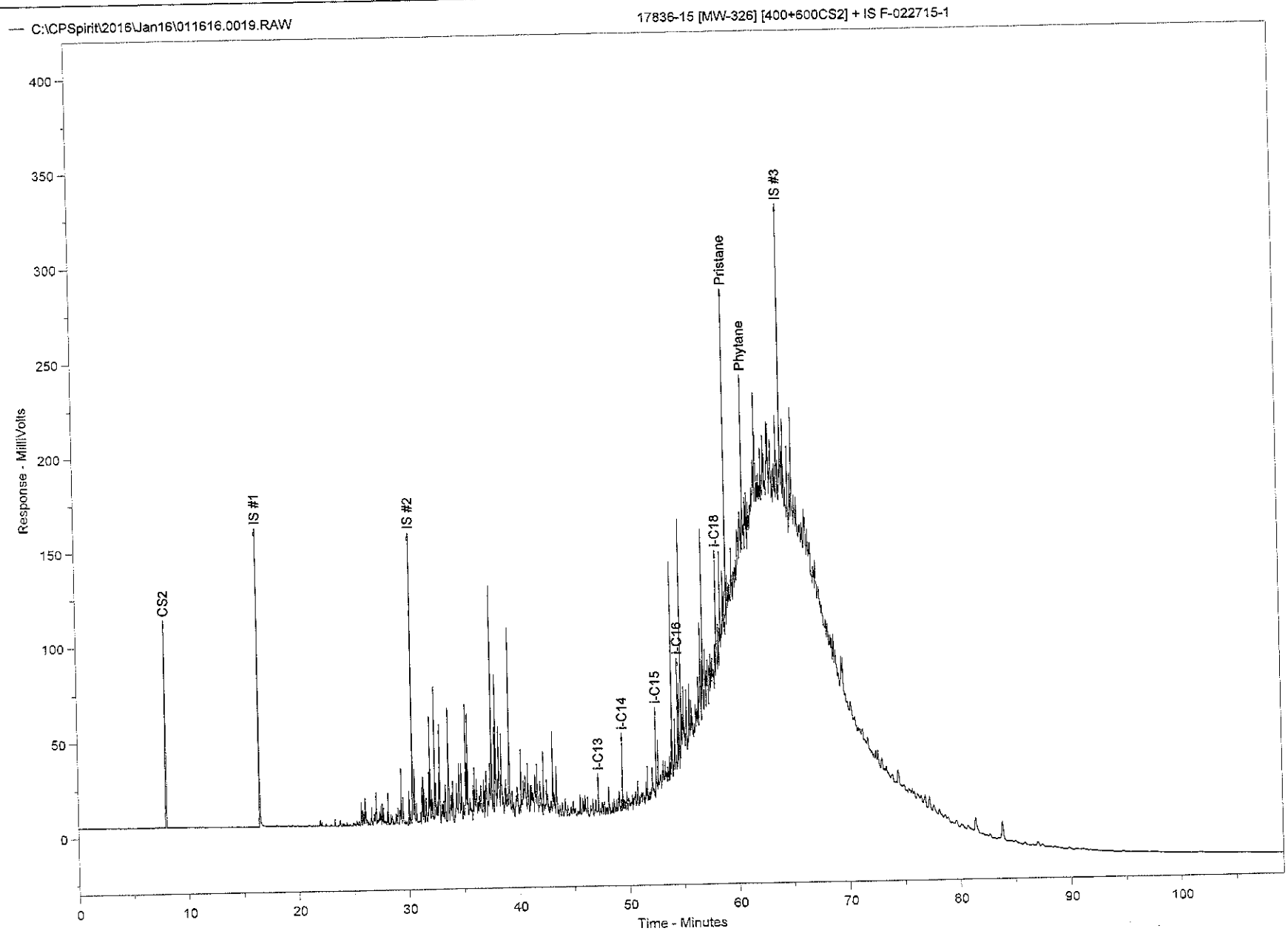
1/16/2016

ZymaX ID		17836-15
Sample ID		MW-326
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	0.00
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-15
Sample ID		MW-326
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	0.00
79	1,3-Diethylbenzene	0.00
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	0.00
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.00
88	1,2,3,5-Tetramethylbenzene	0.00
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report



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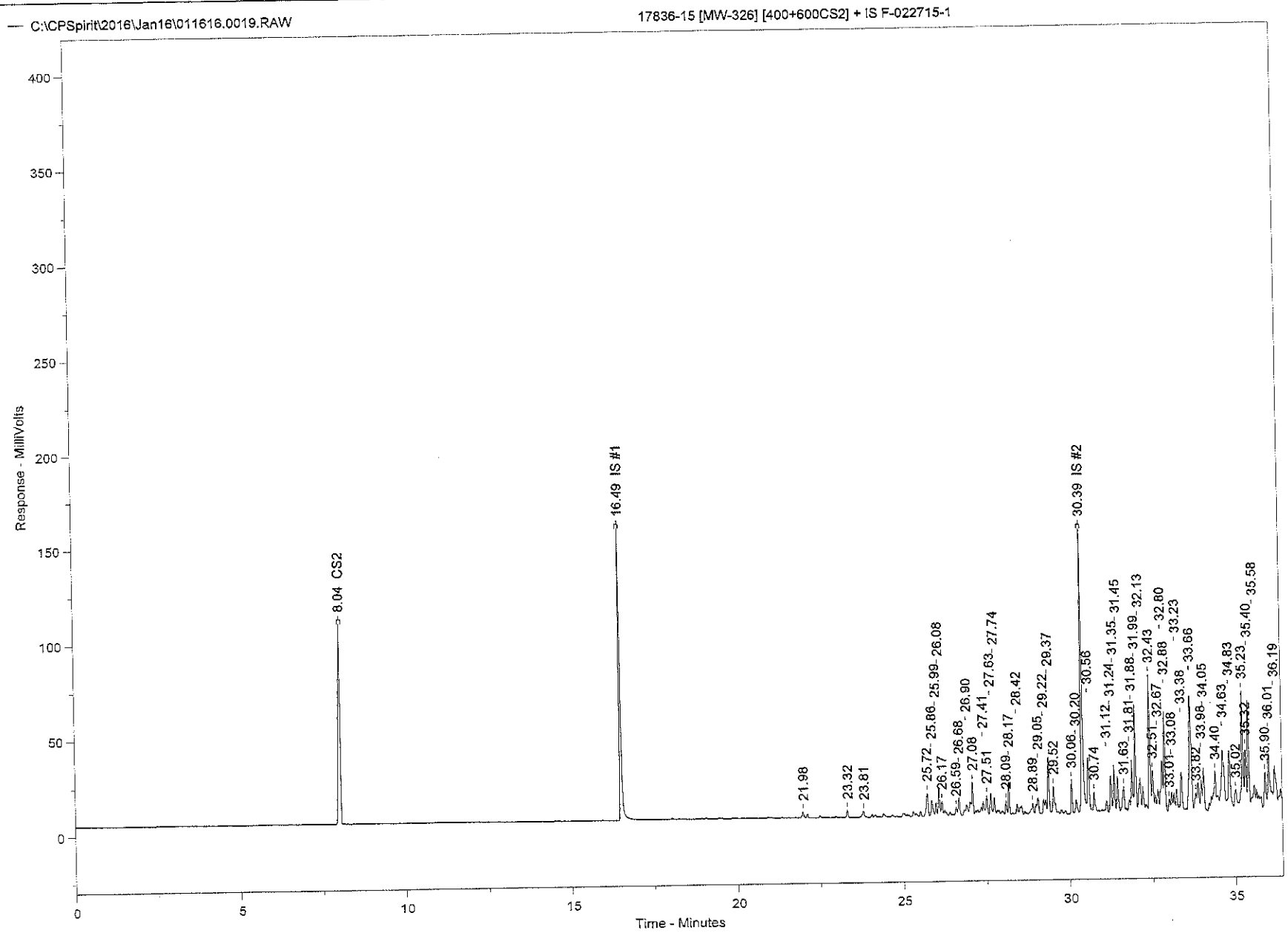
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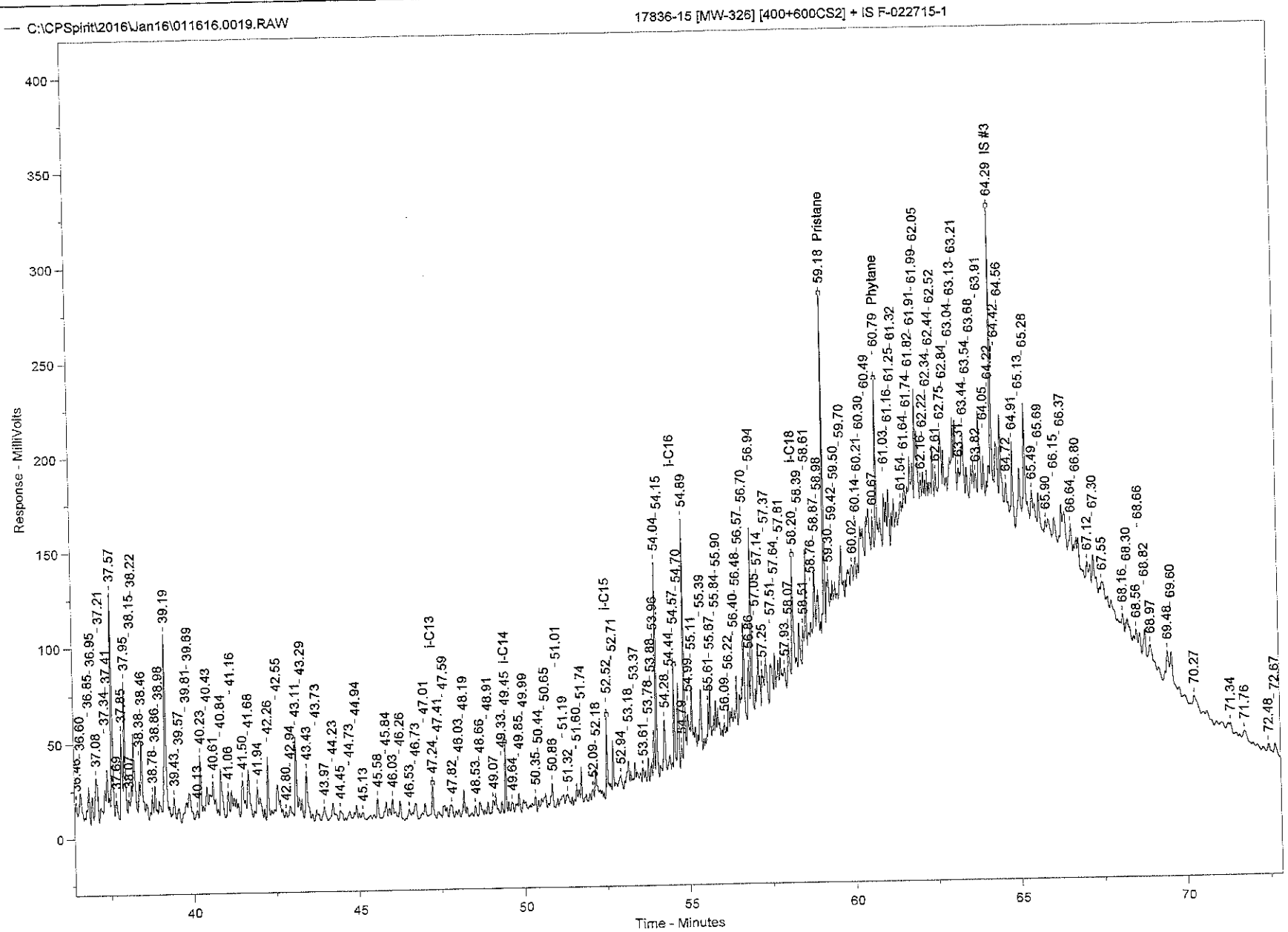
17836-15 [MW-326] [400+600CS2] + IS F-022715-1
Response - MilliVolts
Time - Minutes
8.04 CS2
16.49 IS #1
30.39 IS #2
21.98
23.32
23.81
25.72
25.86
25.99
26.08
26.17
26.59
26.68
26.90
27.08
27.41
27.51
27.63
27.74
28.09
28.17
28.42
28.89
29.05
29.22
29.37
29.52
30.06
30.20
30.56
30.74
31.12
31.24
31.35
31.45
31.63
31.81
31.88
31.99
32.13
32.43
32.51
32.67
32.80
32.88
33.01
33.08
33.23
33.38
33.66
33.82
33.98
34.05
34.40
34.63
34.83
35.02
35.23
35.32
35.40
35.58
35.90
36.01
36.19



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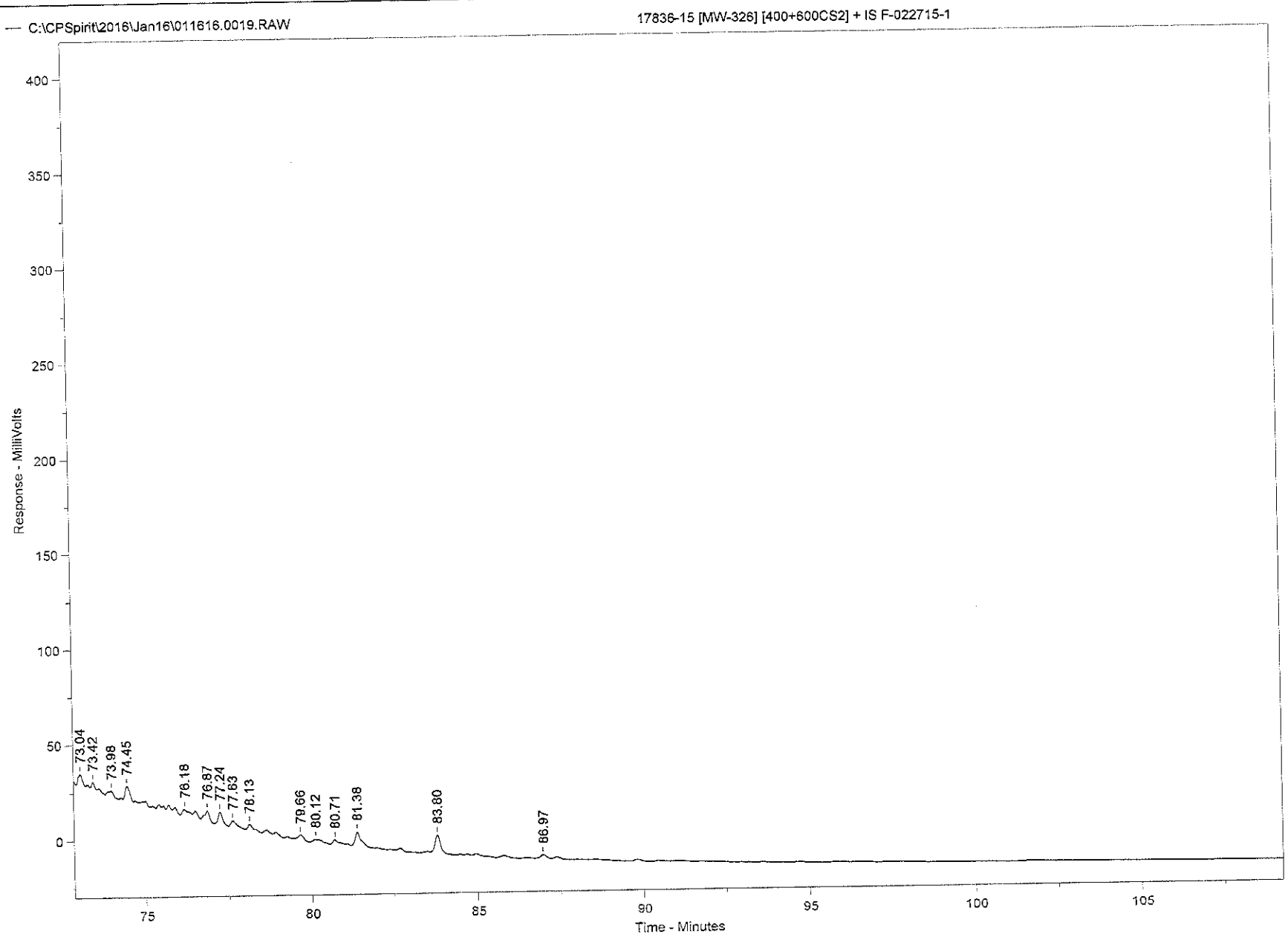
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17836-15 [MW-326] [400+600CS2] + IS F-022715-1
Response - MilliVolts
400
350
300
250
200
150
100
50
0
73.04
73.42
73.98
74.45
76.18
76.87
77.24
77.63
78.13
79.66
80.12
80.71
81.38
83.80
86.97
75
80
85
90
95
100
105
Time - Minutes

Sample Name = **17836-15 [MW-326] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0019.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/18/2016 8:28:55 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.04	1.7472	429082.70
IS #1	16.49	1.9045	467706.60
	21.98	0.0414	10168.18
	23.32	0.0425	10431.36
	23.81	0.0579	14231.17
	25.72	0.1878	46128.95
	25.86	0.1157	28424.66
	25.99	0.0631	15484.70
	26.08	0.1492	36650.84
	26.17	0.0768	18867.47
	26.59	0.0522	12809.02
	26.68	0.1181	29007.75
	26.90	0.1210	29714.24
	27.08	0.2860	70227.10
	27.41	0.0558	13697.68
	27.51	0.1071	26307.62
	27.63	0.1310	32171.02
	27.74	0.0946	23233.13
	28.09	0.0747	18354.61
	28.17	0.1817	44612.32
	28.42	0.0455	11176.28
	28.89	0.0966	23721.04
	29.05	0.1651	40547.79
	29.22	0.0875	21480.60
	29.37	0.3295	80926.03
	29.52	0.2058	50552.15
	30.06	0.1906	46817.41
	30.20	0.1093	26853.68
IS #2	30.39	1.8964	465715.20
	30.56	0.4558	111947.10
	30.74	0.1378	33837.37
	31.12	0.0592	14526.67
	31.24	0.2458	60372.82
	31.35	0.2950	72456.40
	31.45	0.2396	58850.22
	31.63	0.2276	55890.48
	31.81	0.0723	17757.96
	31.88	0.2919	71676.69
	31.99	0.6260	153734.90
	32.13	0.2297	56410.44
	32.43	0.7630	187371.20
	32.51	0.2879	70710.55
	32.67	0.1278	31386.76
	32.80	0.4320	106085.10
	32.88	0.6272	154018.20
	33.01	0.0769	18887.74
	33.08	0.1232	30257.74
	33.23	0.1638	40233.20
	33.38	0.3046	74802.46
	33.66	1.1622	285401.50
	33.82	0.1633	40105.29
	33.98	0.1941	47659.86
	34.05	0.2688	66023.34
	34.40	0.1561	38332.72
	34.63	0.5905	145019.30

Peak Name	Ret. Time	Area %	Area
	34.83	0.4408	108261.10
	35.02	0.1626	39925.89
	35.23	0.7612	186926.80
	35.32	0.3444	84584.90
	35.40	0.6149	150996.00
	35.58	0.0835	20507.79
	35.90	0.2692	66114.29
	36.01	0.5675	139370.60
	36.19	0.4398	107996.50
	36.46	0.2258	55450.73
	36.60	0.4551	111772.30
	36.85	0.3618	88858.09
	36.95	0.1982	48684.37
	37.08	0.5969	146578.70
	37.21	0.2104	51675.64
	37.34	0.2923	71786.18
	37.41	0.5876	144313.80
	37.57	1.6222	398369.40
	37.69	0.2721	66828.26
	37.85	0.7323	179828.20
	37.95	1.0108	248232.10
	38.07	0.2037	50014.73
	38.15	0.2939	72181.10
	38.22	0.8955	219912.80
	38.38	0.3061	75181.12
	38.46	0.7451	182979.50
	38.78	0.2861	70254.39
	38.86	0.3411	83779.09
	38.98	0.3151	77373.13
	39.19	1.5842	389048.60
	39.43	0.2536	62287.16
	39.57	0.1594	39148.87
	39.81	0.2805	68891.87
	39.89	0.3868	94997.83
	40.13	0.0722	17737.30
	40.23	0.3967	97433.09
	40.43	0.1930	47387.32
	40.61	0.1451	35636.15
	40.84	0.4250	104378.10
	41.06	0.1476	36237.50
	41.16	0.0964	23663.30
	41.50	0.4697	115341.50
	41.68	0.4917	120760.60
	41.94	0.1205	29583.25
	42.26	0.3821	93836.55
	42.55	0.2926	71856.86
	42.80	0.0360	8837.57
	42.94	0.1502	36888.48
	43.11	0.5715	140360.30
	43.29	0.1183	29049.46
	43.43	0.4508	110696.30
	43.73	0.1370	33638.57
	43.97	0.1752	43022.40
	44.23	0.1868	45869.09
	44.45	0.1276	31342.48
	44.73	0.0997	24481.26
	44.94	0.0996	24456.66
	45.13	0.0830	20392.50
	45.58	0.1453	35671.16
	45.84	0.1275	31313.33
	46.03	0.0905	22231.43
	46.26	0.1252	30737.63
	46.53	0.0944	23171.38
	46.73	0.1804	44307.09
	47.01	0.1990	48874.25
	47.24	0.2693	66124.48
i-C13	47.41	0.0852	20916.52

Peak Name	Ret. Time	Area %	Area
	47.59	0.1355	33270.32
	47.82	0.1722	42293.34
	48.03	0.0993	24387.21
	48.19	0.1640	40264.45
	48.53	0.0709	17418.87
	48.66	0.1498	36798.93
	48.91	0.0780	19144.38
	49.07	0.0605	14846.24
	49.33	0.0822	20175.18
i-C14	49.45	0.3668	90071.76
	49.64	0.1108	27200.29
	49.85	0.1294	31773.63
	49.99	0.2059	50558.81
	50.35	0.1290	31686.05
	50.44	0.0650	15952.68
	50.65	0.3060	75144.29
	50.86	0.2386	58602.57
	51.01	0.0603	14805.66
	51.19	0.1876	46064.68
	51.32	0.1636	40173.66
	51.60	0.1088	26729.18
	51.74	0.1766	43367.34
	52.09	0.0665	16322.15
	52.18	0.1931	47413.96
i-C15	52.52	0.5678	139445.40
	52.71	0.3785	92949.45
	52.94	0.2069	50807.39
	53.18	0.2343	57533.50
	53.37	0.0715	17554.35
	53.61	0.0848	20827.30
	53.78	0.1109	27244.53
	53.88	0.1182	29037.19
	53.96	0.2855	70114.97
	54.04	1.0220	250980.50
	54.15	0.0850	20875.81
	54.28	0.4636	113845.20
	54.44	0.1725	42372.61
i-C16	54.57	0.5112	125552.90
	54.70	0.5586	137188.60
	54.79	0.1538	37768.96
	54.89	1.2131	297922.20
	54.99	0.5535	135929.90
	55.11	0.5084	124849.60
	55.39	0.6137	150720.00
	55.61	0.2527	62055.70
	55.67	0.3910	96029.71
	55.84	0.1886	46317.43
	55.90	0.2926	71851.24
	56.09	0.0738	18123.76
	56.22	0.2619	64324.64
	56.40	0.1215	29826.31
	56.48	0.2459	60378.01
	56.57	0.2876	70637.46
	56.70	0.7430	182477.30
	56.86	0.4291	105371.30
	56.94	1.0416	255806.60
	57.05	0.1003	24630.46
	57.14	0.5831	143193.20
	57.25	0.3359	82493.22
	57.37	0.4652	114239.60
	57.51	0.4307	105769.80
	57.64	0.3212	78880.80
	57.81	0.3149	77345.48
	57.93	0.1902	46700.97
	58.07	0.3416	83899.74
i-C18	58.20	0.9922	243667.20
	58.39	0.3226	79218.60

Peak Name	Ret. Time	Area %	Area
	58.51	0.2080	51070.95
	58.61	0.5991	147135.70
	58.76	0.3669	90107.80
	58.87	0.5578	136983.10
	58.98	0.4584	112572.20
Pristane	59.18	1.6523	405764.30
	59.30	0.5431	133384.20
	59.42	0.3350	82263.13
	59.50	0.2110	51818.46
	59.70	0.6129	150520.50
	60.02	0.1607	39477.03
	60.14	0.1568	38512.50
	60.21	0.0539	13232.42
	60.30	0.6028	148047.20
	60.49	0.1099	26990.63
	60.67	0.2267	55675.57
Phytane	60.79	0.9521	233822.10
	61.03	0.3581	87940.71
	61.16	0.3149	77330.54
	61.25	0.1297	31848.16
	61.32	0.1941	47672.16
	61.54	0.2777	68203.99
	61.64	0.3115	76496.74
	61.74	0.3496	85848.30
	61.82	0.4507	110675.40
	61.91	0.5511	135346.50
	61.99	0.7524	184778.40
	62.05	0.7556	185564.20
	62.16	0.3301	81074.84
	62.22	0.3745	91971.95
	62.34	0.2923	71785.23
	62.44	0.3201	78599.11
	62.52	0.5770	141712.20
	62.61	0.4890	120093.10
	62.75	1.1814	290118.00
	62.84	0.5628	138207.00
	63.04	0.7390	181484.70
	63.13	0.9766	239821.70
	63.21	0.9240	226917.00
	63.31	0.6723	165095.40
	63.44	1.1301	277536.10
	63.54	0.6038	148274.20
	63.68	0.5506	135208.20
	63.82	0.5474	134422.20
	63.91	1.2239	300566.80
	64.05	0.6461	158669.00
	64.22	0.5713	140288.40
IS #3	64.29	2.0471	502729.50
	64.42	1.0651	261556.10
	64.56	1.1805	289903.80
	64.72	0.5920	145386.80
	64.91	0.6874	168804.10
	65.13	0.6219	152716.30
	65.28	1.0458	256826.10
	65.49	0.1362	33436.31
	65.69	0.2185	53657.39
	65.90	0.0531	13029.66
	66.15	0.2082	51118.55
	66.37	0.1200	29462.80
	66.64	0.2290	56247.21
	66.80	0.0556	13651.53
	67.12	0.1382	33948.87
	67.30	0.3791	93089.84
	67.55	0.1374	33733.31
	68.16	0.0902	22162.87
	68.30	0.2426	59572.64
	68.56	0.1347	33076.37

Peak Name	Ret. Time	Area %	Area
	68.66	0.1494	36683.10
	68.82	0.2469	60622.45
	68.97	0.3005	73805.20
	69.48	0.4220	103646.40
	69.60	0.3398	83436.30
	70.27	0.1879	46154.12
	71.34	0.1373	33728.26
	71.76	0.1390	34147.41
	72.48	0.1080	26510.93
	72.67	0.1817	44615.94
	73.04	0.2098	51534.94
	73.42	0.0752	18479.08
	73.98	0.1456	35755.55
	74.45	0.2871	70505.88
	76.18	0.2149	52772.43
	76.87	0.2592	63657.34
	77.24	0.2533	62217.03
	77.63	0.1821	44715.10
	78.13	0.1450	35617.45
	79.66	0.1284	31541.41
	80.12	0.1400	34385.21
	80.71	0.1740	42735.01
	81.38	0.4033	99047.95
	83.80	0.4258	104562.60
	86.97	0.0925	22716.72

Total Area = 2.455805E+07 Total Height = 6541674 Total Amount = 0

1/16/2016

ZymaX ID	17836-16
Sample ID	MW-170

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.00
Aromatics / Naphthenes	0.00

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.00
% Isoparaffinic	0.00
% Aromatic	0.00
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-16
Sample ID		MW-170
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

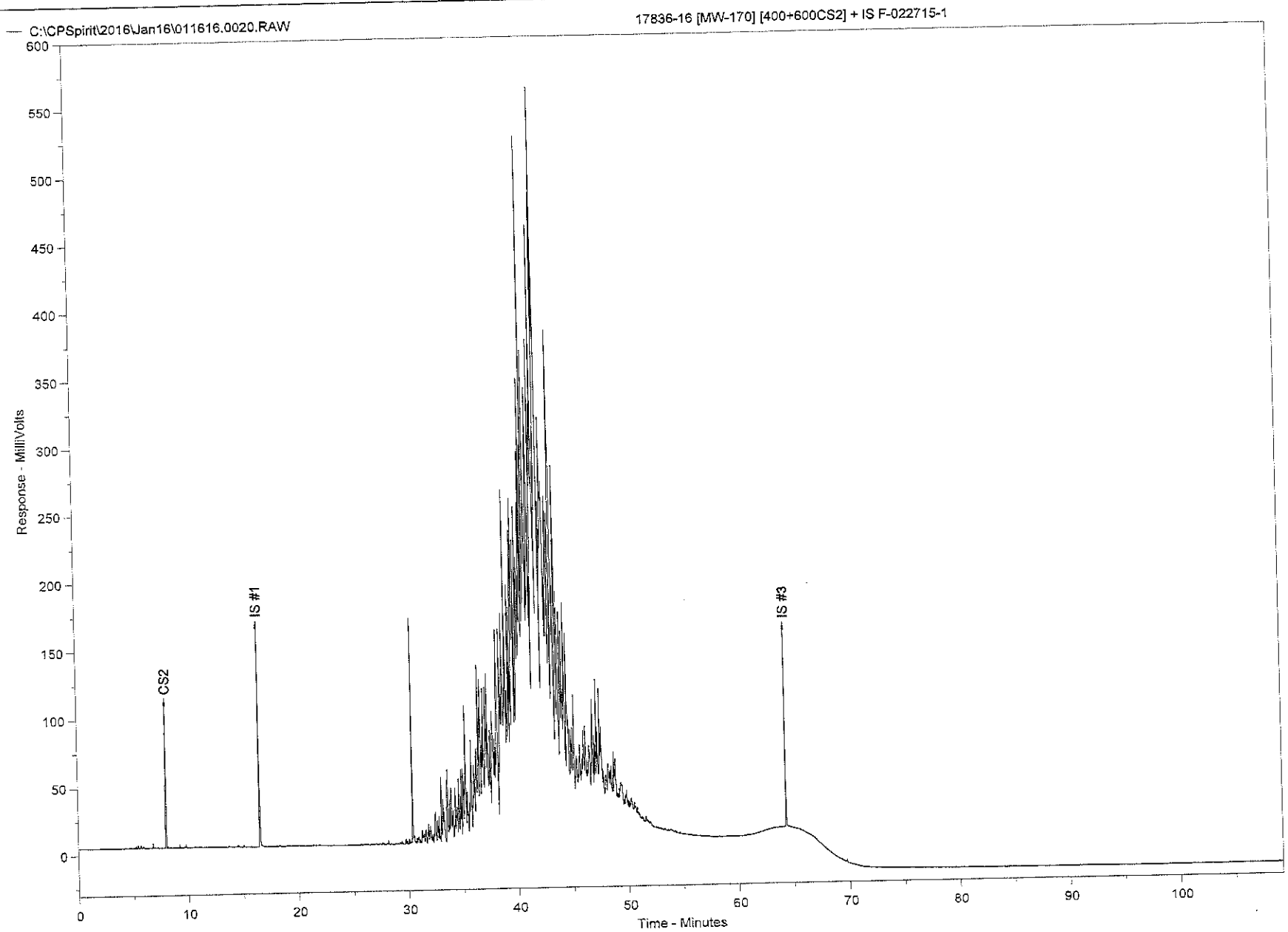
1/16/2016

ZymaX ID		17836-16
Sample ID		MW-170
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	0.00
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-16
Sample ID		MW-170
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	0.00
79	1,3-Diethylbenzene	0.00
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	0.00
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.00
88	1,2,3,5-Tetramethylbenzene	0.00
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report



Printed on 1/22/2016 12:32:50 PM

Sample Name = **17836-16 [MW-170] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0020.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/18/2016 10:34:37 AM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.04	0.5631	437352.30
IS #1	16.49	0.6497	504642.30
	29.75	0.0123	9549.36
	30.07	0.0133	10333.12
	30.40	0.5806	450914.20
	30.79	0.0138	10732.90
	31.26	0.0584	45348.39
	31.59	0.0674	52314.14
	31.78	0.0346	26860.19
	32.02	0.1093	84902.89
	32.20	0.0313	24317.51
	32.34	0.0178	13828.84
	32.43	0.0254	19705.56
	32.68	0.0853	66226.74
	32.80	0.0723	56174.95
	33.01	0.1873	145510.00
	33.16	0.1393	108207.40
	33.25	0.1770	137457.20
	33.60	0.4077	316688.00
	33.78	0.0711	55227.20
	33.87	0.0373	28972.93
	34.03	0.0212	16431.31
	34.29	0.1623	126084.50
	34.41	0.0325	25256.71
	34.61	0.1773	137720.80
	34.79	0.1636	127069.10
	34.86	0.1684	130783.00
	35.00	0.3401	264173.00
	35.13	0.1136	88265.95
	35.25	0.6395	496677.20
	35.41	0.2348	182359.50
	35.59	0.0757	58774.17
	35.79	0.4918	382000.90
	36.02	0.5701	442826.60
	36.20	0.1961	152344.00
	36.25	0.2734	212374.30
	36.44	0.7729	600288.40
	36.59	0.6029	468233.60
	36.65	0.4461	346511.00
	36.77	0.3631	281995.40
	36.84	0.2940	228363.50
	36.92	0.5796	450164.80
	37.06	0.2334	181249.20
	37.13	0.4964	385570.50
	37.28	0.7227	561299.40
	37.53	0.4186	325145.50
	37.74	1.1243	873258.00
	37.95	0.3526	273881.30
	38.05	0.2487	193153.30
	38.19	1.3771	1069559.00
	38.36	0.1581	122815.80
	38.46	1.1078	860454.50
	38.58	0.3894	302450.30
	38.64	0.3474	269817.40
	38.71	1.0703	831263.60

Peak Name	Ret. Time	Area %	Area
	38.89	0.8753	679824.50
	39.00	1.4192	1102291.00
	39.11	0.6797	527896.50
	39.28	1.1906	924719.80
	39.40	0.7711	598879.30
	39.47	0.5054	392546.50
	39.61	1.9396	1506480.00
	39.72	1.7758	1379269.00
	39.87	1.0386	806702.70
	40.06	2.0036	1556156.00
	40.19	1.5595	1211215.00
	40.32	1.4484	1124985.00
	40.41	1.2476	968978.30
	40.49	1.3718	1065480.00
	40.59	1.6635	1292007.00
	40.72	1.9915	1546744.00
	40.82	3.4611	2688196.00
	40.98	2.1184	1645318.00
	41.07	1.1676	906831.90
	41.20	1.8013	1399045.00
	41.26	1.6169	1255856.00
	41.34	0.9042	702246.80
	41.43	0.7562	587313.10
	41.51	1.7980	1396483.00
	41.65	2.8900	2244614.00
	41.75	2.8124	2184368.00
	41.83	0.9635	748356.20
	41.92	1.3826	1073848.00
	42.03	3.3057	2567512.00
	42.12	4.1944	3257744.00
	42.29	1.0745	834532.90
	42.39	1.3483	1047197.00
	42.46	4.3382	3369414.00
	42.73	1.1196	869579.30
	42.88	2.4139	1874867.00
	42.99	0.8953	695333.00
	43.06	1.2016	933236.10
	43.24	3.7012	2874655.00
	43.38	0.7840	608919.40
	43.58	2.2254	1728457.00
	43.72	1.4920	1158851.00
	43.97	1.3003	1009933.00
	44.11	0.7882	612157.70
	44.25	0.4098	318257.00
	44.34	0.8953	695356.90
	44.52	0.9609	746311.40
	44.85	0.2377	184613.30
	44.95	0.1640	127396.70
	45.01	0.1943	150926.40
	45.16	0.4165	323492.00
	45.37	0.2381	184953.60
	45.62	0.1097	85239.77
	45.88	0.0987	76683.69
	46.01	0.1433	111314.80
	46.16	0.2399	186305.40
	46.42	0.0375	29097.71
	46.50	0.0518	40254.68
	46.82	0.5373	417294.60
	46.97	0.1307	101527.10
	47.05	0.2088	162160.90
	47.18	0.3996	310380.10
	47.27	0.2225	172791.50
	47.46	0.5237	406777.00
	47.60	0.3489	271002.70
	47.78	0.0857	66542.84
	47.99	0.0877	68151.66
	48.22	0.2692	209050.00

Peak Name	Ret. Time	Area %	Area
	48.49	0.0939	72943.24
	48.63	0.0628	48762.00
	48.72	0.1365	106021.30
	48.86	0.2625	203912.20
	49.20	0.0373	28945.53
	49.34	0.2316	179917.00
	49.71	0.0150	11621.54
	49.86	0.0310	24060.69
	50.28	0.0370	28733.57
	50.57	0.0177	13719.54
	51.58	0.0233	18094.34
IS #3	64.28	0.5837	453366.90

Total Area = 7.766891E+07 Total Height = 1.483667E+07 Total Amount = 0

1/16/2016

ZymaX ID	17836-17
Sample ID	RW-15

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	0.00
Aromatics / Naphthenes	0.00

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.00
% Isoparaffinic	0.00
% Aromatic	0.00
% Naphthenic	0.00
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-17
Sample ID		RW-15
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

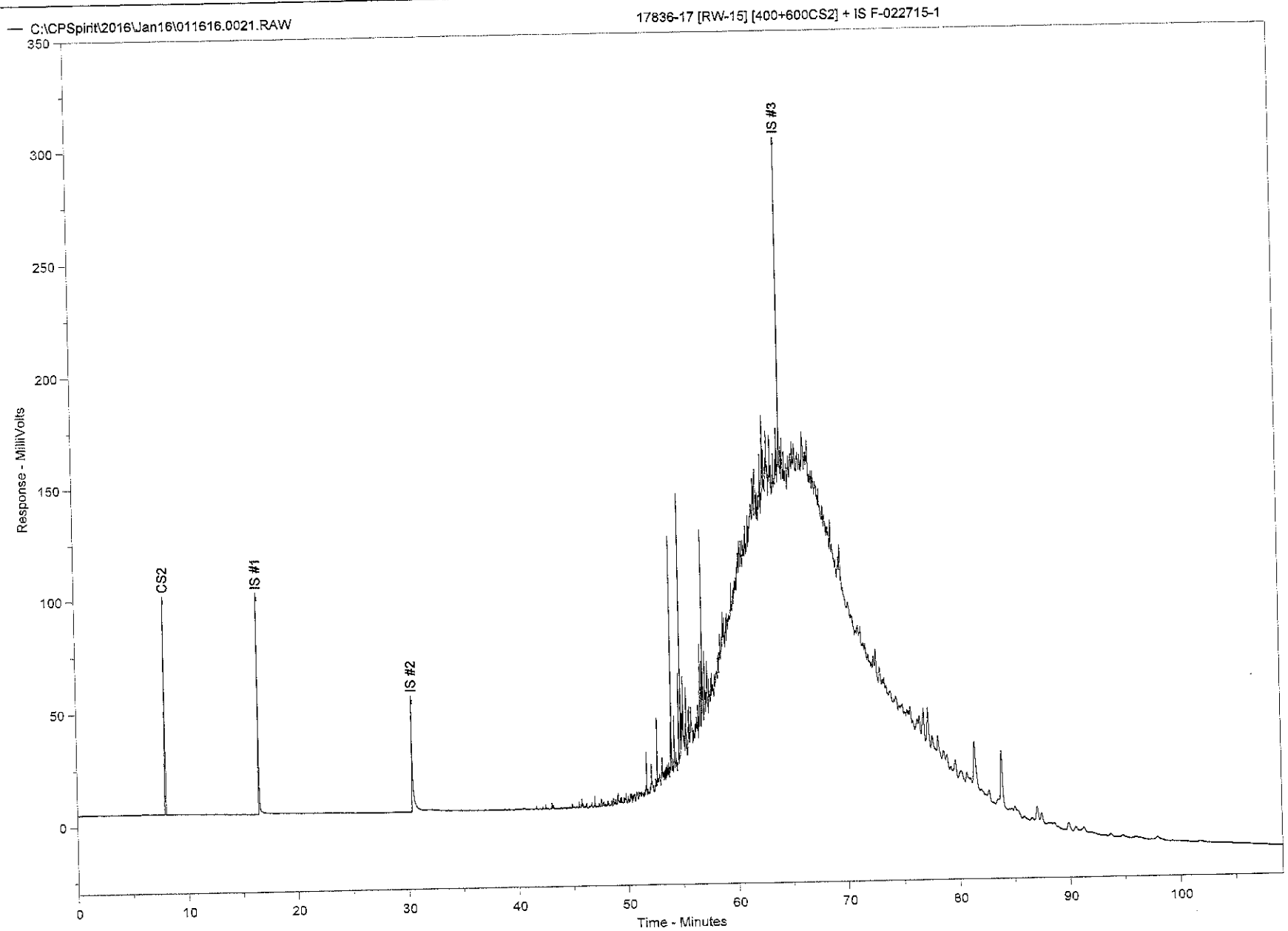
1/16/2016

ZymaX ID		17836-17
Sample ID		RW-15
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.00
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.00
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.00
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.00
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	0.00
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	0.00
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-17
Sample ID		RW-15
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	0.00
79	1,3-Diethylbenzene	0.00
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	0.00
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.00
88	1,2,3,5-Tetramethylbenzene	0.00
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report



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Heading 1 =
Heading 2 =

Acquisition Port = DP#

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Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/18/2016 12:40:04 PM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.03	3.4100	340730.70
IS #1	16.50	3.1284	312595.80
IS #2	30.41	3.4282	342550.30
	43.11	0.0774	7735.01
	45.58	0.0851	8504.37
	45.84	0.1148	11471.26
	47.01	0.1749	17476.59
	47.60	0.1999	19978.86
	48.54	0.1085	10844.03
	48.69	0.1383	13823.88
	49.15	0.2097	20951.66
	50.26	0.0610	6099.15
	50.85	0.2080	20779.64
	51.74	0.3804	38011.25
	52.10	0.1438	14371.98
	52.18	0.5356	53517.56
	52.55	0.1017	10165.32
	52.72	0.5889	58844.93
	53.17	0.4172	41682.48
	53.43	0.1118	11166.47
	53.52	0.1485	14834.64
	53.61	0.2044	20421.04
	53.79	0.1636	16342.94
	53.95	0.6300	62951.16
	54.04	2.1418	214007.80
	54.29	0.5967	59624.65
	54.44	0.1994	19923.77
	54.71	1.1183	111743.60
	54.89	2.4634	246141.30
	55.02	0.9633	96257.53
	55.11	0.9360	93524.07
	55.39	1.2089	120789.60
	55.61	0.4426	44228.20
	55.67	0.3540	35372.77
	55.84	0.6684	66782.64
	56.10	0.2968	29653.68
	56.29	0.3538	35351.05
	56.47	0.3578	35747.27
	56.57	0.3411	34087.29
	56.70	1.5499	154869.50
	56.83	1.1477	114682.10
	56.94	2.3709	236899.30
	57.14	0.9092	90845.45
	57.37	1.3285	132741.90
	57.52	0.5270	52658.56
	57.75	0.2374	23719.94
	58.05	0.3162	31596.49
	58.26	0.5533	55288.51
	58.39	0.3207	32047.42
	58.60	0.2369	23670.47
	58.76	0.1786	17842.29
	58.88	1.0376	103676.20
	59.18	0.4570	45664.65
	59.26	0.4065	40613.37
	59.70	0.4785	47814.25

Peak Name	Ret. Time	Area %	Area
	59.88	0.2484	24815.88
	59.94	0.1261	12598.67
	60.04	0.2298	22957.23
	60.38	0.9114	91071.59
	60.50	0.9702	96942.29
	60.67	0.5738	57337.77
	60.84	0.1996	19948.27
	61.02	0.1774	17724.26
	61.32	0.4796	47921.74
	61.40	0.2481	24789.26
	61.64	1.3746	137346.40
	61.82	0.5974	59693.62
	61.92	0.5889	58842.23
	62.00	0.2072	20700.42
	62.15	0.2234	22321.79
	62.23	0.3107	31050.18
	62.34	0.4235	42320.20
	62.46	0.4393	43897.39
	62.52	0.6184	61792.01
	62.61	0.2266	22646.87
	62.76	1.5693	156802.20
	62.84	0.4694	46898.09
	63.04	0.4787	47831.75
	63.14	0.4983	49788.63
	63.31	0.3701	36985.47
	63.44	0.5875	58704.00
	63.68	0.1917	19159.26
	63.75	0.3232	32289.44
	63.97	0.4581	45776.51
	64.05	0.7521	75152.79
	64.21	0.5478	54735.20
IS #3	64.29	3.8826	387955.80
	64.45	0.7389	73828.60
	64.57	1.0156	101480.30
	64.72	0.5108	51039.65
	64.92	0.7236	72299.93
	65.13	0.9502	94947.80
	65.36	1.6719	167052.20
	65.50	0.9664	96567.95
	65.69	1.1660	116502.30
	65.97	1.9703	196874.30
	66.15	0.9949	99413.64
	66.42	2.3552	235329.90
	66.65	1.1917	119078.10
	66.86	0.9580	95721.33
	67.18	0.4883	48789.21
	67.31	0.2317	23155.68
	67.55	0.2666	26643.44
	67.82	0.4232	42288.52
	68.16	0.2095	20936.48
	68.30	0.2259	22572.67
	68.49	0.0747	7468.82
	68.83	0.5981	59761.48
	68.96	0.5744	57390.15
	69.49	0.6830	68240.84
	69.62	0.6346	63405.72
	70.29	0.3830	38269.30
	71.13	0.2793	27906.46
	71.79	0.2505	25033.98
	72.51	0.4473	44699.23
	72.70	0.8432	84251.52
	73.03	0.6148	61433.47
	74.47	0.3943	39398.90
	75.43	0.2251	22489.47
	75.73	0.4719	47157.27
	76.34	0.5663	56586.52
	76.53	0.6777	67718.34

Peak Name	Ret. Time	Area %	Area
	76.89	1.4120	141085.10
	77.28	1.5968	159552.50
	77.65	0.8733	87262.46
	78.16	0.9804	97965.41
	78.66	0.4096	40928.77
	79.70	0.6966	69601.38
	80.74	1.2275	122652.80
	81.42	3.5013	349846.70
	82.72	0.5624	56195.33
	83.87	2.7991	279687.70
	85.02	0.6570	65649.68
	87.05	0.8437	84300.48
	87.43	0.5522	55173.28
	89.88	0.5393	53890.36

Total Area = 9992038 Total Height = 2289296 Total Amount = 0

1/16/2016

ZymaX ID	17836-18
Sample ID	MW-324

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.00
Aromatics / Total Paraffins (n+iso+cyc)	1.36
Aromatics / Naphthenes	2.02

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	0.00

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	1.34

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.00
% Isoparaffinic	13.84
% Aromatic	57.59
% Naphthenic	28.57
% Olefinic	0.00

1/16/2016

ZymaX ID		17836-18
Sample ID		MW-324
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	9.19
I.S. #1	à,à,à-Trifluorotoluene	0.00

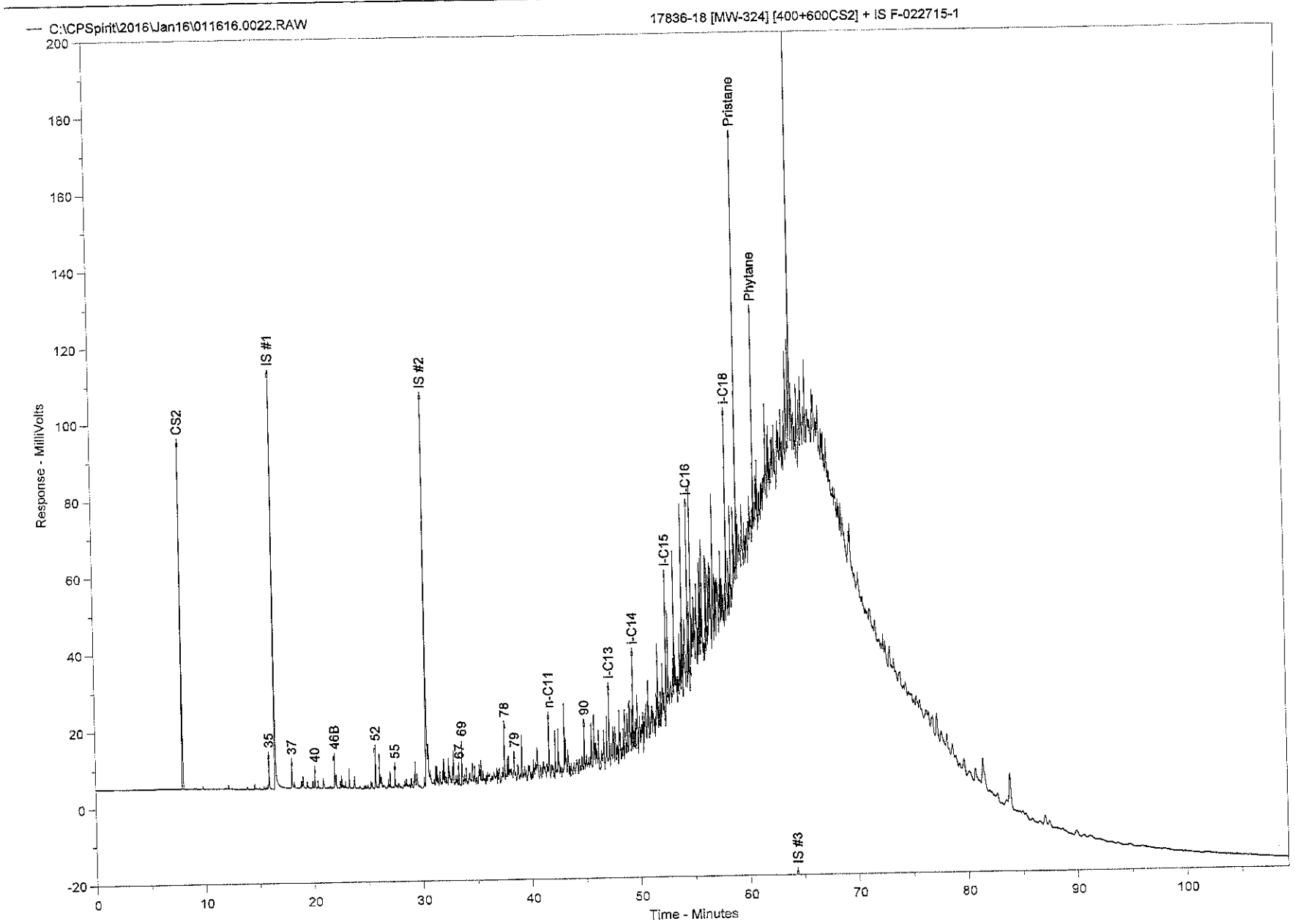
1/16/2016

ZymaX ID		17836-18
Sample ID		MW-324
		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	6.87
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	4.65
41	Toluene/2,3,3-Trimethylpentane	0.00
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.00
44	4-Methylheptane	0.00
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	9.13
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	12.57
53	2,6-Dimethylheptane	0.00
54	Ethylbenzene	0.00
55	m+p Xylenes	5.50
56	4-Methyloctane	0.00
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.00
60	o-Xylene	0.00
61	1-Nonene	0.00
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.00
64	3,3,5-Trimethylheptane	0.00
65	2,4,5-Trimethylheptane	0.00
66	n-Propylbenzene	0.00
67	1-Methyl-3-ethylbenzene	4.88
68	1-Methyl-4-ethylbenzene	0.00
69	1,3,5-Trimethylbenzene	13.75
70	3,3,4-Trimethylheptane	0.00

1/16/2016

ZymaX ID		17836-18
Sample ID		MW-324
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	0.00
74	Isobutylbenzene	0.00
75	sec-Butylbenzene	0.00
76	n-Decane	0.00
77	1,2,3-Trimethylbenzene	0.00
78	Indan	16.81
79	1,3-Diethylbenzene	4.53
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.00
82	1,3-Dimethyl-5-ethylbenzene	0.00
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.00
85	1,2-Dimethyl-4-ethylbenzene	0.00
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.00
88	1,2,3,5-Tetramethylbenzene	0.00
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	12.12
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

Chrom Perfect Chromatogram Report



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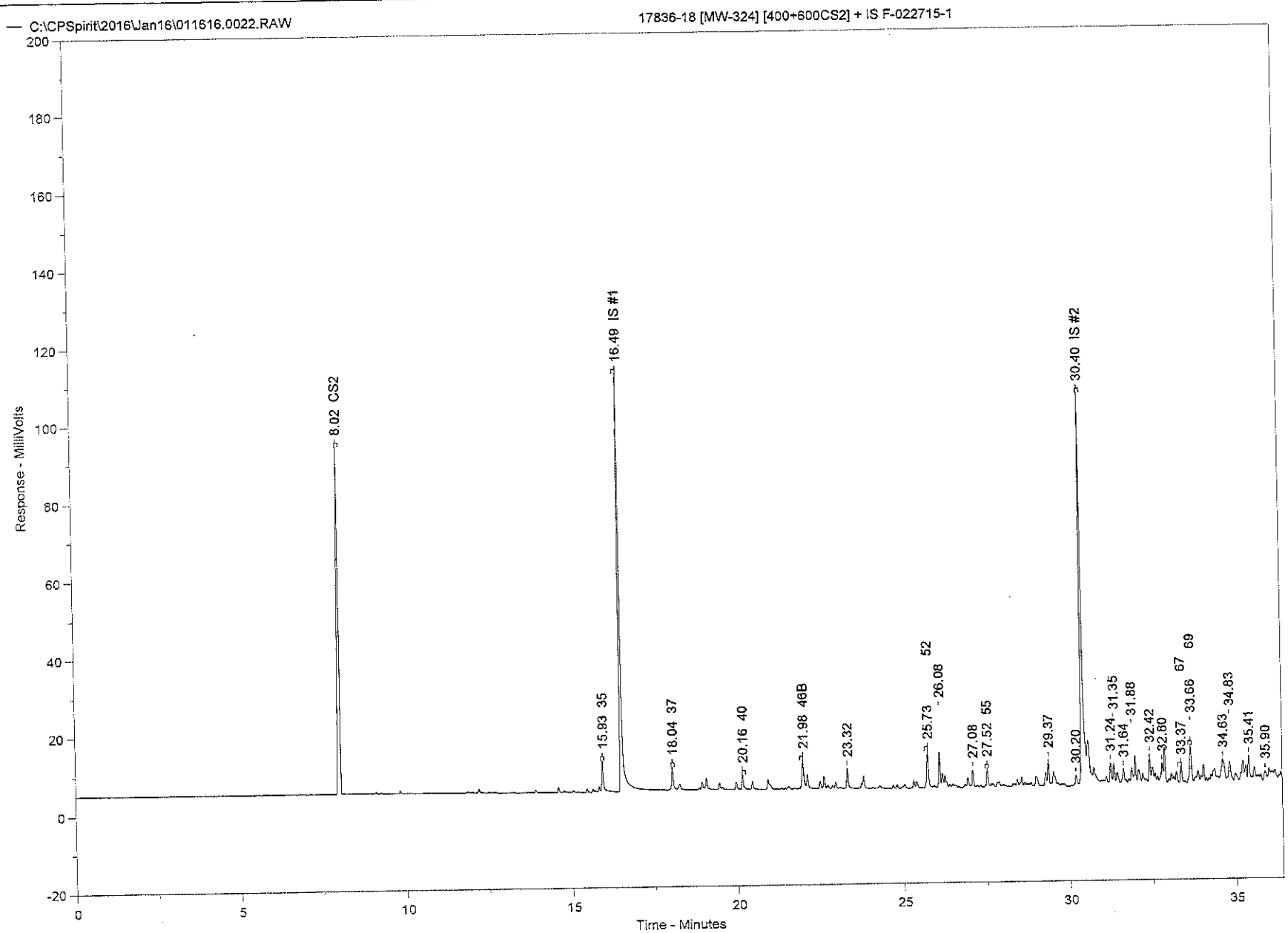
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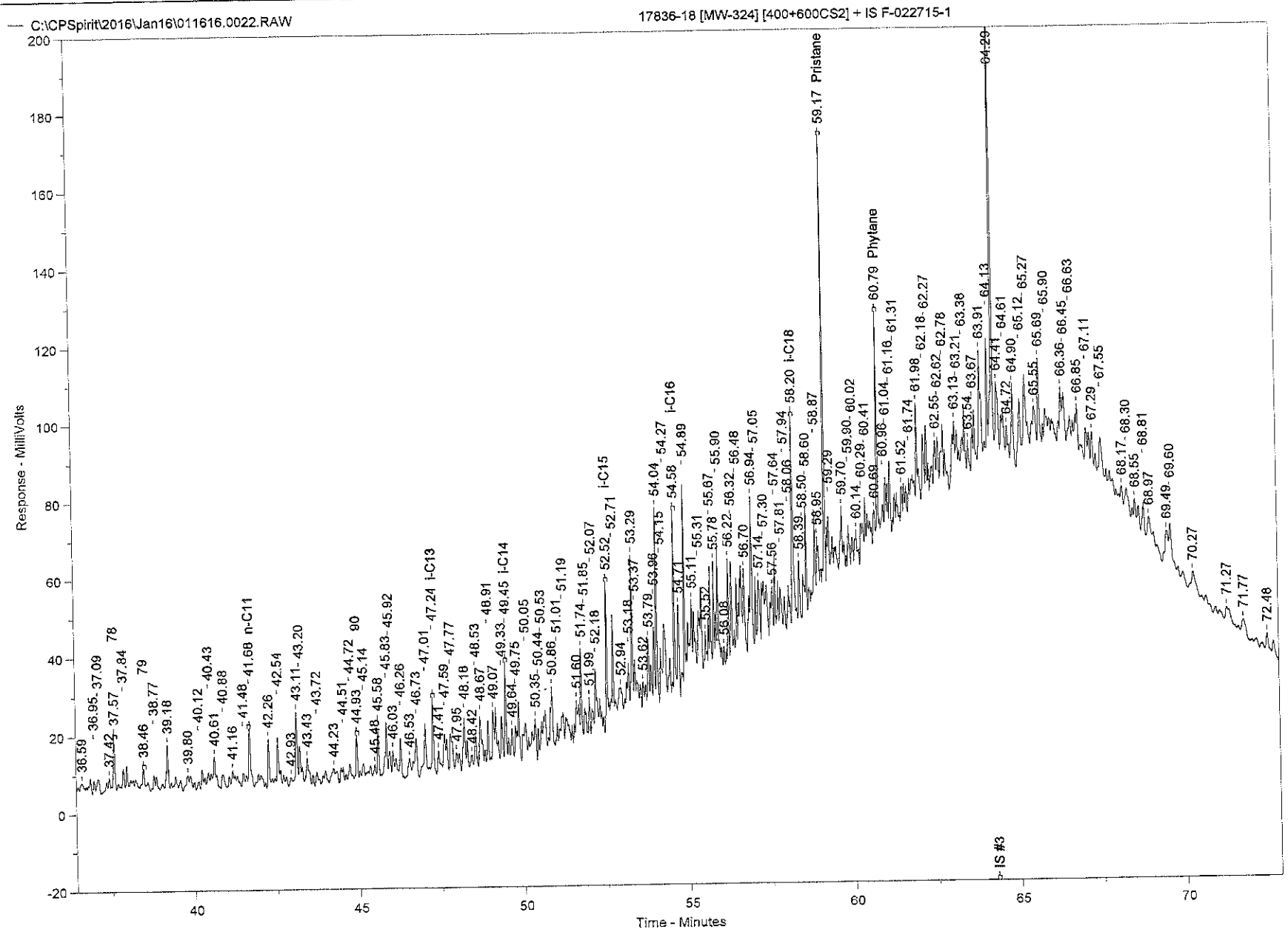
Response - MilliVolts
Time - Minutes
8.02 CS2
15.93 35
16.49 IS #1
18.04 37
20.16 40
21.98 46B
23.32
25.73 52
26.08
27.08
27.52 55
29.37
30.20
30.40 IS #2
31.24
31.35
31.64
31.88
32.42
32.80
33.37
33.66 67
69
34.63
34.83
35.41
35.90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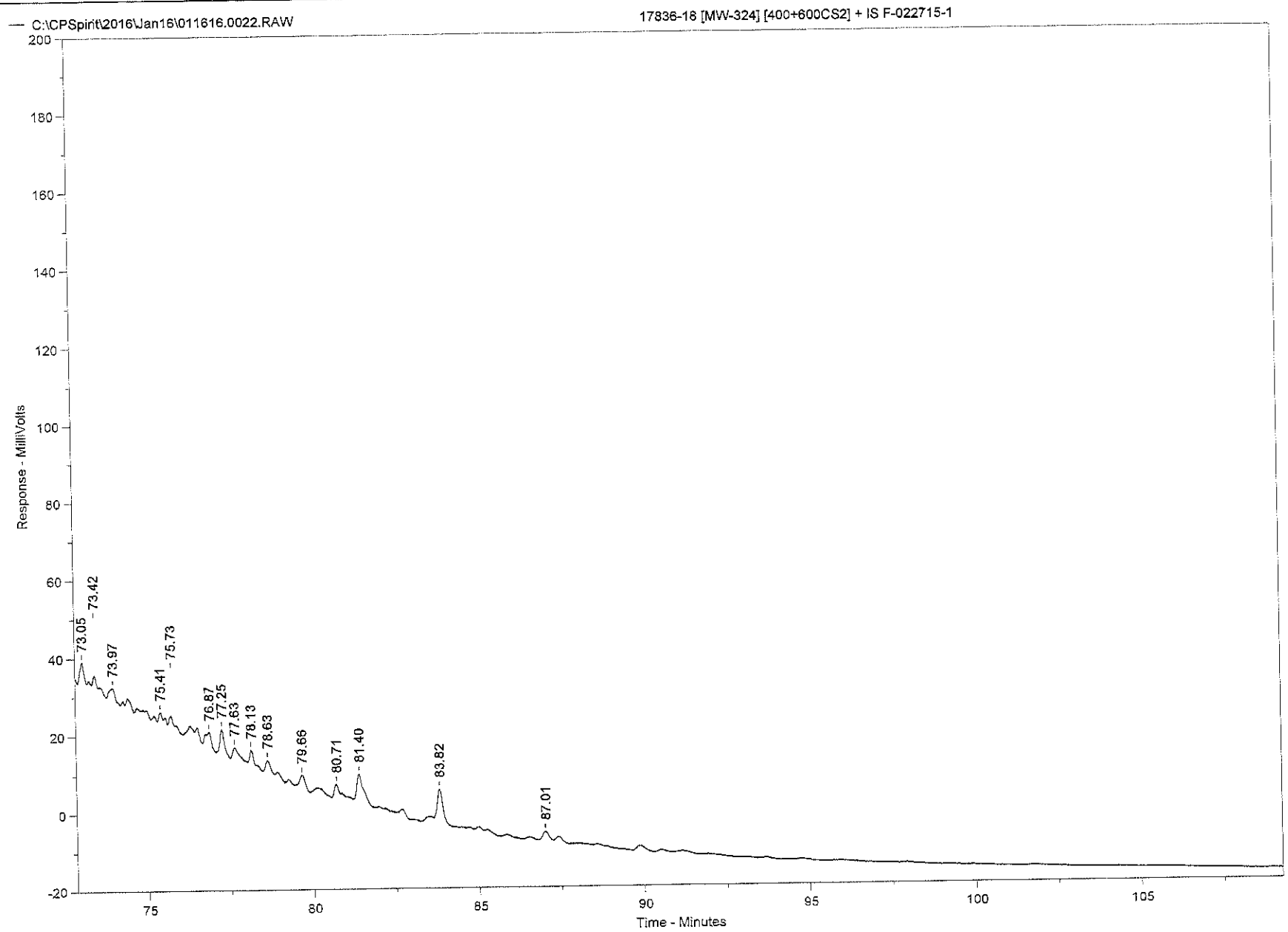
17836-18 [MW-324] [400+600CS2] + IS F-022715-1
Response - MilliVolts
Time - Minutes
Pristane
Phytane
i-C16
i-C18
i-C15
i-C14
i-C13
n-C11
IS #3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17836-18 [MW-324] [400+600CS2] + IS F-022715-1
Response - MilliVolts
Time - Minutes
200
180
160
140
120
100
80
60
40
20
0
-20
75
80
85
90
95
100
105
73.05
73.42
73.97
75.41
75.73
76.87
77.25
77.63
78.13
78.63
79.66
80.71
81.40
83.82
87.01

Sample Name = **17836-18 [MW-324] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2016\Jan16\011616.0022.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\012216.cal

Date Taken (end) = 1/18/2016 2:45:51 PM
Method Version = 44
Calibration Version = 2

Peak Name	Ret. Time	Area %	Area
CS2	8.02	3.2121	322632.40
35	15.93	0.2471	24821.00
IS #1	16.49	3.5668	358265.40
37	18.04	0.1847	18552.52
40	20.16	0.1249	12549.06
46B	21.98	0.2454	24647.19
	23.32	0.1618	16249.27
52	25.73	0.3379	33942.91
	26.08	0.2206	22156.50
	27.08	0.1163	11677.05
55	27.52	0.1478	14846.73
	29.37	0.2854	28664.67
	30.20	0.0899	9030.72
IS #2	30.40	3.2555	326995.00
	31.24	0.1511	15172.55
	31.35	0.1306	13117.89
	31.64	0.1420	14260.07
	31.88	0.0695	6977.21
	32.42	0.1478	14850.26
	32.80	0.0723	7257.51
67	33.37	0.1311	13168.85
69	33.66	0.3696	37122.73
	34.63	0.3026	30389.73
	34.83	0.2014	20224.53
	35.41	0.1602	16095.83
	35.90	0.0768	7714.21
	36.59	0.1104	11085.67
	36.95	0.1098	11032.97
	37.09	0.2239	22490.53
	37.42	0.2563	25745.88
78	37.57	0.4519	45394.65
	37.84	0.1444	14505.42
79	38.46	0.1218	12231.33
	38.77	0.2071	20804.99
	39.18	0.3814	38306.95
	39.80	0.3501	35160.56
	40.12	0.0782	7856.63
	40.43	0.1286	12915.70
	40.61	0.3640	36563.46
	40.88	0.2115	21240.40
	41.16	0.2791	28030.55
	41.48	0.1573	15802.18
n-C11	41.68	0.6220	62473.66
	42.26	0.3417	34323.28
	42.54	0.4412	44315.00
	42.93	0.1259	12646.62
	43.11	0.6621	66506.14
	43.20	0.3497	35127.70
	43.43	0.3886	39033.75
	43.72	0.1719	17264.96
	44.23	0.1243	12486.79
	44.51	0.2302	23121.87
	44.72	0.1750	17577.93
90	44.93	0.3258	32722.46
	45.14	0.1132	11367.27

Peak Name	Ret. Time	Area %	Area
	45.48	0.1040	10449.12
	45.58	0.3543	35589.11
	45.83	0.5092	51141.10
	45.92	0.2055	20639.09
	46.03	0.1305	13112.30
	46.26	0.2931	29438.72
	46.53	0.2355	23650.22
	46.73	0.4451	44710.40
	47.01	0.7433	74659.84
i-C13	47.24	0.6800	68298.71
	47.41	0.2903	29155.23
	47.59	0.3950	39670.67
	47.77	0.4927	49486.98
	47.95	0.1068	10726.13
	48.18	0.5592	56168.09
	48.42	0.1458	14641.87
	48.53	0.3135	31491.14
	48.67	0.6004	60310.48
	48.91	0.2727	27390.45
	49.07	0.2795	28072.04
	49.33	0.3512	35275.59
i-C14	49.45	0.6205	62321.59
	49.64	0.2486	24966.53
	49.75	0.1547	15534.06
	50.05	0.6936	69664.95
	50.35	0.3856	38733.23
	50.44	0.1508	15144.35
	50.53	0.0930	9336.63
	50.86	0.5926	59524.55
	51.01	0.1234	12394.91
	51.19	0.3294	33082.18
	51.60	0.1034	10384.12
	51.74	0.4633	46537.03
	51.85	0.2556	25669.12
	51.99	0.2102	21116.61
	52.07	0.2013	20220.75
	52.18	0.4960	49816.05
i-C15	52.52	1.0000	100448.30
	52.71	0.5131	51536.64
	52.94	0.3688	37040.04
	53.18	0.3599	36147.14
	53.29	0.7740	77747.83
	53.37	0.1660	16673.56
	53.62	0.2020	20287.94
	53.79	0.4955	49770.65
	53.96	0.5341	53650.47
	54.04	1.1843	118956.50
	54.15	0.4575	45955.17
	54.27	0.8834	88730.98
i-C16	54.58	1.0142	101873.90
	54.71	0.7158	71896.52
	54.89	1.3023	130805.10
	55.11	0.3432	34467.66
	55.31	0.2782	27947.47
	55.52	0.2395	24053.12
	55.67	0.5514	55379.87
	55.78	0.5371	53952.23
	55.90	0.6876	69064.45
	56.08	0.1049	10538.01
	56.22	0.5752	57776.88
	56.32	0.5523	55478.39
	56.48	0.3008	30214.20
	56.70	0.3750	37661.80
	56.94	1.6658	167316.80
	57.05	0.3582	35981.87
	57.14	0.8061	80964.05
	57.30	1.0077	101215.90

Peak Name	Ret. Time	Area %	Area
	57.56	0.6951	69821.89
	57.64	0.6000	60262.20
	57.81	0.4649	46693.35
	57.94	0.2417	24281.60
	58.06	0.3729	37455.61
i-C18	58.20	1.7945	180251.20
	58.39	0.4198	42162.96
	58.50	0.4248	42665.17
	58.60	0.5492	55161.26
	58.87	0.5548	55728.29
	58.95	0.7256	72882.42
Pristane	59.17	2.4070	241764.60
	59.29	0.1730	17377.69
	59.70	0.4628	46487.86
	59.90	0.3380	33954.89
	60.02	0.2331	23415.57
	60.14	0.2341	23516.99
	60.29	0.5032	50543.18
	60.41	0.2013	20216.95
	60.69	0.3250	32640.18
Phytane	60.79	1.4331	143946.50
	60.96	0.3742	37588.05
	61.04	0.4994	50165.96
	61.16	0.4524	45441.04
	61.31	0.1735	17429.74
	61.52	0.2292	23023.49
	61.74	0.1212	12176.23
	61.98	0.4406	44251.31
	62.18	0.5044	50665.76
	62.27	0.3303	33175.25
	62.55	0.3671	36876.67
	62.62	0.3655	36716.49
	62.78	0.5236	52593.75
	63.13	0.9788	98319.65
	63.21	0.5419	54426.32
	63.38	0.4941	49626.70
	63.54	0.2656	26682.88
	63.67	0.2027	20358.64
	63.91	1.2435	124901.20
	64.13	0.7905	79399.49
IS #3	64.29	4.2432	426206.00
	64.41	1.2165	122188.40
	64.61	0.9440	94818.96
	64.72	0.4716	47365.57
	64.90	0.8836	88756.46
	65.12	0.8487	85244.42
	65.27	1.3860	139211.50
	65.55	0.8878	89169.77
	65.69	0.7758	77926.29
	65.90	0.2398	24084.06
	66.36	0.6484	65129.26
	66.45	0.6355	63831.68
	66.63	0.4394	44131.52
	66.85	0.3672	36883.10
	67.11	0.3001	30147.95
	67.29	0.3138	31518.98
	67.55	0.4781	48025.86
	68.17	0.1286	12912.98
	68.30	0.3609	36254.50
	68.55	0.1322	13281.67
	68.81	0.3118	31313.63
	68.97	0.2458	24691.87
	69.49	0.3944	39619.68
	69.60	0.4740	47614.29
	70.27	0.3648	36643.47
	71.27	0.4647	46678.89
	71.77	0.3434	34490.43

Peak Name	Ret. Time	Area %	Area
	72.48	0.1848	18557.90
	73.05	0.5373	53965.60
	73.42	0.5017	50390.14
	73.97	0.4100	41185.79
	75.41	0.1251	12564.37
	75.73	0.1598	16047.46
	76.87	0.4161	41790.71
	77.25	0.5523	55472.07
	77.63	0.5017	50395.38
	78.13	0.4195	42138.20
	78.63	0.2983	29958.29
	79.66	0.3335	33498.64
	80.71	0.2323	23335.32
	81.40	0.9914	99577.46
	83.82	0.9263	93044.59
	87.01	0.2760	27721.17

Total Area = 1.004441E+07 Total Height = 2819437 Total Amount = 0

REPORT OF ANALYTICAL RESULTS

Client: Jennifer DeBoer Stantec 1060 Andrew Drive, Suite 140 West Chester, PA 19380	Lab Number: 17836 Collected: 12/21/2015 Received: 12/24/2015 Matrix: Product
Project: Evergreen, Marcus Hook AOI 1 Project Number: 213402493 Collected by: Colin Dubinski	Sample Description: See Below Analyzed: 1/22/2016 Method: ASTM D1217

SPECIFIC GRAVITY

LAB NUMBER	SAMPLE DESCRIPTION	SPECIFIC GRAVITY
17836-1	MW-231	0.930
17836-2	MW-19	0.920
17836-3	P-3	0.914
17836-4	MW-33	0.930
17836-5	MW-285	0.868
17836-6	MW-491	0.866

REPORT OF ANALYTICAL RESULTS

Client: Jennifer DeBoer Stantec 1060 Andrew Drive, Suite 140 West Chester, PA 19380	**Lab Number:** 17836 **Collected:** 12/21/2015 **Received:** 12/24/2015 **Matrix:** Product
Project: Evergreen, Marcus Hook AOI 1 **Project Number:** 213402493 **Collected by:** Colin Dubinski	**Sample Description:** See Below **Analyzed:** 1/22/2016 **Method:** ASTM D1217

SPECIFIC GRAVITY

LAB NUMBER	SAMPLE DESCRIPTION	SPECIFIC GRAVITY
17836-7	MW-492	0.858
17836-8	RW-26	0.840
17836-9	RW-31	0.910
17836-10	RW-29	0.856
17836-11	RW-169	0.916
17836-12	MW-188	0.936

REPORT OF ANALYTICAL RESULTS

Client: Jennifer DeBoer Stantec 1060 Andrew Drive, Suite 140 West Chester, PA 19380	Lab Number: 17836 Collected: 12/21/2015 Received: 12/24/2015 Matrix: Product
Project: Evergreen, Marcus Hook AOI 1 Project Number: 213402493 Collected by: Colin Dubinski	Sample Description: See Below Analyzed: 1/22/2016 Method: ASTM D1217

SPECIFIC GRAVITY

LAB NUMBER	SAMPLE DESCRIPTION	SPECIFIC GRAVITY
17836-13	MW-439	0.922
17836-14	MW-371	0.908
17836-15	MW-326	0.910
17836-16	MW-170	0.870
17836-17	RW-15	0.932
17836-18	MW-324	0.934

Pace Analytical Energy Services
FINAL REPORT
This report and the data within has completed QA/QC review
Contact: Taryn Mancine
Ph: 412-826-5245 Fax:
Email: taryn.mancine@pacelabs.com

Fuels & Lubrication Lab
1801 Route 51 South
Building 9
Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836001	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-1
Result *wt. %*	2.01

Tracking #	403308-1
Work Order	17836001
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

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Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836002	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-2
Result *wt. %*	0.172

Tracking #	403308-2
Work Order	17836002
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

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Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836003	PO# 17836		

D0808

Test Code: D0808 / Method: D808

Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-3
Result *wt. %*	0.019

Comments

This sample contained a significant amount of water, which is not suitable for XRF analysis.
With oil present, the sample was prepped by bombing and then run on the Ion Chromatograph using method D808. Even with the bomb prep, the combustion was not as good as it should have been, therefore the result is questionable.

Tracking #	403308-3
Work Order	17836003
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

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Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836004	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-4
Result *wt. %*	0.284

Tracking #	403308-4
Work Order	17836004
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

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Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836005	PO# 17836		

D0808

Test Code: D0808 / Method: D808

Sample Date		01/04/2016
Result Date		01/04/2016
Tracking #		403308-5
Result	*wt. %*	<0.003

Comments

This sample contained a significant amount of water, which is not suitable for XRF analysis.
With oil present, the sample was prepped by bombing and then run on the Ion Chromatograph using method D808. Even with the bomb prep, the combustion was not as good as it should have been, therefore the result is questionable.

Tracking #	403308-5
Work Order	17836005
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

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Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836006	PO# 17836		

Sulfur by WD-XRF

Test Code: D2622 / Method: D2622/D4927

Sample Date		01/04/2016
Result Date		01/04/2016
Tracking #		403308-6
Result	*wt. %*	0.299

Tracking #	403308-6
Work Order	17836006
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

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Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836007	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-7
Result *wt. %*	0.227

Tracking #	403308-7
Work Order	17836007
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

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Pace Analytical Energy Services
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Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836008	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-8
Result *wt. %*	0.202

Tracking #	403308-8
Work Order	17836008
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

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Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 17836009	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-9
Result *wt. %*	0.314

Tracking #	403308-9
Work Order	17836009
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

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Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360010	PO# 17836		

Sulfur by WD-XRF

Test Code: D2622 / Method: D2622/D4927

Sample Date		01/04/2016
Result Date		01/04/2016
Tracking #		403308-10
Result	*wt. %*	0.287

Tracking #	403308-10
Work Order	178360010
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

Pace Analytical Energy Services
FINAL REPORT
This report and the data within has completed QA/QC review
Contact: Taryn Mancine
Ph: 412-826-5245 Fax:
Email: taryn.mancine@pacelabs.com

Fuels & Lubrication Lab
1801 Route 51 South
Building 9
Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360011	PO# 17836		

D0808

Test Code: D0808 / Method: D808

Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-11
Result *wt. %*	0.0063

Comments

This sample contained a significant amount of water, which is not suitable for XRF analysis.
With oil present, the sample was prepped by bombing and then run on the Ion Chromatograph using method D808. Even with the bomb prep, the combustion was not as good as it should have been, therefore the result is questionable.

Tracking #	403308-11
Work Order	178360011
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

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Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360012	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-12
Result *wt. %*	0.536

Tracking #	403308-12
Work Order	178360012
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

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Fuels & Lubrication Lab
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Building 9
Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360013	PO# 17836		

Sulfur by WD-XRF

Test Code: D2622 / Method: D2622/D4927

Sample Date		01/04/2016
Result Date		01/04/2016
Tracking #		403308-13
Result	*wt. %*	0.193

Tracking #	403308-13
Work Order	178360013
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

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Fuels & Lubrication Lab
1801 Route 51 South
Building 9
Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360014	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-14
Result *wt. %*	0.234

Tracking #	403308-14
Work Order	178360014
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

Pace Analytical Energy Services
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Ph: 412-826-5245 Fax:
Email: taryn.mancine@pacelabs.com

Fuels & Lubrication Lab
1801 Route 51 South
Building 9
Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360015	PO# 17836		

Sulfur by WD-XRF

Test Code: D2622 / Method: D2622/D4927

Sample Date		01/04/2016
Result Date		01/04/2016
Tracking #		403308-15
Result	*wt. %*	0.234

Tracking #	403308-15
Work Order	178360015
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

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Ph: 412-826-5245 Fax:
Email: taryn.mancine@pacelabs.com

Fuels & Lubrication Lab
1801 Route 51 South
Building 9
Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360016	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-16
Result *wt. %*	0.0224

Tracking #	403308-16
Work Order	178360016
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

Pace Analytical Energy Services
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Email: taryn.mancine@pacelabs.com

Fuels & Lubrication Lab
1801 Route 51 South
Building 9
Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360017	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-17
Result *wt. %*	0.212

Tracking #	403308-17
Work Order	178360017
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

Pace Analytical Energy Services
FINAL REPORT
This report and the data within has completed QA/QC review
Contact: Taryn Mancine
Ph: 412-826-5245 Fax:
Email: taryn.mancine@pacelabs.com

Fuels & Lubrication Lab
1801 Route 51 South
Building 9
Jefferson Hills, PA 15025
Ph: 412-387-1001
Fax: 412-387-1028

Pace Analytical Energy Services	**Pace Analytical Energy Services**	**Lube Supplier**	**Level 3**	**Level 4**
Pittsburgh, PA	Pittsburgh, PA,- Pace Analytical	Unknown	Make: UNKNOWN	Make: UNKNOWN
Sulfur	2015	**Lube Type**	Model: UNKNOWN	Model: UNKNOWN
2015	2015	Unknown		Serial No: UNKNOWN
Test Group(s): Custom	Client Sample# 178360018	PO# 17836		

Sulfur by WD-XRF	Test Code: D2622 / Method: D2622/D4927
Sample Date	01/04/2016
Result Date	01/04/2016
Tracking #	403308-18
Result *wt. %*	0.539

Tracking #	403308-18
Work Order	178360018
Sample Date	01/04/2016
Received Date	01/04/2016
Time on Oil	
Time on Unit	

General Diagnostic Notes

Additional detail may be available if requested, at standard Clark consulting rates.

Disclaimer: The reported results relate only to the samples received for testing.

Torkelson Geochemistry, Inc.
2528 S. Columbia Place
Tulsa, OK 74114-3233
Phone: 918-749-8441
Fax: 918-749-6005
e-mail: BTorkelson@torkelsongeochemistry.com

CHAIN-OF-CUSTODY RECORD

Project: SUNOCO REFINERY
Location: MARCUS HOOK AOI-4
Proj. No.:
P.O.:
Sampled By: Andrew Eberts

Report/Bill To: Tiffani Dover (AQUATERRA)
Address: 122 S. Church St. West Chester, PA
Phone: (610) 431-5733
Fax:
e-mail: TD@aquaterra-tech.com

Additional Instructions
CC & Pat Tray (LANGAN)
ptray@langan.com

Requested Turn-Around Time:

ITEM NO.	SAMPLE DESCRIPTION	DATE	MATRIX	LAB NO.	Total # OF Vials	PRESERVATIVES: None					ANALYSES REQUESTED: GC Characterization	Density	Viscosity	Water Surface Tension	NAPL Surface Tension	NAPL/Water Interfac. Tens.	Lead	Sulfur						REMARKS
1	MW-399	7/26/13	LNAPL		1						X	X												☆ Please include a brief
2	MW-400	7/26/13	|		1						X	X												interpretation of product
3	MW-404	7/26/13	|		1						X	X												type consistent with other
4																								☆ Samples from this project. ☆
5																								
6																								
7																								
8																								
9																								
10																								

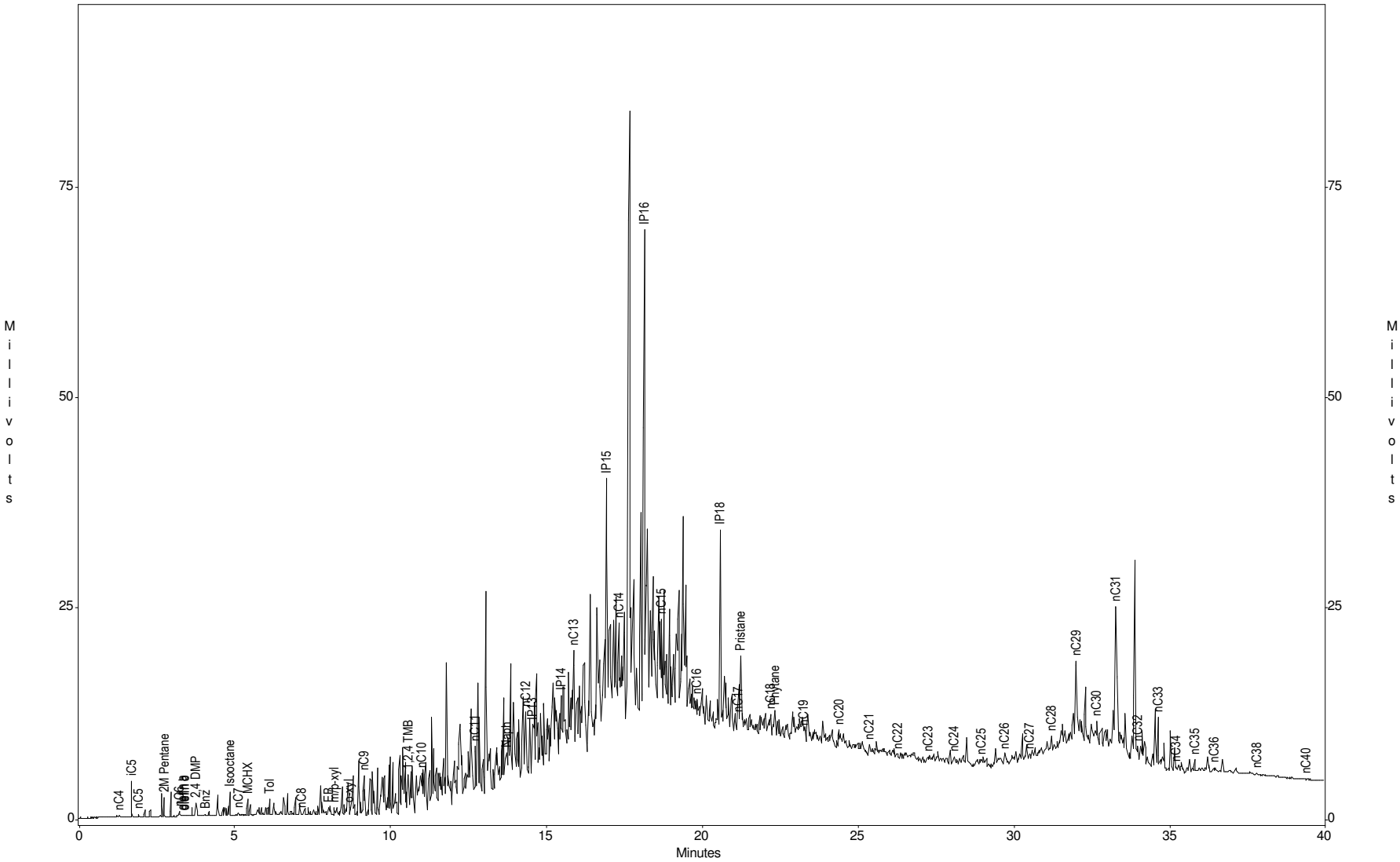
RELINQUISHED BY	DATE	TIME	ACCEPTED BY	DATE	TIME
A. P. Eberts	7/26/13	1130	/ AQUATERRA	7/26/13	1130
/ AQUATERRA	7/26/13	1130	FED EX	7/26/13	1130

Sunoco Refinery - Philadelphia						
TGI Job 13116						
Interpretation of Product Type(s), Proportions and Weathering				Similarities to Other Samples in this Study		
Sample	Product Type(s)	Proportions	Weathering	Quite Similar to	Fairly Similar to	Somewhat Similar to
MW-399	Unknown Light Material	5	?			
	Middle Distillate	70	Extreme	Unique		
	Heavier Material	25	?			
MW-400	Unknown Light Material	10	?			
	Middle Distillate	85	Extreme	Unique		
	Heavier Material	5	?			
MW-404	Middle Distillate	100	High	Unique		
	Note: Heavier material could be either crude oil or residual oil					

Torkelson Geochemistry, Inc.

Sunoco Refinery, Marcus Hook, AOI-4
Sample ID : MW-399
Acquired : Jul 31, 2013 12:23:09

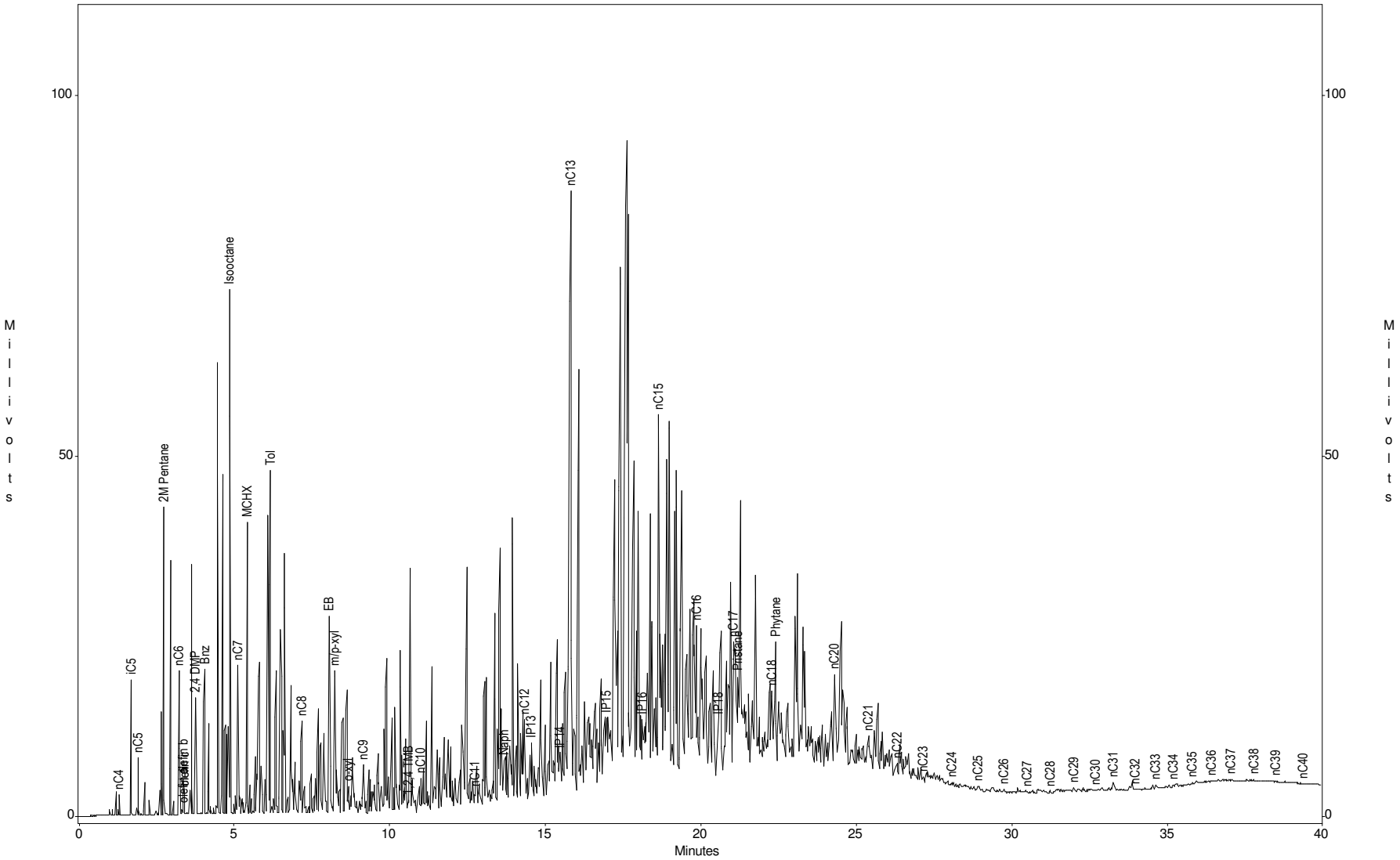
c:\ezchrom\chrom\13116\mw-399 -- Channel A



Torkelson Geochemistry, Inc.

Sunoco Refinery, Marcus Hook, AOI-4
Sample ID : MW-400
Acquired : Jul 31, 2013 13:14:16

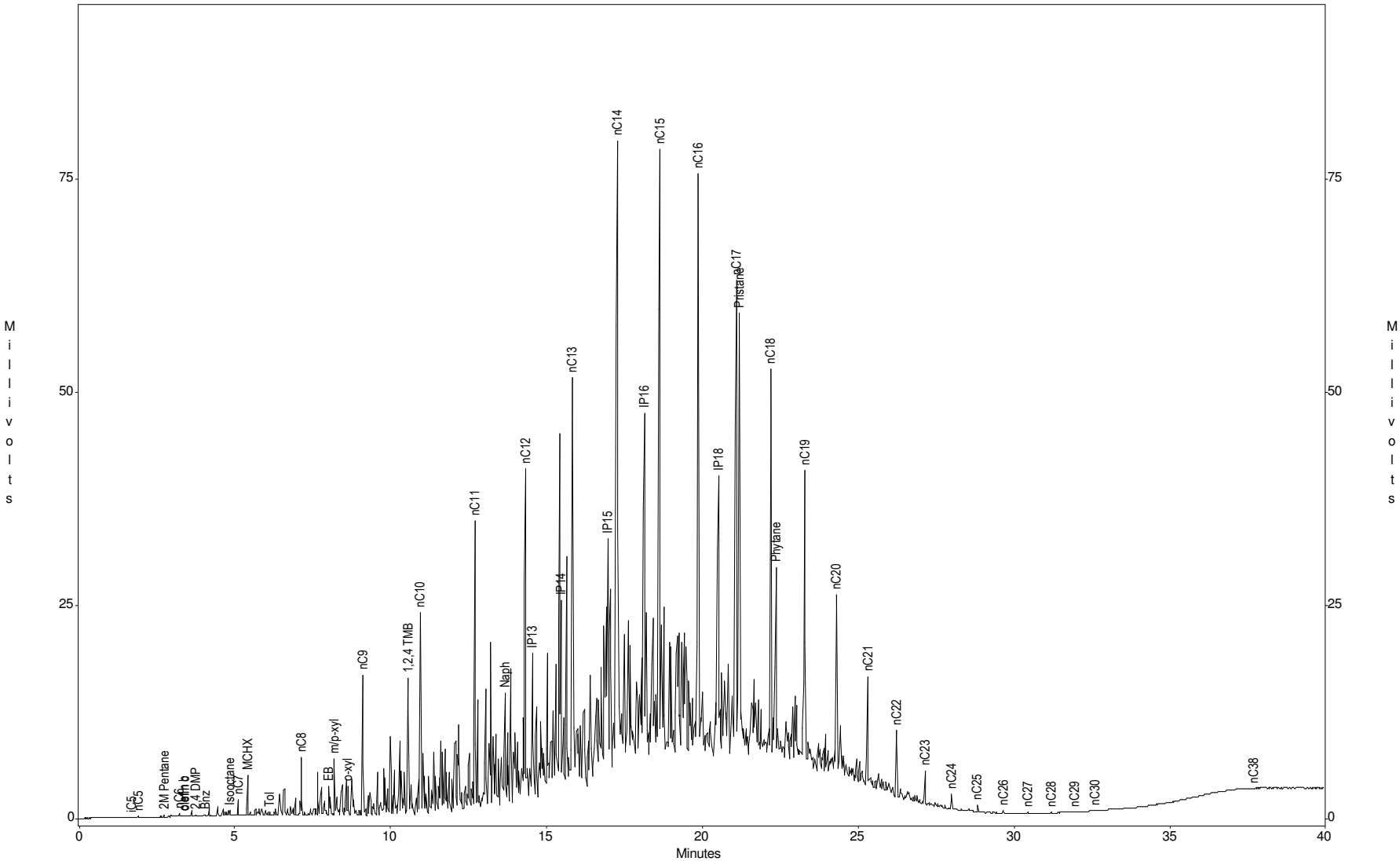
c:\ezchrom\chrom\13116\mw-400 -- Channel A



Torkelson Geochemistry, Inc.

Sunoco Refinery, Marcus Hook, AOI-4
Sample ID : MW-404
Acquired : Jul 31, 2013 14:57:16

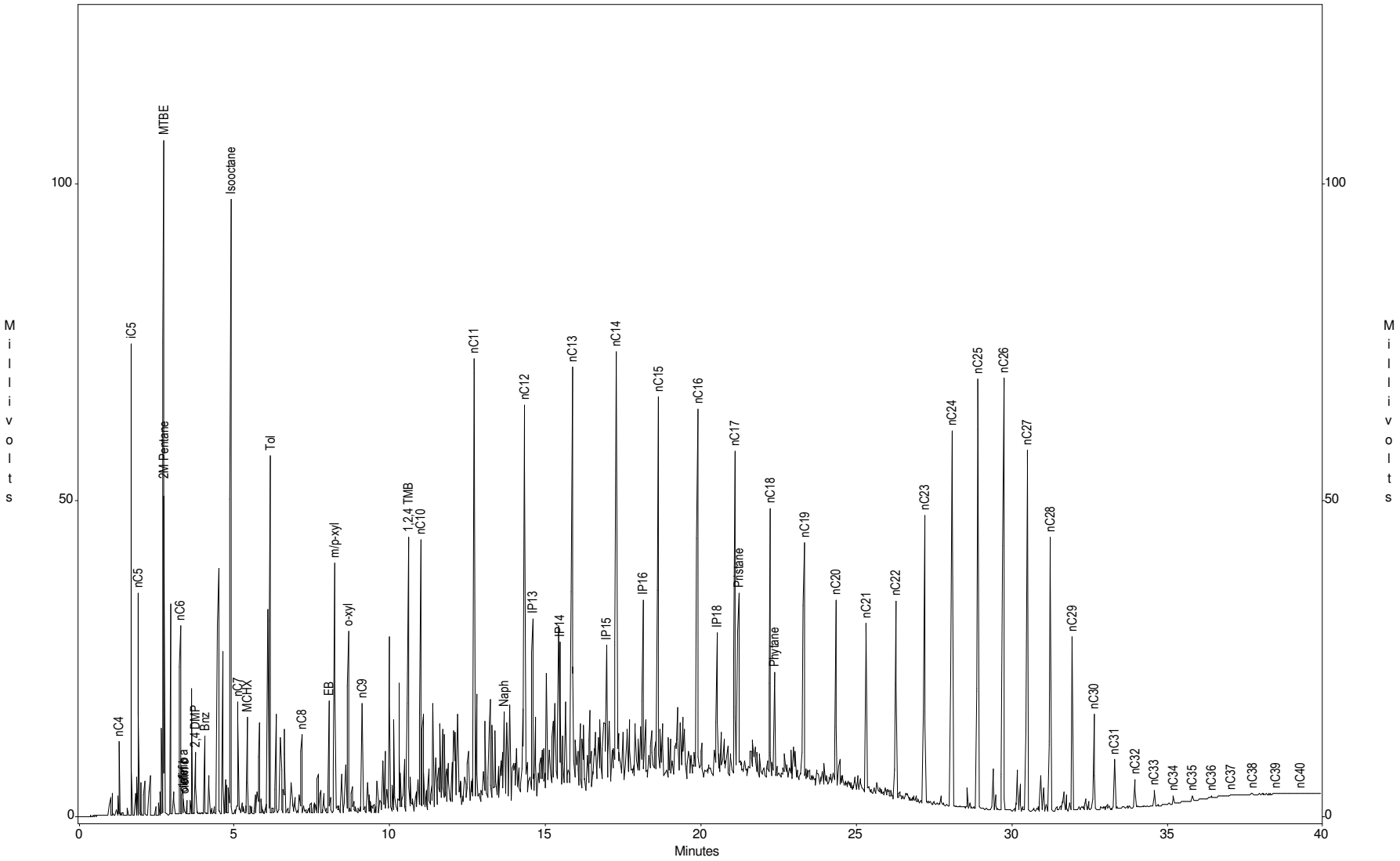
c:\ezchrom\chrom\13116\mw-404.2 -- Channel A



Torkelson Geochemistry, Inc.

Sunoco Refinery, Marcus Hook, AOI-4
Sample ID : Gas/Dies/Wax std
Acquired : Jul 31, 2013 09:48:07

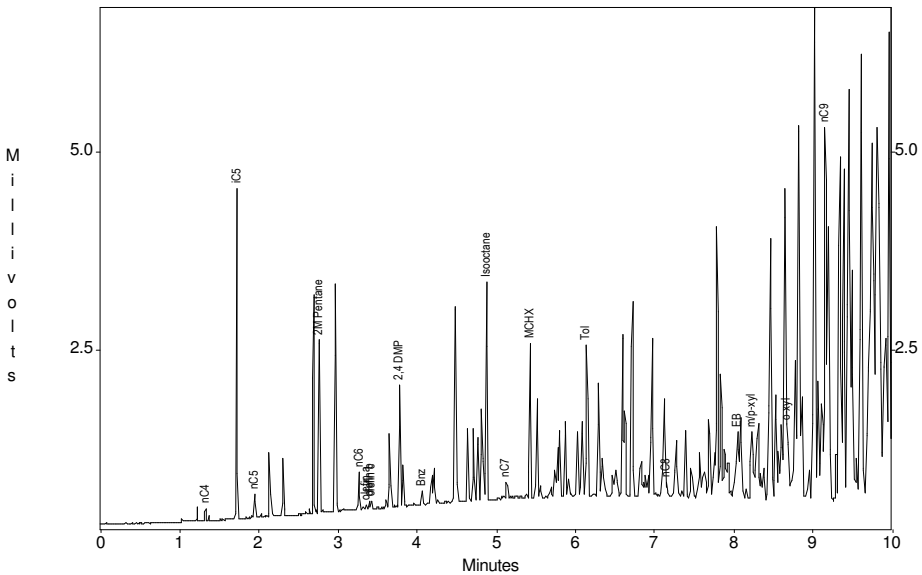
c:\ezchrom\chrom\13116\gadiwax2 -- Channel A



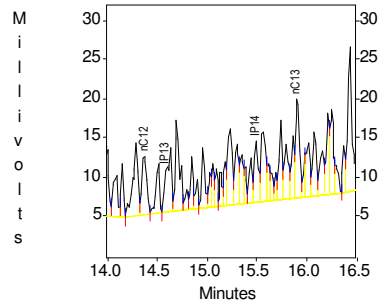
Torkelson Geochemistry, Inc.

Sunoco Refinery, Marcus Hook, AOI-4
Sample ID : MW-399
Acquired : Jul 31, 2013 12:23:09

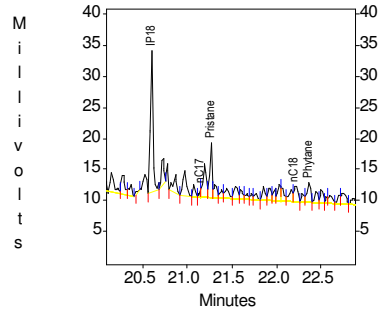
c:\ezchrom\chrom\13116\mw-399 -- Channel A



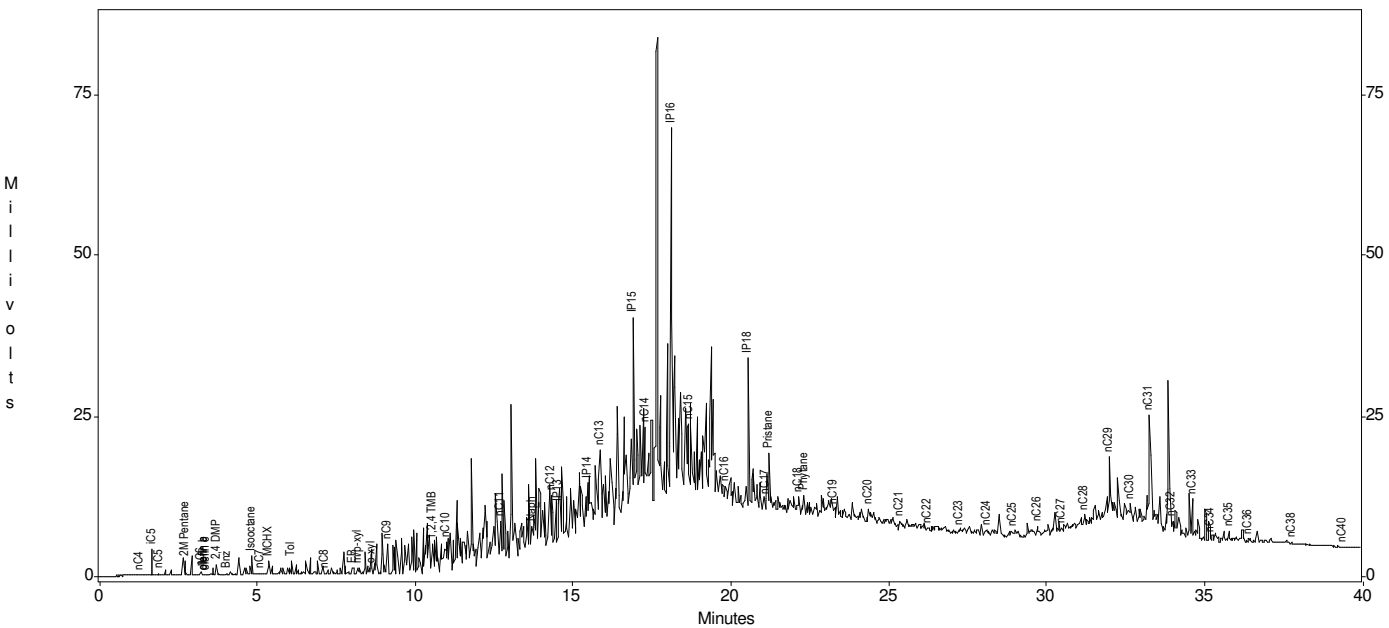
c:\ezchrom\chrom\13116\mw-399 -- Channel A



c:\ezchrom\chrom\13116\mw-399 -- Channel A



c:\ezchrom\chrom\13116\mw-399 -- Channel A



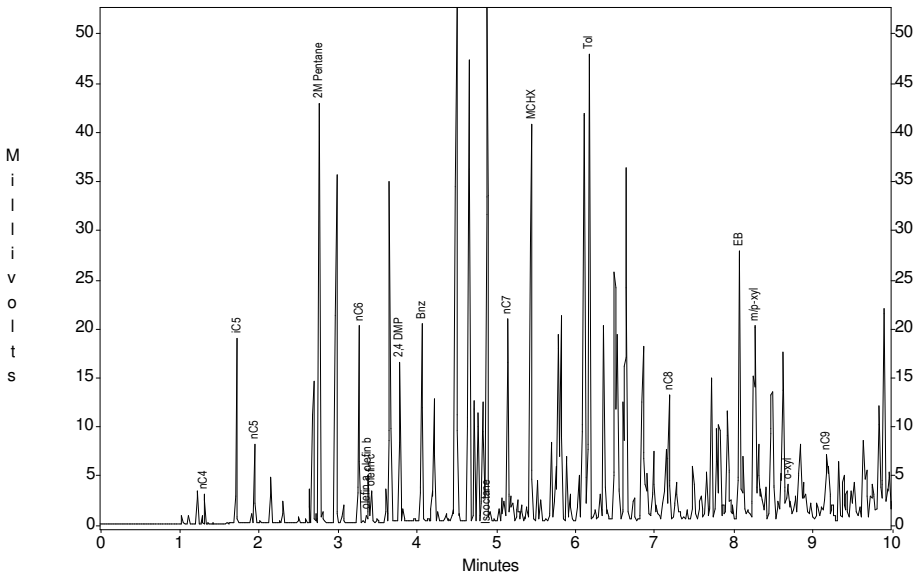
Channel A Results

Peak	Area	Height
nC4	112	153
iC5	2910	4169
nC5	222	295
MTBE	0	0
2M Pentane	1952	2184
nC6	460	478
olefin a	67	59
olefin b	93	93
olefin c	96	86
2,4 DMP	1587	1527
Bnz	231	171
Isooctane	3120	2739
nC7	296	219
MCHX	2343	1948
Tol	2465	1918
nC8	238	189
EB	1891	842
m/p-xyl	523	517
o-xyl	1394	938
nC9	6724	4710
1,2,4 TMB	8847	4530
nC10	8232	4401
nC11	12656	5942
Naph	12767	2742
nC12	24268	7489
IP13	30379	5511
IP14	20509	7843
nC13	34303	12493
IP15	70034	30729
nC14	50614	12576
IP16	137541	57080
nC15	15895	9598
nC16	1825	1557
IP18	45772	22932
nC17	2136	1681
Pristane	17944	8967
nC18	8987	2762
Phytane	9755	3229
nC19	5206	1579
nC20	7122	2486
nC21	4220	1342
nC22	1025	453
nC23	1042	604
nC24	2853	977
nC25	2385	853
nC26	5143	1169
nC27	1723	545
nC28	4444	1653
nC29	15981	7535
nC30	3280	1611
nC31	20327	10621
nC32	3144	956
nC33	11040	5442
nC34	656	336
nC35	2530	1297
nC36	669	337
nC37	0	0
nC38	265	120
nC39	0	0
nC40	65	45

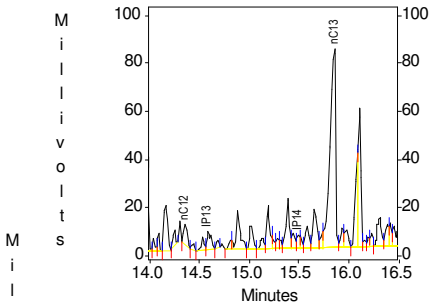
Torkelson Geochemistry, Inc.

Sunoco Refinery, Marcus Hook, AOI-4
Sample ID : MW-400
Acquired : Jul 31, 2013 13:14:16

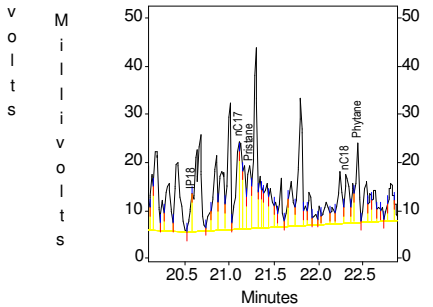
c:\ezchrom\chrom\13116\mw-400 -- Channel A



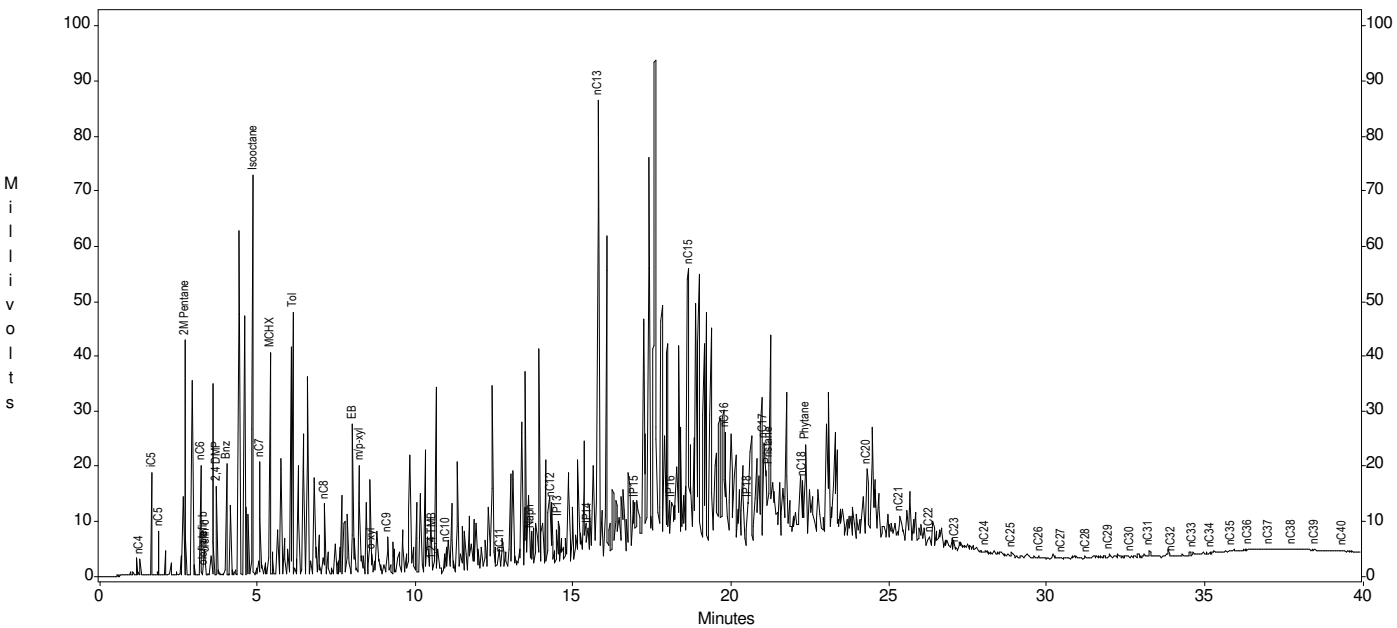
c:\ezchrom\chrom\13116\mw-400 -- Channel A



c:\ezchrom\chrom\13116\mw-400 -- Channel A



c:\ezchrom\chrom\13116\mw-400 -- Channel A



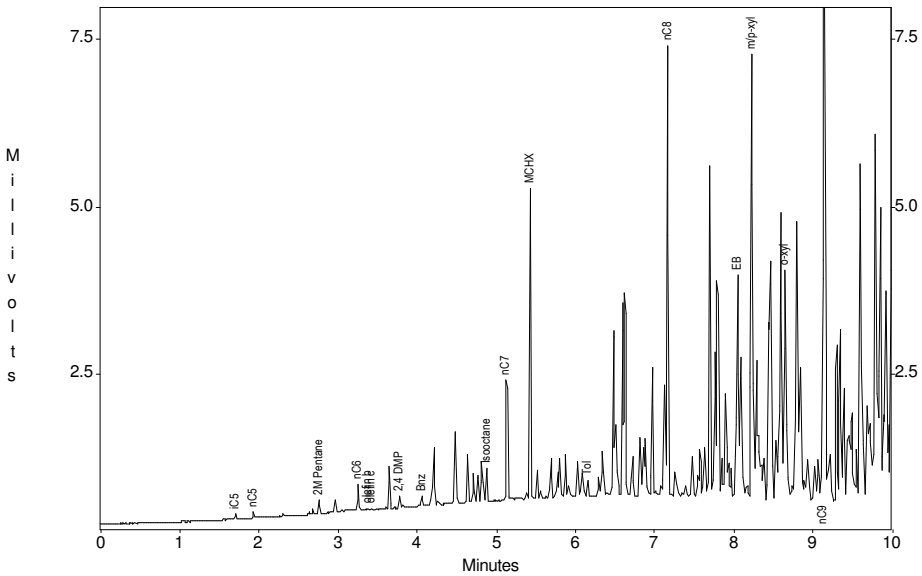
Channel A Results

Peak	Area	Height
nC4	1582	2969
iC5	12188	18805
nC5	5613	8047
MTBE	0	0
2M Pentane	37788	42686
nC6	18943	19901
olefin a	826	785
olefin b	4606	4812
olefin c	3188	3050
2,4 DMP	16912	16205
Bnz	24284	20087
Isooctane	94627	72666
nC7	24842	20542
MCHX	51002	40454
Tol	62707	47502
nC8	15813	12758
EB	39397	27372
m/p-xyl	43891	19862
o-xyl	7275	3733
nC9	16911	6651
1,2,4 TMB	3334	1629
nC10	9374	4484
nC11	3048	1805
Naph	21469	5476
nC12	21485	8607
IP13	22025	7434
IP14	9589	5446
nC13	325388	83211
IP15	11341	5538
nC14	0	0
IP16	7887	4302
nC15	149026	48039
nC16	49305	20120
IP18	11180	7620
nC17	43902	17941
Pristane	39651	13025
nC18	33215	9950
Phytane	34785	16501
nC19	0	0
nC20	32151	12908
nC21	12253	5083
nC22	6450	1921
nC23	1395	637
nC24	1223	559
nC25	4082	676
nC26	1198	441
nC27	657	253
nC28	136	161
nC29	1338	513
nC30	176	74
nC31	1159	680
nC32	90	52
nC33	745	389
nC34	496	218
nC35	267	138
nC36	150	73
nC37	52	65
nC38	102	56
nC39	136	48
nC40	135	50

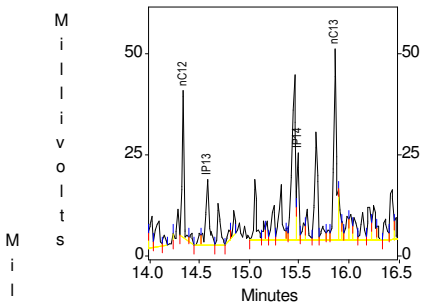
Torkelson Geochemistry, Inc.

Sunoco Refinery, Marcus Hook, AOI-4
Sample ID : MW-404
Acquired : Jul 31, 2013 14:57:16

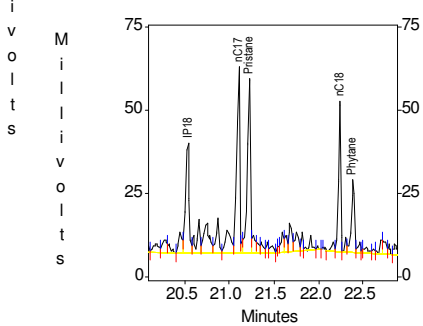
c:\ezchrom\chrom\13116\mw-404.2 -- Channel A



c:\ezchrom\chrom\13116\mw-404.2 -- Channel A



c:\ezchrom\chrom\13116\mw-404.2 -- Channel A



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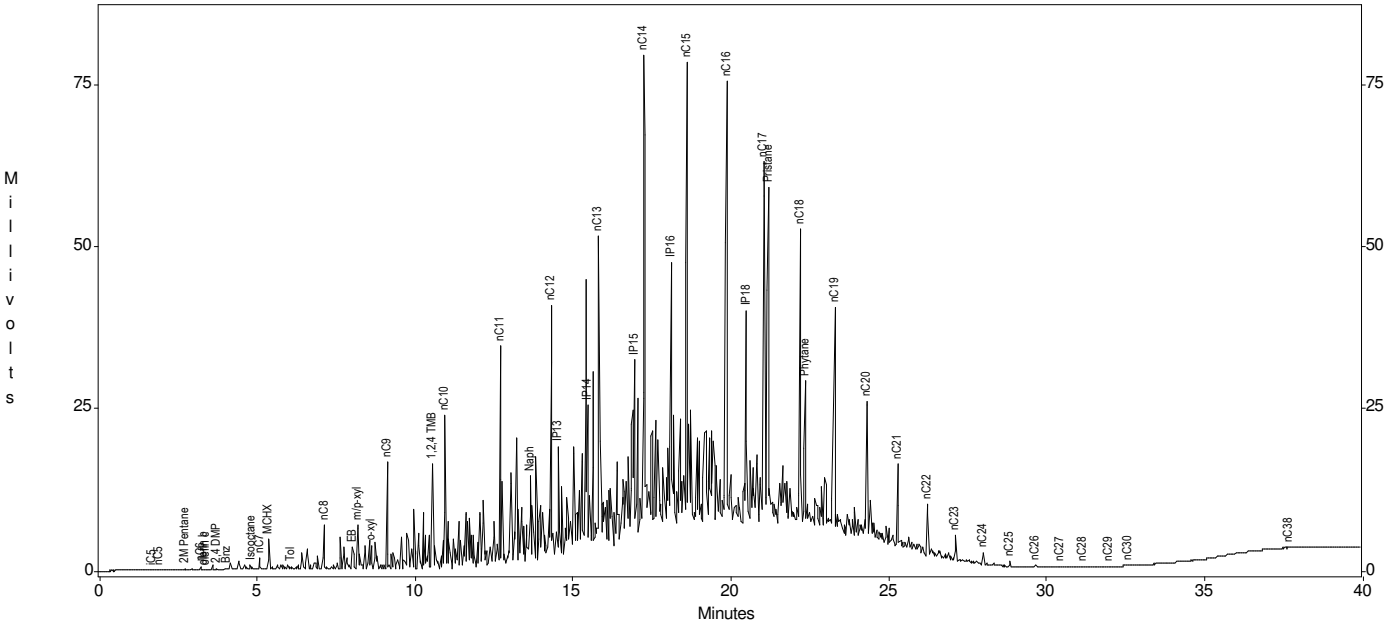


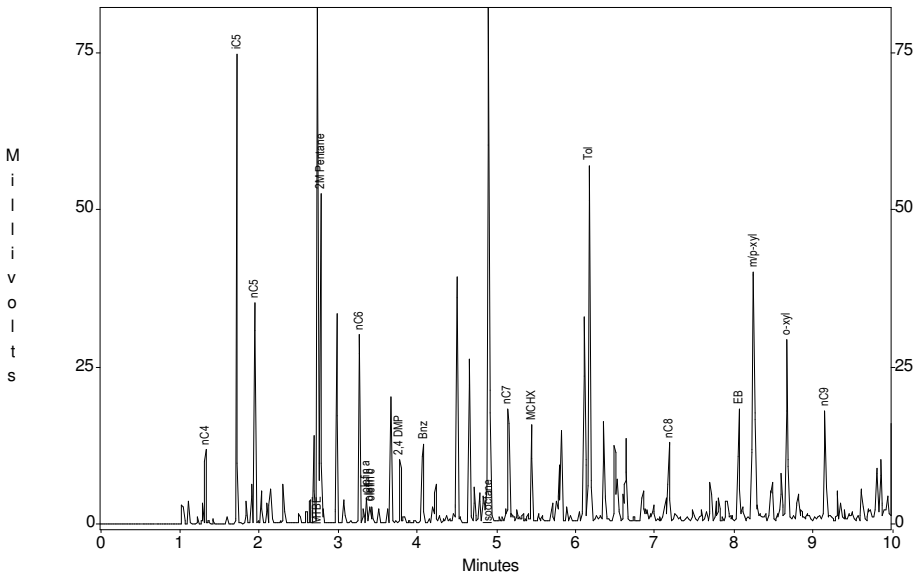
Channel A Results

Peak	Area	Height
nC4	0	0
iC5	62	70
nC5	76	91
MTBE	0	0
2M Pentane	191	204
nC6	386	398
olefin a	0	0
olefin b	25	27
olefin c	18	16
2,4 DMP	180	161
Bnz	162	138
Isooctane	623	505
nC7	2051	1796
MCHX	5411	4635
Tol	368	265
nC8	8212	6753
EB	4660	3348
m/p-xyl	11722	6661
o-xyl	5471	3443
nC9	24861	16475
1,2,4 TMB	24929	16004
nC10	33377	23564
nC11	59222	33705
Naph	27868	12944
nC12	53989	36385
IP13	39701	16695
IP14	30624	21515
nC13	95358	47781
IP15	44050	27185
nC14	252015	73103
IP16	87248	38131
nC15	155064	69253
nC16	161758	67952
IP18	77878	32824
nC17	122423	55656
Pristane	128378	51793
nC18	87785	44966
Phytane	49382	21862
nC19	88901	34495
nC20	39174	21189
nC21	22873	12983
nC22	13654	7965
nC23	6124	3915
nC24	2955	1785
nC25	1625	762
nC26	627	376
nC27	317	155
nC28	153	64
nC29	35	11
nC30	129	18
nC31	0	0
nC32	0	0
nC33	0	0
nC34	0	0
nC35	0	0
nC36	0	0
nC37	0	0
nC38	509	24
nC39	0	0
nC40	0	0

Torkelson Geochemistry, Inc.

Sunoco Refinery, Marcus Hook, AOI-4
Sample ID : Gas/Dies/Wax std
Acquired : Jul 31, 2013 09:48:07

c:\ezchrom\chrom\13116\gadiwax2 -- Channel A



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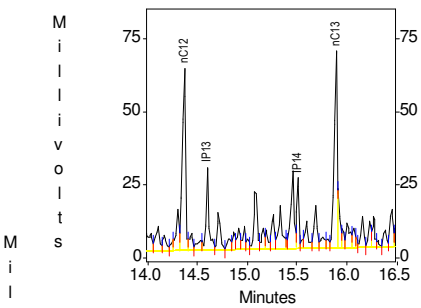

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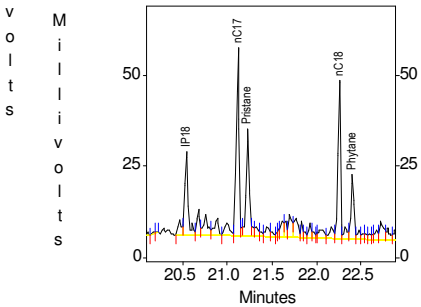

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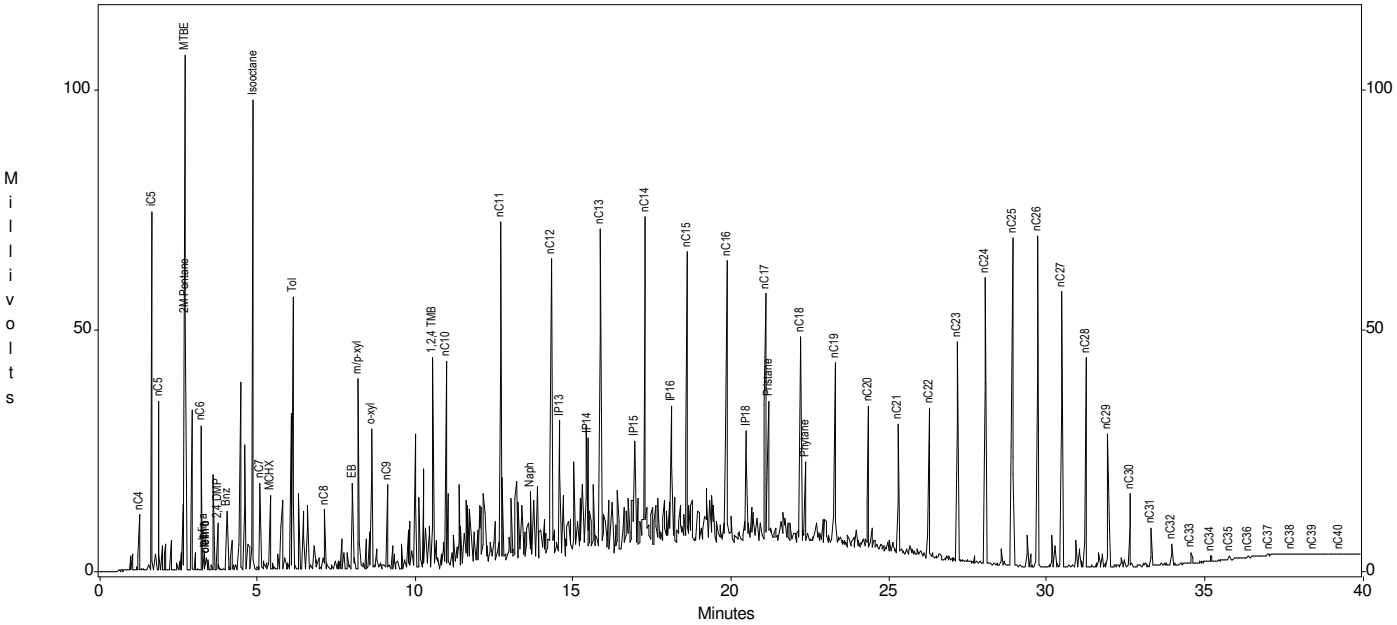


Channel A Results

Peak	Area	Height
nC4	6715	11809
iC5	48777	74556
nC5	24677	35065
MTBE	98955	106748
2M Pentane	45112	52393
nC6	28993	29917
olefin a	4597	4039
olefin b	2546	2647
olefin c	3175	2425
2,4 DMP	10381	9833
Bnz	14673	12398
Isooctane	138582	97296
nC7	21552	17833
MCHX	19408	15347
Tol	87660	56644
nC8	15224	12507
EB	24194	17847
m/p-xyl	81566	39539
o-xyl	41807	28852
nC9	27556	17353
1,2,4 TMB	73700	43453
nC10	65133	42883
nC11	125818	70576
Naph	30081	14053
nC12	121441	62189
IP13	57557	28241
IP14	35492	23982
nC13	143306	67394
IP15	45479	22191
nC14	176321	68040
IP16	59415	28080
nC15	120914	59091
nC16	129477	58240
IP18	59074	22584
nC17	105491	51390
Pristane	64436	29181
nC18	87281	43210
Phytane	38324	17408
nC19	82299	38494
nC20	60855	30169
nC21	48432	27113
nC22	59508	31223
nC23	96702	45491
nC24	151446	59495
nC25	115980	67908
nC26	193687	68497
nC27	151315	57053
nC28	96857	43286
nC29	53582	27433
nC30	24568	14667
nC31	14050	7790
nC32	7367	4459
nC33	3978	2325
nC34	2223	1237
nC35	1138	723
nC36	677	353
nC37	574	194
nC38	1269	115
nC39	235	71
nC40	176	46

Torkelson Geochemistry, Inc.							
Physical Properties Measurements							
Sample	TGI Job Number	Density of NAPL (gm/ml)	Viscosity of NAPL (centipoise)	Surface Tension Air/Water (dynes/cm)	Interfacial Tension NAPL/Water (dynes/cm)	Surface Tension Air/NAPL (dynes/cm)	Temperature of Measurements
MW-399	13116	0.9195	NA	NA	NA	NA	60F
MW-400	13116	0.9021	NA	NA	NA	NA	60F
MW-404	13116	0.8685	NA	NA	NA	NA	60F

NA = Not Analyzed

Sample Date	25-NOV-15
Sample ID	204291683
Batch Number	
User SampleID	20151125-683
Sample Type	PBPSSO POLLOCK STREET SEWER OUTFALL
Tag	11/24/15 1510
Material Name	MISC. UNDEFINED PRODUCT
Material Type	PLANT SAMPLE
Condition	APPROVED
EPA Batch #	
Comments	CHEMIST TO DETERMINE SIM DIS METHOD AND MUST REVIEW RESULTS - RECOVERED OIL FROM MONITORING WELL #468 - TWO LAYERS IN A 4 OUNCE JAR

Component	Result	Units	Inspec	Low	High
SULFUR	0.0574	wt.%	N/A		
SULFUR FOR COA	574	ppm	N/A		
INITIAL BOILING POINT (GC)	174.4	deg F	N/A		
01 % (GC)	186.4	deg F	N/A		
02 % (GC)	209.4	deg F	N/A		
03 % (GC)	215.8	deg F	N/A		
04 % (GC)	234.6	deg F	N/A		
05 % (GC)	240.8	deg F	N/A		
10 % (GC)	272.4	deg F	N/A		
20 % (GC)	310.8	deg F	N/A		
30 % (GC)	328.6	deg F	N/A		
40 % (GC)	350.2	deg F	N/A		
50 % (GC)	366.8	deg F	N/A		
60 % (GC)	384.8	deg F	N/A		
70 % (GC)	402	deg F	N/A		
80 % (GC)	422.8	deg F	N/A		
90 % (GC)	447.8	deg F	N/A		
95 % (GC)	472.6	deg F	N/A		
END POINT (GC)	563.8	deg F	N/A		
BROMINE NUMBER	0	NONE	N/A		

From: Taryn Mancine
To: DeBoer, Jenny
Subject: RE: INVOICE - 213402493 Evergreen Marcus Hook (17515)
Date: Friday, January 08, 2016 1:27:44 PM
Attachments: ATT00002.png

Hi Jenny

Sorry this took so long, he thought he sent the email to you, but he did not. Please see his email response for data:

If this is a refinery site or bulk storage site, MW-409 is most likely an alkylate blending stream for gasoline manufacture. It could also be an aviation gasoline, but if so, it would contain TEL.

MW-468 appears to be a mix of heavily degraded gasoline and kerosene. The military specification fuel JP-4 is also a gasoline/kerosene mix. Alkyl lead analysis may be able to distinguish these: JP-4 would not contain lead; an old gasoline might.

As for the invoice, yes, that should not have been charged. If you would like I can analyze the organic lead no charge since that cost is $300. Or I can have it credited - the only issue is now with the new year and different fiscal calendar, so might be a bigger mess. I could take the costs off from the newest samples we have in house for you, so that you not charged for that fee.

Let me know what is best and easiest on your end! Thanks!!

Taryn Mancine
Project Manager
Pace Analytical®
220 William Pitt Way
Pittsburgh, PA 15238
Phone: 412-826-4481
taryn.mancine@pacelabs.com
GO STEELERS!

>>> "DeBoer, Jenny" <Jenny.DeBoer@stantec.com> 1/7/2016 12:18 PM >>>

Hi Taryn-

I just wanted to follow up on this invoice and the product types. I haven't seen anything from Dr. Jeffrey. Do you know when I should expect that?

Thanks, Jenny

From: DeBoer, Jenny
Sent: Monday, January 04, 2016 9:32 AM
To: 'Taryn Mancine'
Subject: RE: INVOICE - 213402493 Evergreen Marcus Hook (17515)

Hi Taryn-

Once I get the product type information from Dr. Jeffrey, I'll get this invoice processed. I received another invoice from Ruth Welsh (attached) that included a fee for data interpretation and

report preparation. Can you tell me what this is for as I didn't request a report?

Thanks, Jenny

From: Taryn Mancine [mailto:Taryn.Mancine@pacelabs.com]
Sent: Monday, December 21, 2015 10:33 AM
To: DeBoer, Jenny
Subject: INVOICE - 213402493 Evergreen Marcus Hook (17515)

Thanks and Merry Christmas :)

Taryn Mancine
Project Manager

Pace Analytical®

220 William Pitt Way
Pittsburgh, PA 15238
Phone: 412-826-4481
taryn.mancine@pacelabs.com

This email has been scanned by the Symantec Email Security.cloud service.
For more information please visit http://www.symanteccloud.com

December 18, 2015

formerly ZymaX Forensics

Jenny DeBoer
Stantec
1060 Andrew Drive; Suite 140
West Chester, PA 19380

RE: Evergreen, Marcus Hook AOI 4, 5
Project Number: 213402493

Pace Analytical received 2 sample(s) received on December 2nd, 2015 for analysis labeled MW-409 and MW-468. Per client request, the following analyses were performed:

1. C3-C36 Whole Oil (ASTM 3328)
2. Specific Gravity (ASTM D1217)

The sample was performed in house under laboratory number **17515**.

Please call the lab at 412-826-4481, or you may email any questions or concerns to taryn.mancine@pacelabs.com regarding any analytical data reports.

Respectfully submitted,

Taryn Mancine

Taryn Mancine
Project Manager/Scientist

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

17575

Page: 1 of 1

Section A Required Client Information:

Company:	Stantec Consulting Services, Inc
Address:	1060 Andrew Drive, Suite 140
	West Chester, PA 19380
Email To:	Jenny.DeBoer@stantec.com
Phone: 610-250-2500	Fax: 610-840-2501
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Jenny.DeBoer@stantec.com
Copy To:	
Purchase Order No.:	
Project Name:	Evergreen, Marcus Hook AOI 4, 5
Project Number:	213402493

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: PA

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): C3-C36 (ASTM D3328)	Specific Gravity	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-409	P	G	11/24/15	14:40				1	1								x	x		
2	MW-468	P	G	11/24/15	15:10				1	1								x	x		
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Please report product identification (and relative proportions), degree of weathering, age information and any other	J. DeBoer	11/30/15	1115	[illegible]	11/30	1115
intrepretive information available from the requested analyses. Questions can be directed to Jenny DeBoer (cell 610-209-2511).	[illegible]	11/30/15	1330	[illegible]	12-2-15	2:20
Hold additional volume for possible additional analyses.				[illegible] PHTS	12/2/15	1420

SAMPLE CONDITIONS	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	5	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jenny DeBoer

SIGNATURE of SAMPLER: J. DeBoer

DATE Signed (MM/DD/YY): 11/30/2015

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Cooler Receipt Form

Client Name: Stantec Project: Evergreen Lab Work Order: 17515

A. Shipping/Container Information (circle appropriate response)

Courier: FedEx UPS USPS Client Other: Pace-C Air bill Present: Yes No

Tracking Number:

Custody Seal on Cooler/Box Present: Yes No Seals Intact: Yes No

Cooler/Box Packing Material: Bubble Wrap Absorbent Foam Other:

Type of Ice: Wet Blue None Ice Intact: Yes Melted

Cooler Temperature: 5°C Radiation Screened: Yes No Chain of Custody Present: Yes No

Comments:

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC	✓			
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used			✓	
Are containers properly preserved for the requested testing? (as labeled)			✓	
If an unknown preservation state, were containers checked? Exception: VOA's coliform			✓	If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	

Comments:

Cooler contents examined/received by : LG Date: 12.2.15

Project Manager Review : TM Date: 12-18-15

F-PAE-Q-009-rev.00, 20 Nov2014

12/9/2015

ZymaX ID	17515-1
Sample ID	MW-409

Evaporation

n-Pentane / n-Heptane	2.55
2-Methylpentane / 2-Methylheptane	8.03

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	294.88
Aromatics / Total Paraffins (n+iso+cyc)	0.10
Aromatics / Naphthenes	39.87

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	1992.32
3-Methylhexane / n-Heptane	16.61
Methylcyclohexane / n-Heptane	0.93
Isoparaffins + Naphthenes / Paraffins	68.31

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	1469.31

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	1.30
% Isoparaffinic	88.37
% Aromatic	9.00
% Naphthenic	0.23
% Olefinic	1.10

12/9/2015

ZymaX ID		17515-1
Sample ID		MW-409
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.13
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	2.24
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.06
12	trans-2-Pentene	0.01
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.03
15	2,2-Dimethylbutane	0.01
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	2.36
18	2-Methylpentane	0.68
19	3-Methylpentane	0.34
20	Hexane	0.02
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.02
27	2,4-Dimethylpentane	7.72
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.01
31	2-Methylhexane/TAME	0.34
32	2,3-Dimethylpentane	15.93
33	3-Methylhexane	0.37
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	30.46
I.S. #1	à,à,à-Trifluorotoluene	0.00

12/9/2015

ZymaX ID	17515-1
Sample ID	MW-409

		Relative Area %
36	n-Heptane	0.02
37	Methylcyclohexane	0.02
38	2,5-Dimethylhexane	2.59
39	2,4-Dimethylhexane	3.84
40	2,3,4-Trimethylpentane	9.94
41	Toluene/2,3,3-Trimethylpentane	6.11
42	2,3-Dimethylhexane	2.58
43	2-Methylheptane	0.08
44	4-Methylheptane	0.03
45	3,4-Dimethylhexane	0.44
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.07
47	3-Methylheptane	3.17
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.01
50	2,2-Dimethylheptane	0.51
51	2,4-Dimethylheptane	0.12
52	Ethylcyclohexane	0.10
53	2,6-Dimethylheptane	0.23
54	Ethylbenzene	0.05
55	m+p Xylenes	0.19
56	4-Methyloctane	0.01
57	2-Methyloctane	0.01
58	3-Ethylheptane	0.00
59	3-Methyloctane	0.01
60	o-Xylene	0.02
61	1-Nonene	1.06
62	n-Nonane	1.01
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.18
64	3,3,5-Trimethylheptane	0.63
65	2,4,5-Trimethylheptane	0.32
66	n-Propylbenzene	0.04
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.02
69	1,3,5-Trimethylbenzene	0.13
70	3,3,4-Trimethylheptane	2.82

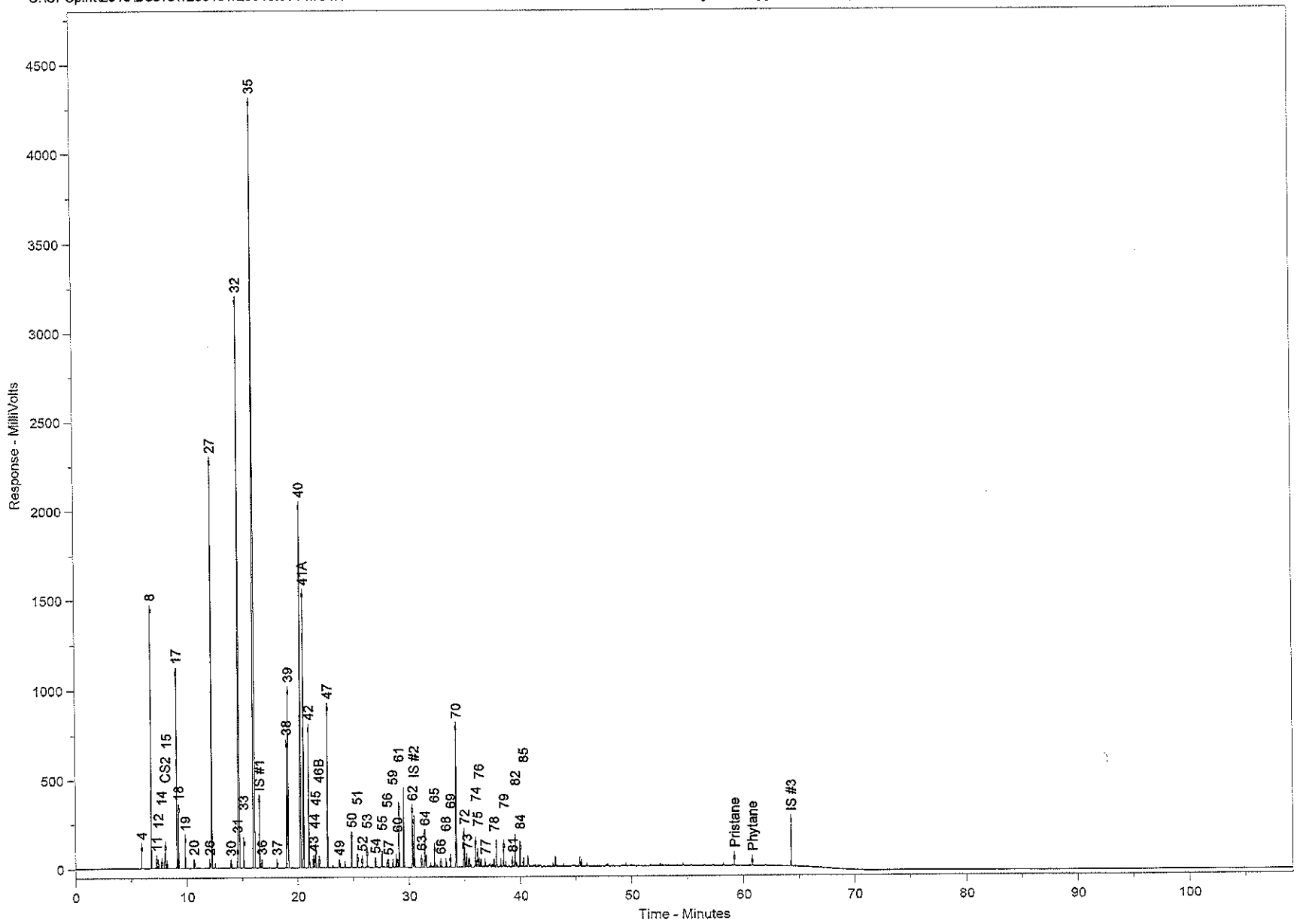
ZymaX ID	17515-1
Sample ID	MW-409

		Relative Area %
71	1-Methyl-2-ethylbenzene	0.00
72	3-Methylnonane	0.58
73	1,2,4-Trimethylbenzene	0.14
74	Isobutylbenzene	0.46
75	sec-Butylbenzene	0.26
76	n-Decane	0.04
77	1,2,3-Trimethylbenzene	0.03
78	Indan	0.02
79	1,3-Diethylbenzene	0.37
80	1,4-Diethylbenzene	0.00
81	n-Butylbenzene	0.07
82	1,3-Dimethyl-5-ethylbenzene	0.53
83	1,4-Dimethyl-2-ethylbenzene	0.00
84	1,3-Dimethyl-4-ethylbenzene	0.33
85	1,2-Dimethyl-4-ethylbenzene	0.04
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.00
88	1,2,3,5-Tetramethylbenzene	0.00
89	1,2,3,4-Tetramethylbenzene	0.00
90	Naphthalene	0.00
91	2-Methyl-naphthalene	0.00
92	1-Methyl-naphthalene	0.00

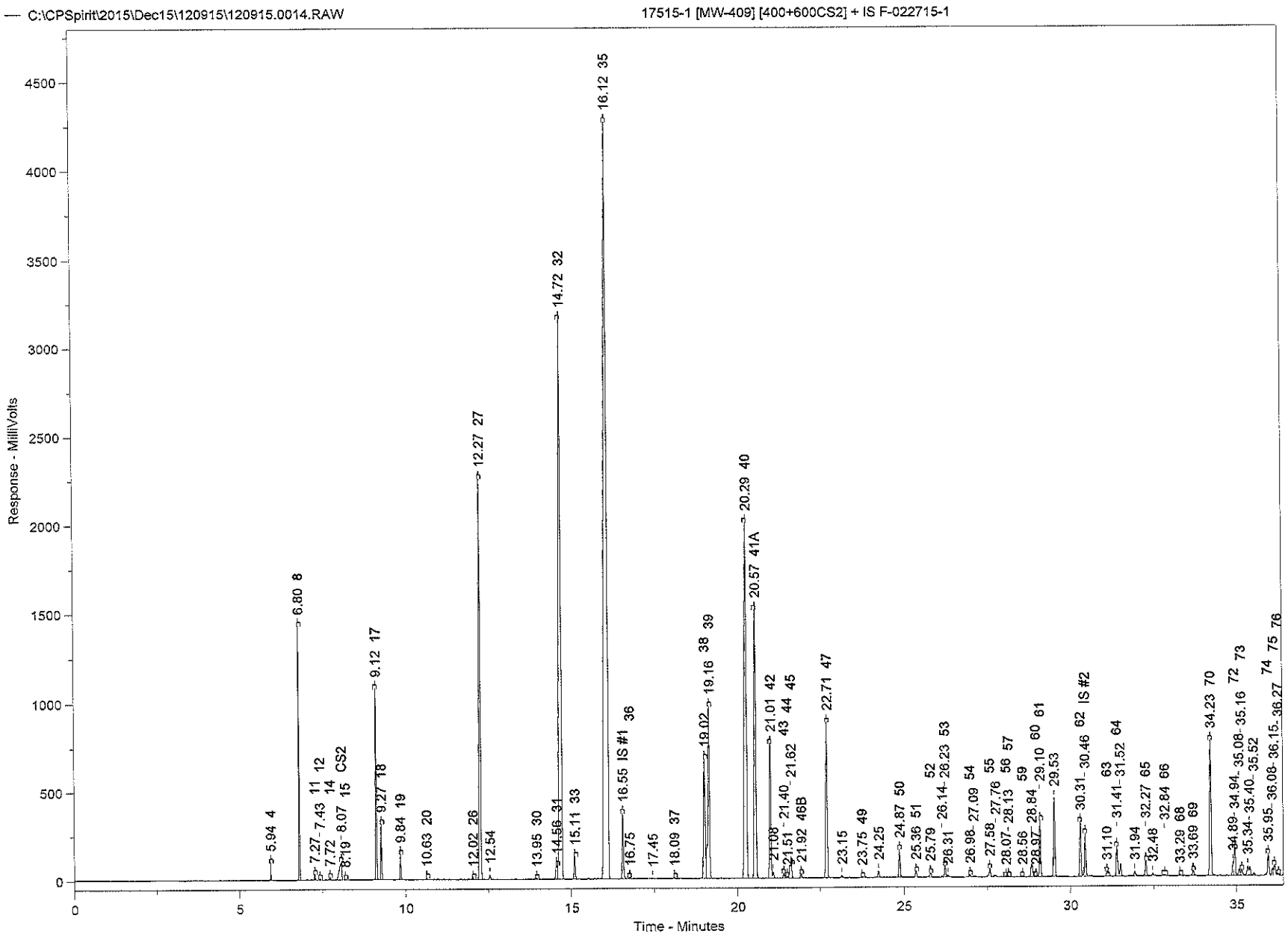
Chrom Perfect Chromatogram Report

C:\CPSpirit\2015\Dec15\120915\120915.0014.RAW

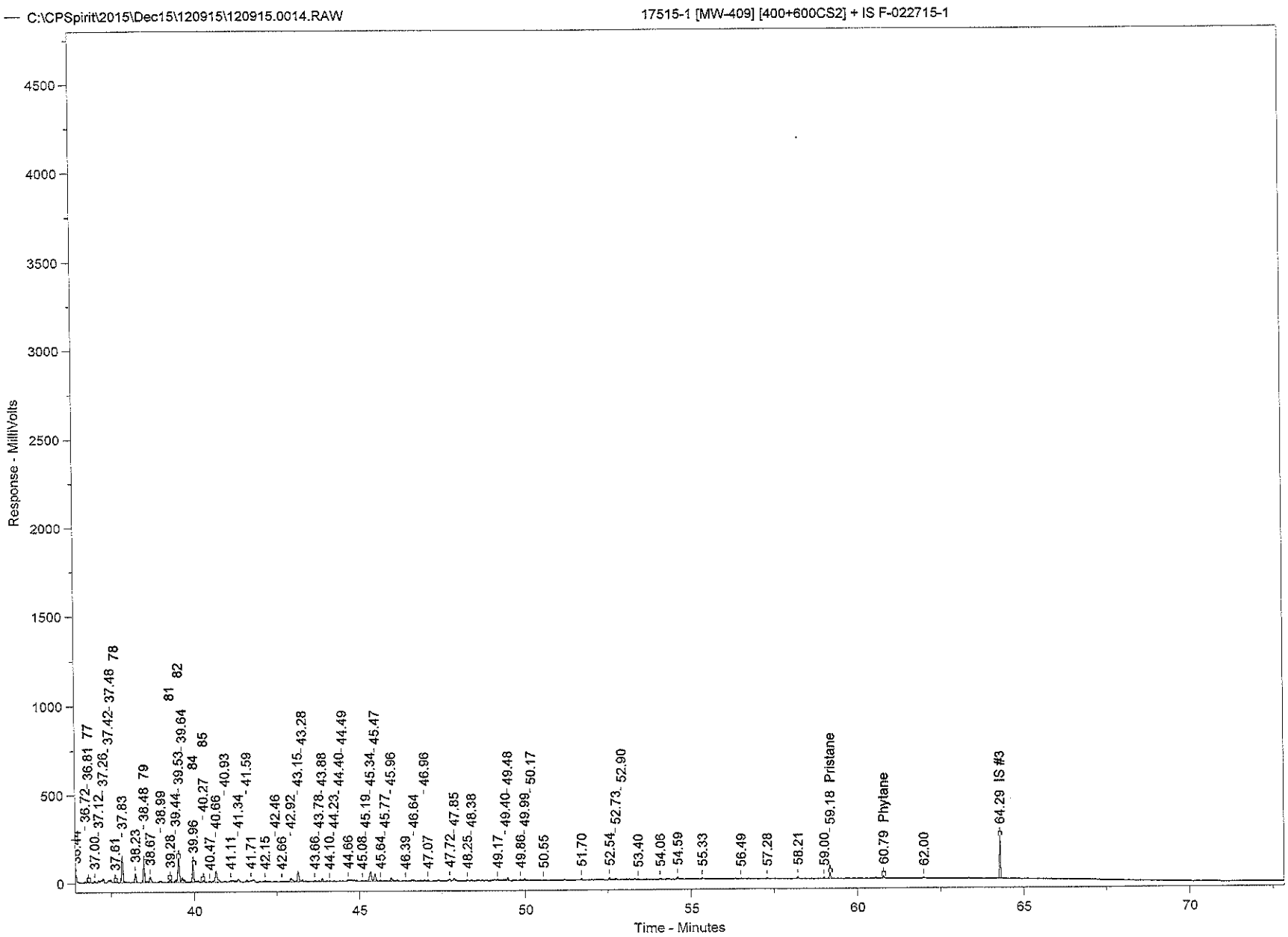
17515-1 [MW-409] [400+600CS2] + IS F-022715-1

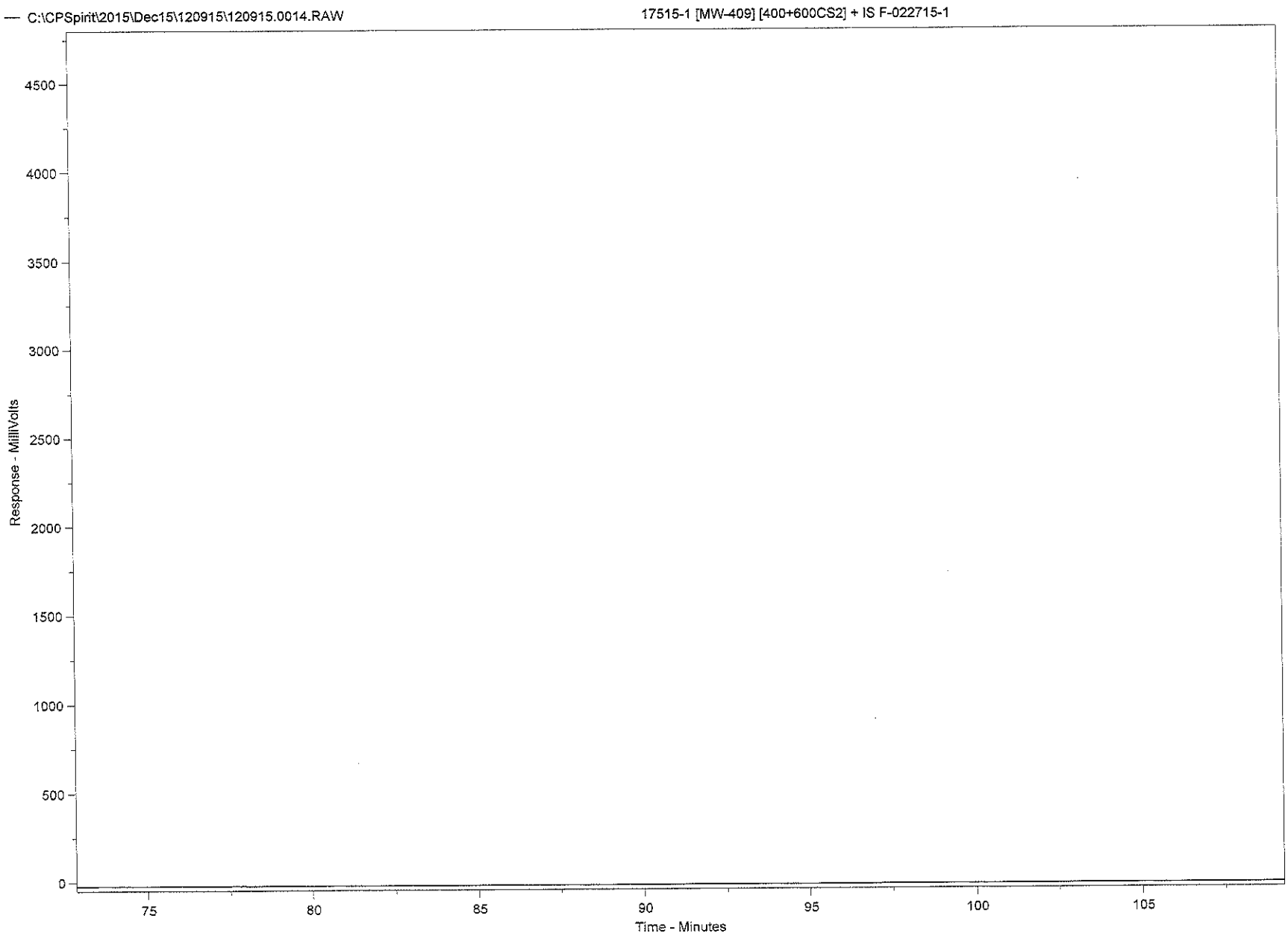


Chrom Perfect Chromatogram Report



Chrom Perfect Chromatogram Report

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17515-1 [MW-409] [400+600CS2] + IS F-022715-1
Response - MilliVolts
4500
4000
3500
3000
2500
2000
1500
1000
500
0
75
80
85
90
95
100
105
Time - Minutes

Sample Name = **17515-1 [MW-409] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2015\Dec15\120915\120915.0014.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\111915.cal

Date Taken (end) = 12/10/2015 5:55:19 PM
Method Version = 44
Calibration Version = 3

Peak Name	Ret. Time	Area %	Area
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8	6.80	2.0192	1881841.00
11	7.27	0.0514	47924.82
12	7.43	0.0113	10498.82
14	7.72	0.0288	26817.54
CS2	8.07	0.5695	530700.80
15	8.19	0.0091	8453.53
17	9.12	2.1214	1977074.00
18	9.27	0.6143	572481.40
19	9.84	0.3040	283272.90
20	10.63	0.0206	19201.69
26	12.02	0.0201	18702.03
27	12.27	6.9460	6473340.00
	12.54	0.0653	60851.87
30	13.95	0.0115	10710.71
31	14.56	0.3072	286257.80
32	14.72	14.3455	13369340.00
33	15.11	0.3343	311541.60
35	16.12	27.4233	25557140.00
IS #1	16.55	0.9638	898243.20
36	16.75	0.0201	18758.41
	17.45	0.0106	9892.34
37	18.09	0.0187	17393.67
38	19.02	2.3333	2174511.00
39	19.16	3.4583	3222974.00
40	20.29	8.9450	8336289.00
41A	20.57	5.5037	5129190.00
42	21.01	2.3205	2162581.00
	21.08	0.0875	81531.05
43	21.40	0.0765	71248.58
44	21.51	0.0262	24391.35
45	21.62	0.3981	371008.80
46B	21.92	0.0619	57724.46
47	22.71	2.8563	2661934.00
	23.15	0.0358	33340.26
49	23.75	0.0114	10578.56
	24.25	0.1008	93945.95
50	24.87	0.4560	424989.70
51	25.36	0.1042	97065.52
52	25.79	0.0911	84866.07
	26.14	0.0133	12430.62
53	26.23	0.2032	189367.40
	26.31	0.0356	33159.28
54	26.98	0.0444	41406.91
	27.09	0.0294	27424.01
55	27.58	0.1725	160774.30
	27.76	0.0409	38154.25
56	28.07	0.0109	10172.14
57	28.13	0.0116	10789.81
59	28.56	0.0128	11960.16
	28.84	0.2965	276345.20
60	28.97	0.0150	13962.29
61	29.10	0.9545	889546.30
	29.53	1.3251	1234939.00
62	30.31	0.9084	846601.10

Peak Name	Ret. Time	Area %	Area
IS #2	30.46	0.7089	660618.80
63	31.10	0.1599	148975.30
64	31.41	0.5709	532055.70
	31.52	0.2014	187732.40
	31.94	0.1114	103790.60
65	32.27	0.2840	264670.50
	32.48	0.0436	40612.70
66	32.84	0.0365	34013.15
68	33.29	0.0192	17906.05
69	33.69	0.1194	111255.10
70	34.23	2.5382	2365445.00
	34.89	0.2122	197755.80
72	34.94	0.5266	490727.10
	35.08	0.1447	134833.70
73	35.16	0.1279	119195.30
	35.34	0.1959	182534.00
	35.40	0.1506	140335.00
	35.52	0.0485	45209.29
74	35.95	0.4165	388132.20
	36.08	0.1205	112277.30
75	36.15	0.2377	221489.50
76	36.27	0.0398	37096.51
	36.44	0.1551	144580.00
	36.72	0.0246	22879.56
77	36.81	0.0242	22514.67
	37.00	0.0344	32046.44
	37.12	0.0467	43553.19
	37.26	0.1188	110760.70
	37.42	0.0537	50070.50
	37.48	0.0555	51743.50
78	37.61	0.0186	17375.68
	37.83	0.4826	449753.30
	38.23	0.1639	152738.20
79	38.48	0.3359	313000.00
	38.67	0.1167	108742.70
	38.99	0.0501	46644.22
81	39.28	0.0596	55561.82
	39.44	0.0412	38354.12
82	39.53	0.4782	445633.00
	39.64	0.1241	115669.20
84	39.96	0.2941	274118.70
85	40.27	0.0403	37512.27
	40.47	0.0176	16372.32
	40.66	0.3342	311421.50
	40.93	0.0239	22238.26
	41.11	0.0414	38629.02
	41.34	0.0734	68395.52
	41.59	0.0322	29964.76
	41.71	0.0106	9880.42
	42.15	0.0300	27948.43
	42.46	0.0197	18372.79
	42.66	0.0175	16333.89
	42.92	0.1113	103726.70
	43.15	0.2132	198690.70
	43.28	0.0303	28253.20
	43.66	0.0166	15445.80
	43.78	0.0207	19307.22
	43.88	0.0586	54600.12
	44.10	0.0394	36685.79
	44.23	0.0217	20229.97
	44.40	0.0131	12162.41
	44.49	0.0118	11003.38
	44.66	0.0178	16634.75
	45.08	0.0157	14586.87
	45.19	0.0168	15628.21
	45.34	0.2321	216345.50
	45.47	0.1491	138953.00

Peak Name	Ret. Time	Area %	Area
	45.64	0.0226	21099.37
	45.77	0.0139	12989.11
	45.96	0.0664	61893.34
	46.39	0.0135	12540.88
	46.64	0.0480	44701.17
	46.96	0.0159	14793.48
	47.07	0.0256	23861.94
	47.72	0.0313	29166.92
	47.85	0.0329	30658.22
	48.25	0.0190	17745.42
	48.38	0.0161	15048.40
	49.17	0.0163	15209.54
	49.40	0.0365	33990.67
	49.48	0.0450	41934.79
	49.86	0.0281	26155.54
	49.99	0.0345	32145.36
	50.17	0.0118	11028.05
	50.55	0.0234	21816.95
	51.70	0.0343	31949.80
	52.54	0.0362	33697.03
	52.73	0.0274	25519.22
	52.90	0.0234	21782.04
	53.40	0.0169	15716.89
	54.06	0.0210	19528.85
	54.59	0.0309	28835.92
	55.33	0.0167	15588.50
	56.49	0.0103	9622.88
	57.28	0.0200	18638.22
	58.21	0.0346	32262.09
	59.00	0.0169	15752.09
Pristane	59.18	0.0888	82738.68
Phytane	60.79	0.0370	34460.77
	62.00	0.0212	19734.95
IS #3	64.29	0.4906	457174.10

Total Area = 9.319512E+07 Total Height = 2.608581E+07 Total Amount = 1

ZymaX ID	17515-2
Sample ID	MW-468
Evaporation	
n-Pentane / n-Heptane	0.05
2-Methylpentane / 2-Methylheptane	0.16
Waterwashing	
Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	0.10
Aromatics / Total Paraffins (n+iso+cyc)	1.98
Aromatics / Naphthenes	7.26
Biodegradation	
(C4 - C8 Para + Isopara) / C4 - C8 Olefins	187.87
3-Methylhexane / n-Heptane	2.14
Methylcyclohexane / n-Heptane	6.94
Isoparaffins + Naphthenes / Paraffins	7.93
Octane rating	
2,2,4,-Trimethylpentane / Methylcyclohexane	0.16
Relative percentages - Bulk hydrocarbon composition as PIANO	
% Paraffinic	3.72
% Isoparaffinic	20.46
% Aromatic	65.87
% Naphthenic	9.07
% Olefinic	0.88

12/9/2015

ZymaX ID		17515-2
Sample ID		MW-468
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.02
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.02
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.05
18	2-Methylpentane	0.18
19	3-Methylpentane	0.23
20	Hexane	0.10
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.06
26	Methylcyclopentane	0.32
27	2,4-Dimethylpentane	0.11
28	Benzene	0.00
29	5-Methyl-1-hexene	0.06
30	Cyclohexane	0.43
31	2-Methylhexane/TAME	0.43
32	2,3-Dimethylpentane	0.33
33	3-Methylhexane	0.73
34A	1-trans-3-Dimethylcyclopentane	0.27
34B	1-cis-3-Dimethylcyclopentane	0.41
35	2,2,4-Trimethylpentane	0.38
I.S. #1	à,à,à-Trifluorotoluene	0.00

ZymaX ID		17515-2
Sample ID		MW-468
		Relative Area %
36	n-Heptane	0.34
37	Methylcyclohexane	2.38
38	2,5-Dimethylhexane	0.26
39	2,4-Dimethylhexane	0.40
40	2,3,4-Trimethylpentane	0.30
41	Toluene/2,3,3-Trimethylpentane	0.25
42	2,3-Dimethylhexane	0.59
43	2-Methylheptane	1.15
44	4-Methylheptane	0.45
45	3,4-Dimethylhexane	0.20
46A	3-Ethyl-3-methylpentane	1.98
46B	1,4-Dimethylcyclohexane	0.92
47	3-Methylheptane	0.10
48	2,2,5-Trimethylhexane	0.21
49	n-Octane	0.78
50	2,2-Dimethylheptane	0.09
51	2,4-Dimethylheptane	0.50
52	Ethylcyclohexane	4.36
53	2,6-Dimethylheptane	1.10
54	Ethylbenzene	1.03
55	m+p Xylenes	1.69
56	4-Methyloctane	1.57
57	2-Methyloctane	0.85
58	3-Ethylheptane	0.62
59	3-Methyloctane	2.82
60	o-Xylene	0.00
61	1-Nonene	0.76
62	n-Nonane	0.67
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.58
64	3,3,5-Trimethylheptane	1.48
65	2,4,5-Trimethylheptane	0.99
66	n-Propylbenzene	2.69
67	1-Methyl-3-ethylbenzene	0.51
68	1-Methyl-4-ethylbenzene	1.29
69	1,3,5-Trimethylbenzene	5.14
70	3,3,4-Trimethylheptane	1.90

ZymaX ID 17515-2
Sample ID MW-468

		Relative Area %
71	1-Methyl-2-ethylbenzene	1.26
72	3-Methylnonane	0.41
73	1,2,4-Trimethylbenzene	3.37
74	Isobutylbenzene	0.79
75	sec-Butylbenzene	1.86
76	n-Decane	1.81
77	1,2,3-Trimethylbenzene	0.46
78	Indan	7.00
79	1,3-Diethylbenzene	2.53
80	1,4-Diethylbenzene	1.79
81	n-Butylbenzene	4.43
82	1,3-Dimethyl-5-ethylbenzene	2.81
83	1,4-Dimethyl-2-ethylbenzene	2.70
84	1,3-Dimethyl-4-ethylbenzene	2.78
85	1,2-Dimethyl-4-ethylbenzene	2.78
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	2.04
88	1,2,3,5-Tetramethylbenzene	2.40
89	1,2,3,4-Tetramethylbenzene	3.47
90	Naphthalene	2.54
91	2-Methyl-naphthalene	4.41
92	1-Methyl-naphthalene	3.28

Chrom Perfect Chromatogram Report

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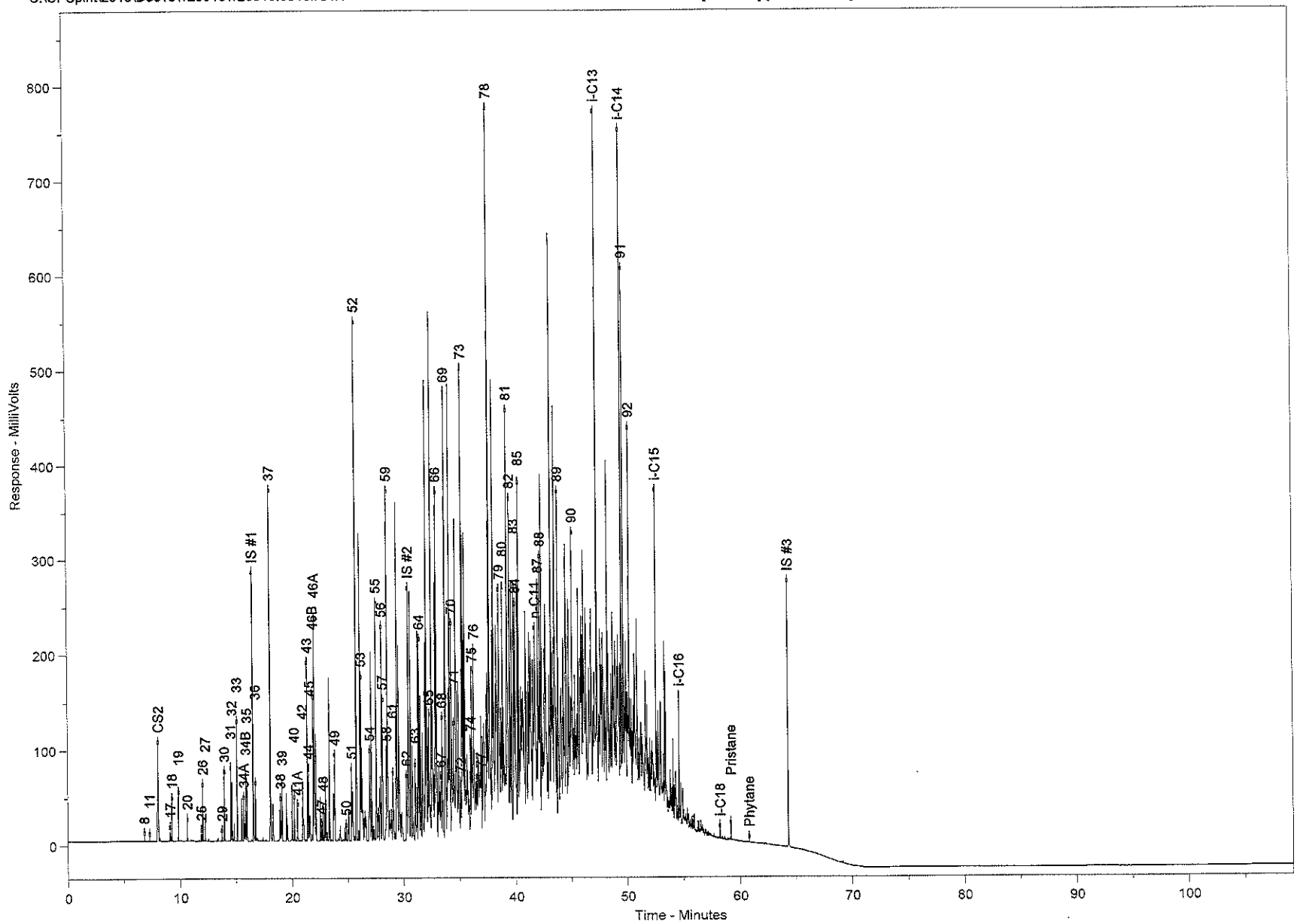
17515-2 [MW-468] [400+600CS2] + IS F-022715-1



Chrom Perfect Chromatogram Report

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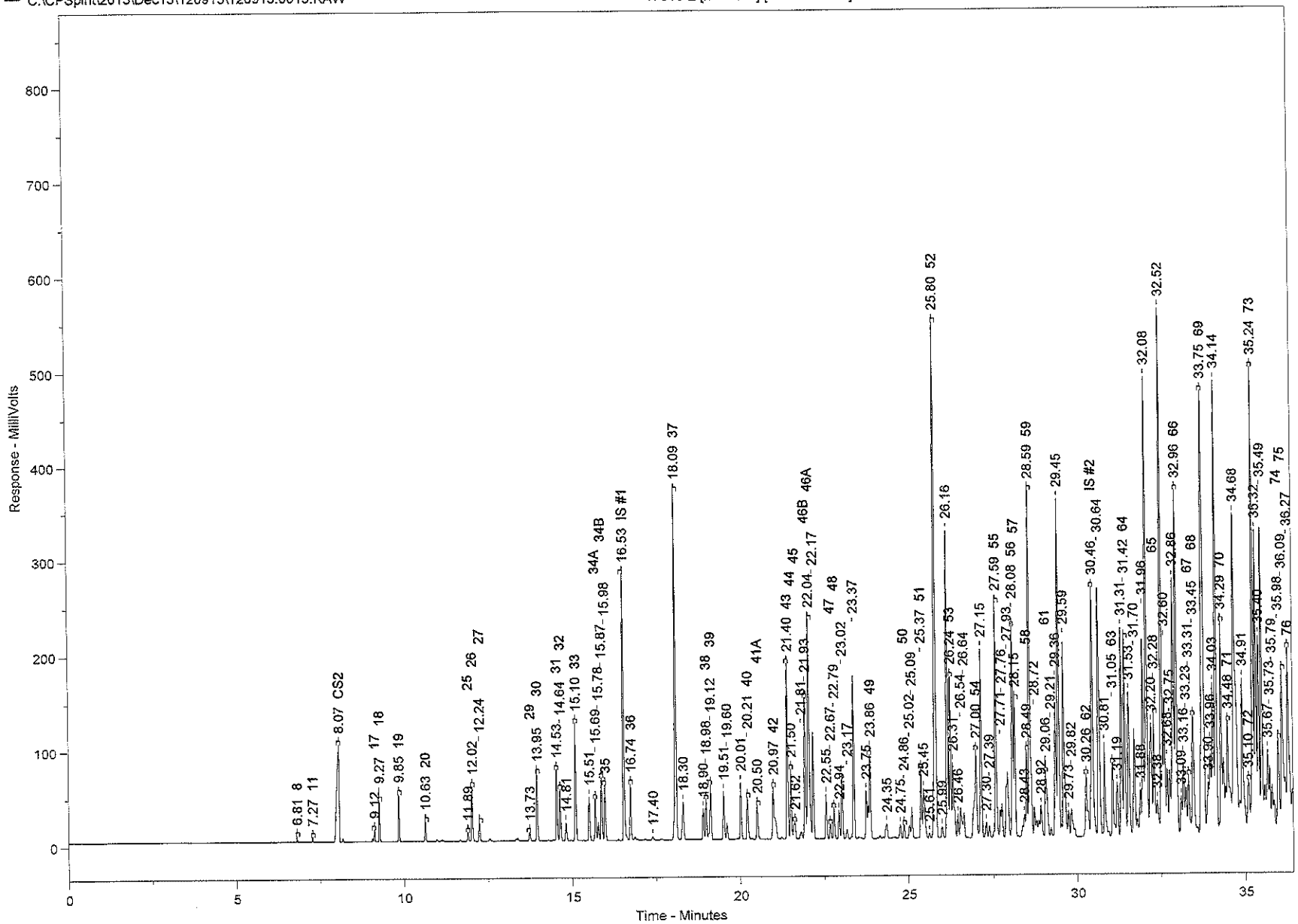
17515-2 [MW-468] [400+600CS2] + IS F-022715-1



Chrom Perfect Chromatogram Report

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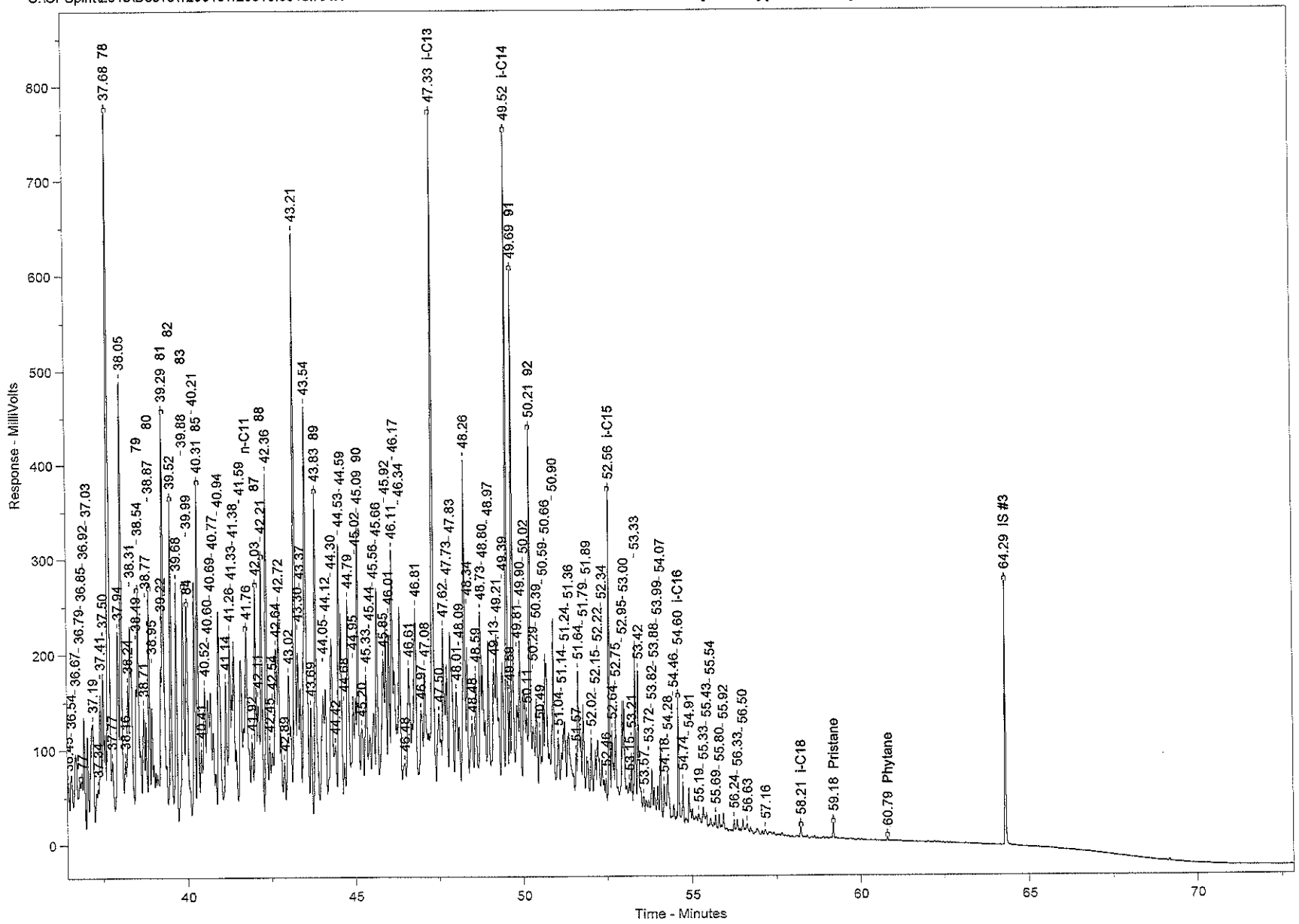
17515-2 [MW-468] [400+600CS2] + IS F-022715-1



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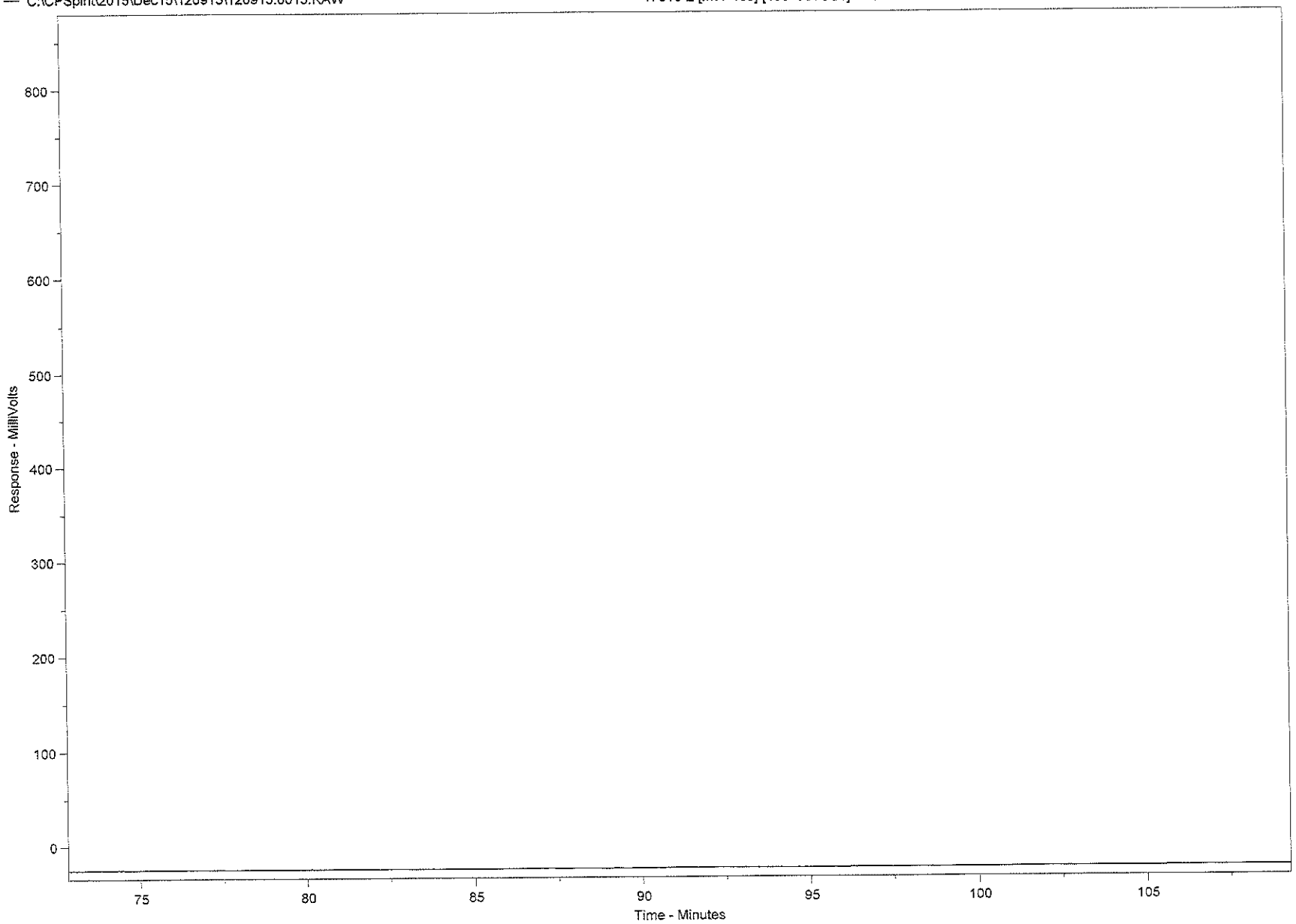
17515-2 [MW-468] [400+600CS2] + IS F-022715-1



Sample Name = **17515-2 [MW-468] [400+600CS2] + IS F-022715-1**

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = **C:\CPSpirit\2015\Dec15\120915\120915.0015.RAW**
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\111915.cal

Date Taken (end) = 12/10/2015 8:03:09 PM
Method Version = 44
Calibration Version = 3

Peak Name	Ret. Time	Area %	Area
8	6.81	0.0049	8149.69
11	7.27	0.0046	7609.00
CS2	8.07	0.3016	500028.50
17	9.12	0.0127	21078.93
18	9.27	0.0472	78168.96
19	9.85	0.0590	97857.69
20	10.63	0.0265	43899.21
25	11.89	0.0141	23307.30
26	12.02	0.0804	133278.80
27	12.24	0.0292	48487.37
29	13.73	0.0154	25566.43
30	13.95	0.1091	180866.40
31	14.53	0.1110	184088.80
32	14.64	0.0846	140179.50
	14.81	0.0302	50124.78
33	15.10	0.1872	310305.20
	15.51	0.0705	116876.50
34A	15.69	0.0679	112612.20
	15.78	0.0300	49687.91
34B	15.87	0.1050	174085.00
35	15.98	0.0970	160763.50
IS #1	16.53	0.4305	713756.20
36	16.74	0.0873	144795.80
	17.40	0.0068	11340.37
37	18.09	0.6065	1005499.00
	18.30	0.0793	131525.80
	18.90	0.0506	83893.29
38	18.98	0.0675	111894.10
39	19.12	0.1018	168841.40
	19.51	0.0801	132872.00
	19.60	0.0277	45903.98
	20.01	0.0940	155761.40
40	20.21	0.0764	126608.80
41A	20.50	0.0627	103877.70
42	20.97	0.1507	249836.70
43	21.40	0.2937	486835.50
44	21.50	0.1154	191273.20
45	21.62	0.0500	82914.45
	21.81	0.0189	31346.08
46B	21.93	0.2338	387651.20
46A	22.04	0.5059	838660.40
	22.17	0.1712	283751.90
	22.55	0.0753	124860.10
47	22.67	0.0267	44196.14
48	22.79	0.0527	87386.89
	22.94	0.0468	77581.76
	23.02	0.1100	182397.00
	23.17	0.0174	28895.79
	23.37	0.2731	452805.10
	23.75	0.0814	135005.00
49	23.86	0.1992	330211.40
	24.35	0.0371	61576.13
	24.75	0.0246	40703.96
50	24.86	0.0240	39820.52
	25.02	0.0229	38019.81

Peak Name	Ret. Time	Area %	Area
	25.09	0.0560	92858.05
51	25.37	0.1264	209475.80
	25.45	0.1201	199146.70
	25.61	0.0084	13968.00
52	25.80	1.1118	1843178.00
	25.99	0.0224	37176.36
	26.16	0.5527	916342.60
53	26.24	0.2819	467277.60
	26.31	0.1740	288423.30
	26.46	0.0390	64593.12
	26.54	0.0752	124592.20
	26.64	0.0412	68351.15
54	27.00	0.2641	437917.30
	27.15	0.3361	557130.90
	27.30	0.0314	52006.21
	27.39	0.0208	34503.95
55	27.59	0.4303	713452.30
	27.71	0.0473	78343.03
	27.76	0.0571	94614.59
	27.93	0.2107	349276.00
56	28.08	0.4017	665915.50
57	28.15	0.2162	358436.10
	28.43	0.0652	108127.90
58	28.49	0.1580	262006.60
59	28.59	0.7191	1192103.00
	28.72	0.0562	93244.99
	28.92	0.1013	167940.90
61	29.06	0.1942	321890.50
	29.21	0.0187	30968.10
	29.36	0.2856	473548.00
	29.45	0.6434	1066616.00
	29.59	0.4643	769698.30
	29.73	0.0320	52970.43
	29.82	0.0715	118514.70
62	30.26	0.1701	281938.00
IS #2	30.46	0.5923	982006.60
	30.64	0.5532	917107.20
	30.81	0.1892	313739.80
63	31.05	0.1485	246137.80
	31.19	0.1053	174501.30
	31.31	0.4126	684035.40
64	31.42	0.3787	627889.10
	31.53	0.3135	519718.70
	31.70	0.2414	400210.20
	31.88	0.0979	162312.90
	31.96	0.3692	612038.00
	32.08	0.9054	1500991.00
	32.20	0.3162	524188.30
65	32.28	0.2514	416731.70
	32.38	0.0877	145381.00
	32.52	1.0156	1683675.00
	32.60	0.2956	490011.10
	32.68	0.1170	193921.10
	32.75	0.1355	224578.80
	32.86	0.6343	1051641.00
66	32.96	0.6854	1136259.00
	33.09	0.0698	115640.20
	33.16	0.1423	235836.40
	33.23	0.0888	147294.70
67	33.31	0.1294	214548.00
68	33.45	0.3294	546032.90
69	33.75	1.3128	2176495.00
	33.90	0.1063	176244.80
	33.96	0.1730	286798.70
	34.03	0.3721	616964.50
	34.14	0.8385	1390189.00
70	34.29	0.4857	805194.10

Peak Name	Ret. Time	Area %	Area
71	34.48	0.3212	532517.60
	34.68	1.0283	1704828.00
	34.91	0.3330	552134.60
72	35.10	0.1042	172720.30
73	35.24	0.8601	1425981.00
	35.32	0.5022	832578.40
	35.40	0.3276	543196.20
	35.49	0.5415	897694.50
	35.67	0.1268	210211.20
	35.73	0.0606	100459.00
	35.79	0.0290	48152.57
74	35.98	0.2018	334474.00
75	36.09	0.4738	785426.90
76	36.27	0.4621	766021.70
	36.45	0.1007	166986.70
	36.54	0.1593	264178.20
	36.67	0.2756	456976.80
	36.79	0.1280	212252.70
77	36.85	0.1173	194450.40
	36.92	0.2101	348267.30
	37.03	0.1732	287059.20
	37.19	0.4420	732825.90
	37.34	0.1426	236341.50
	37.41	0.2973	492960.60
	37.50	0.4884	809640.10
78	37.68	1.7850	2959266.00
	37.77	0.1857	307870.50
	37.94	0.5371	890469.70
	38.05	1.0085	1671994.00
	38.16	0.1610	266849.10
	38.24	0.3092	512538.00
	38.31	0.6922	1147541.00
	38.49	0.3103	514485.90
79	38.54	0.6451	1069489.00
	38.71	0.2837	470404.20
	38.77	0.2027	335996.70
80	38.87	0.4579	759052.70
	38.95	0.5967	989245.20
	39.22	0.2970	492348.90
81	39.29	1.1303	1873934.00
82	39.52	0.7159	1186863.00
	39.68	0.5297	878131.70
83	39.88	0.6892	1142667.00
84	39.99	0.7087	1174852.00
	40.21	0.5155	854552.60
85	40.31	0.7102	1177408.00
	40.41	0.1811	300233.50
	40.52	0.4156	689070.20
	40.60	0.4150	688039.30
	40.69	0.3235	536366.90
	40.77	0.3226	534800.80
	40.94	0.7099	1176974.00
	41.14	0.4435	735290.30
	41.26	0.4859	805565.10
	41.33	0.2316	383914.00
	41.38	0.4007	664339.80
	41.59	0.5545	919323.00
n-C11	41.76	0.9272	1537140.00
	41.92	0.2452	406429.50
87	42.03	0.5205	862860.30
	42.11	0.3537	586427.40
88	42.21	0.6120	1014655.00
	42.36	0.7755	1285610.00
	42.45	0.1981	328428.70
	42.54	0.2057	340950.80
	42.64	0.5918	981169.10
	42.72	0.6543	1084791.00

Peak Name	Ret. Time	Area %	Area
	42.89	0.1669	276659.80
	43.02	0.6838	1133607.00
	43.21	1.2964	2149208.00
	43.30	0.4260	706230.20
	43.37	0.3053	506145.90
	43.54	1.5103	2503833.00
	43.69	0.2643	438191.20
89	43.83	0.8850	1467274.00
	44.05	0.5028	833545.90
	44.12	0.3004	498004.80
	44.30	0.7099	1176968.00
	44.42	0.2677	443825.20
	44.53	0.6738	1117132.00
	44.59	0.3956	655780.90
	44.68	0.1563	259188.80
	44.79	0.6841	1134126.00
	44.95	0.3744	620733.60
	45.02	0.2837	470330.90
90	45.09	0.6490	1075958.00
	45.20	0.3548	588208.40
	45.33	0.4554	754947.30
	45.44	0.2833	469667.00
	45.56	0.4059	672999.50
	45.66	0.6236	1033800.00
	45.85	0.6587	1092019.00
	45.92	0.4643	769746.30
	46.01	0.4390	727736.80
	46.11	0.6869	1138778.00
	46.17	0.3980	659849.40
	46.34	0.6267	1038946.00
	46.48	0.2703	448178.00
	46.61	0.8197	1358923.00
	46.81	0.8002	1326694.00
	46.97	0.4739	785612.30
	47.08	0.8501	1409279.00
i-C13	47.33	1.7165	2845757.00
	47.50	0.5518	914852.90
	47.62	0.5337	884770.30
	47.73	0.3995	662315.80
	47.83	0.8142	1349776.00
	48.01	0.4404	730130.50
	48.09	0.2449	405998.50
	48.26	0.9784	1622066.00
	48.34	0.3772	625393.80
	48.48	0.4290	711292.90
	48.59	0.4780	792388.20
	48.73	0.5859	971324.30
	48.80	0.5437	901317.30
	48.97	0.4994	827888.90
	49.13	0.5356	887868.30
	49.21	0.6656	1103499.00
	49.39	0.5288	876717.30
i-C14	49.52	1.2299	2038998.00
	49.59	0.2607	432285.80
91	49.69	1.1258	1866499.00
	49.81	0.4182	693254.70
	49.90	0.4273	708432.30
	50.02	0.4178	692601.30
	50.11	0.2130	353169.90
92	50.21	0.8378	1389003.00
	50.29	0.2891	479242.30
	50.39	0.3306	548102.40
	50.49	0.2832	469437.70
	50.59	0.2554	423440.50
	50.66	0.7517	1246172.00
	50.90	0.5874	973876.10
	51.04	0.3109	515378.50

Peak Name	Ret. Time	Area %	Area
	51.14	0.1638	271572.00
	51.24	0.3697	612981.30
	51.36	0.5856	970913.30
	51.57	0.1489	246818.20
	51.64	0.5015	831383.10
	51.79	0.2743	454807.30
	51.89	0.2493	413243.70
	52.02	0.2252	373363.70
	52.15	0.2135	353892.50
	52.22	0.3009	498894.50
	52.34	0.2127	352709.40
	52.46	0.0964	159844.80
i-C15	52.56	0.5198	861798.10
	52.64	0.2679	444076.90
	52.75	0.2910	482394.50
	52.95	0.2717	450399.00
	53.00	0.2196	364098.80
	53.15	0.1063	176157.20
	53.21	0.1255	208120.70
	53.33	0.3360	557072.30
	53.42	0.3351	555571.60
	53.57	0.0677	112185.50
	53.72	0.0444	73580.53
	53.82	0.1215	201484.70
	53.88	0.0827	137038.80
	53.99	0.0784	130012.60
	54.07	0.1409	233646.80
	54.18	0.0892	147878.50
	54.28	0.1475	244581.50
	54.46	0.0448	74337.41
i-C16	54.60	0.1817	301161.40
	54.74	0.0674	111722.50
	54.91	0.0528	87457.73
	55.19	0.0154	25592.54
	55.33	0.0377	62459.46
	55.43	0.0212	35207.25
	55.54	0.0154	25559.39
	55.69	0.0144	23853.55
	55.80	0.0225	37220.46
	55.92	0.0229	37961.09
	56.24	0.0167	27634.60
	56.33	0.0204	33743.92
	56.50	0.0234	38816.18
	56.63	0.0183	30362.18
	57.16	0.0116	19163.28
i-C18	58.21	0.0180	29776.30
Pristane	59.18	0.0208	34439.59
Phytane	60.79	0.0055	9078.12
IS #3	64.29	0.3401	563803.90

Total Area = 1.657861E+08 Total Height = 4.278653E+07 Total Amount = 0

REPORT OF ANALYTICAL RESULTS

Client: Jenny DeBoer Stantec 1060 Andrew Drive; Suite 140 West Chester, PA 19380	**Lab Number:** 17515 **Collected:** 11/24/2015 **Received:** 12/2/2015 **Matrix:** Product
Project: Evergreen, Marcus Hook **Project Number:** 213402493 **Collected by:** Jenny DeBoer	**Sample Description:** See Below **Analyzed:** 12/17/2015 **Method:** ASTM D 1217

SPECIFIC GRAVITY

LAB NUMBER	SAMPLE DESCRIPTION	SPECIFIC GRAVITY
17515-1	MW-409	0.719
17515-2	MW-468	0.828

Torkelson Geochemistry, Inc.
2528 S. Columbia Place
Tulsa, OK 74114-3233
Phone: 918-749-8441
Fax: 918-749-6005
e-mail: BTorkelson@torkelsongeochemistry.com

CHAIN-OF-CUSTODY RECORD

Project: SUNOCO REFINERY
Location: MARCUS HOOK AOT-5
Proj. No.:
P.O.:
Sampled By: Andrew Eberts

Report/Bill To: Tiffani Doerr (AQUATERRA)
Address: 122 S. Church St. West Chester, PA
Phone: (610) 431-5733
Fax:
e-mail: TD@AQUATERRA-TECH.COM

Additional Instructions
CC: Pat Troy (LANGAN)
ptroy@langan.com
Requested Turn-Around Time:

ITEM NO.	SAMPLE DESCRIPTION	DATE	MATRIX	LAB NO.	Total # OF Vials	PRESERVATIVES: None					ANALYSES REQUESTED: GC Characterization	Density	Viscosity	Water Surface Tension	NAPL Surface Tension	NAPL/Water Interfac. Tens.	Lead	Sulfur						REMARKS
1	MW-472	8/21/13	LNAPL		1						X	X												☆ Please include a brief
2																								interpretation of product
3																								type consistent with other
4																								☆ Samples from this project. ☆
5																								
6																								
7																								
8																								
9																								
10																								

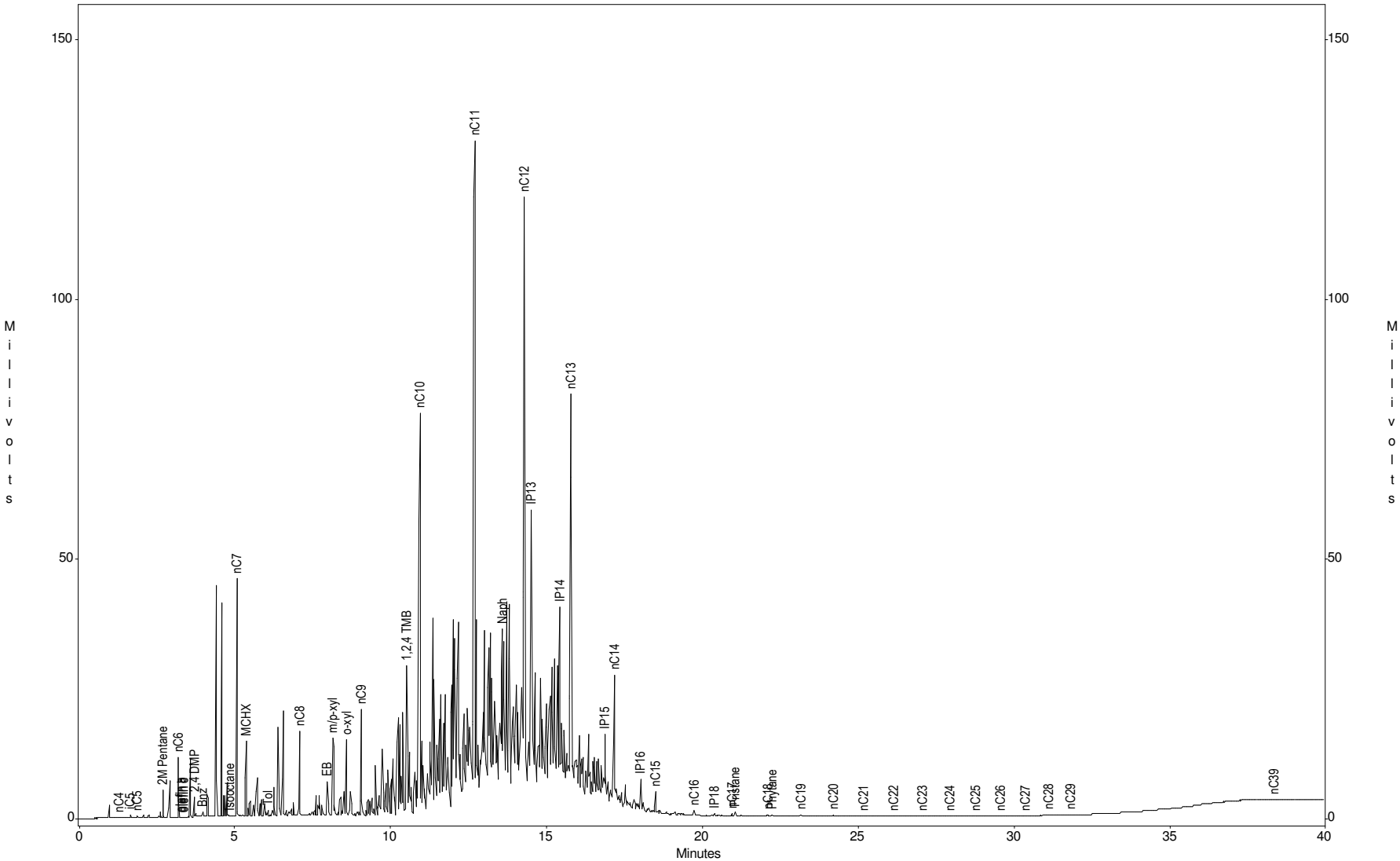
RELINQUISHED BY	DATE	TIME	ACCEPTED BY	DATE	TIME
[signature] Eberts/Aquaterra	8/27/13	1600	[signature] AQUATERRA	8/27/13	1600
[signature] AQUATERRA	8/27/13	1630	FED-EX	8/27/13	1630
			[signature]	8-30-13	0820

Sunoco Refinery - Marcus Hook, AOI5						
TGI Job 13130						
Interpretation of Product Type(s), Proportions and Weathering				Similarities to Other Samples in this Study		
Sample	Product Type(s)	Proportions	Weathering	Quite Similar to	Fairly Similar to	Somewhat Similar to
MW-472	Unknown Light Material	8%	?			
	Light Middle Distillate	92%	Slight			

Torkelson Geochemistry, Inc.

Sunoco Refinery, Marcus Hook, AOI-5
Sample ID : MW-472
Acquired : Sep 04, 2013 14:14:58

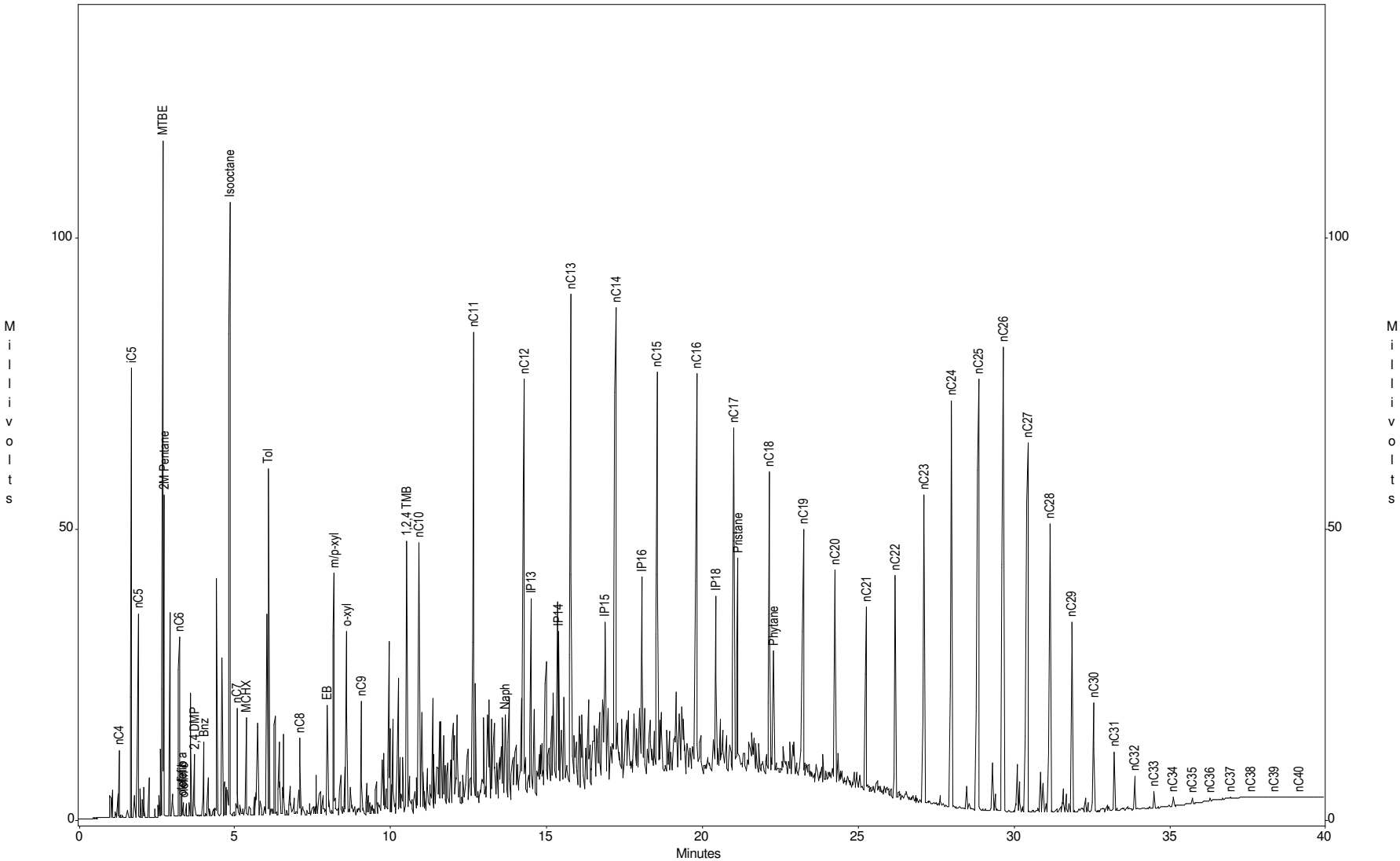
c:\ezchrom\chrom\13130\mw-472 -- Channel A



Torkelson Geochemistry, Inc.

Sunoco Refinery, Marcus Hook, AOI-5
Sample ID : Gas/Dies/Wax std
Acquired : Sep 04, 2013 13:22:56

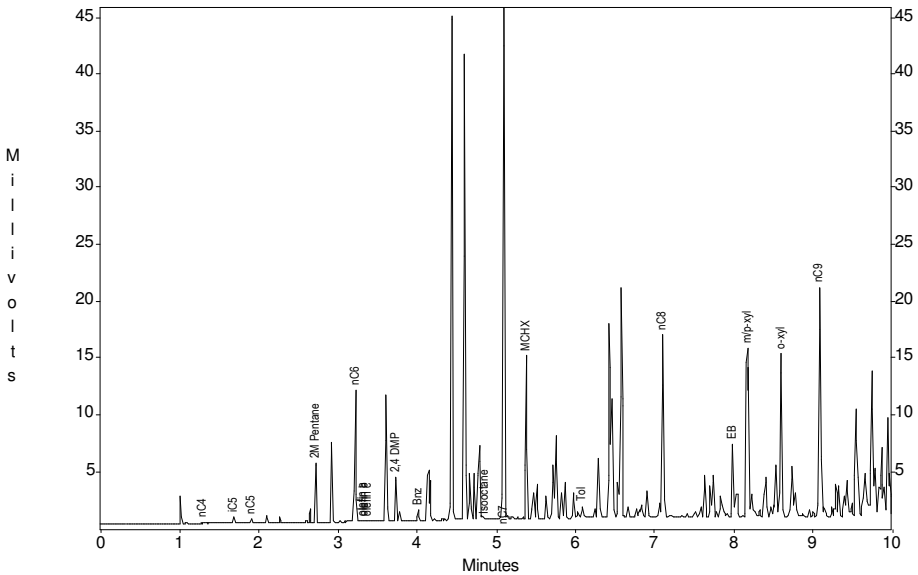
c:\ezchrom\chrom\13130\gadiwax2 -- Channel A



Torkelson Geochemistry, Inc.

Sunoco Refinery, Marcus Hook, AOI-5
Sample ID : MW-472
Acquired : Sep 04, 2013 14:14:58

c:\ezchrom\chrom\13130\mw-472 -- Channel A



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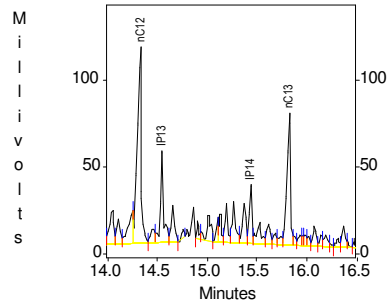

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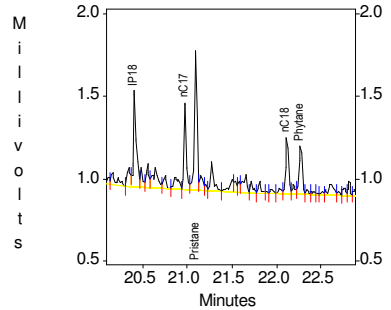

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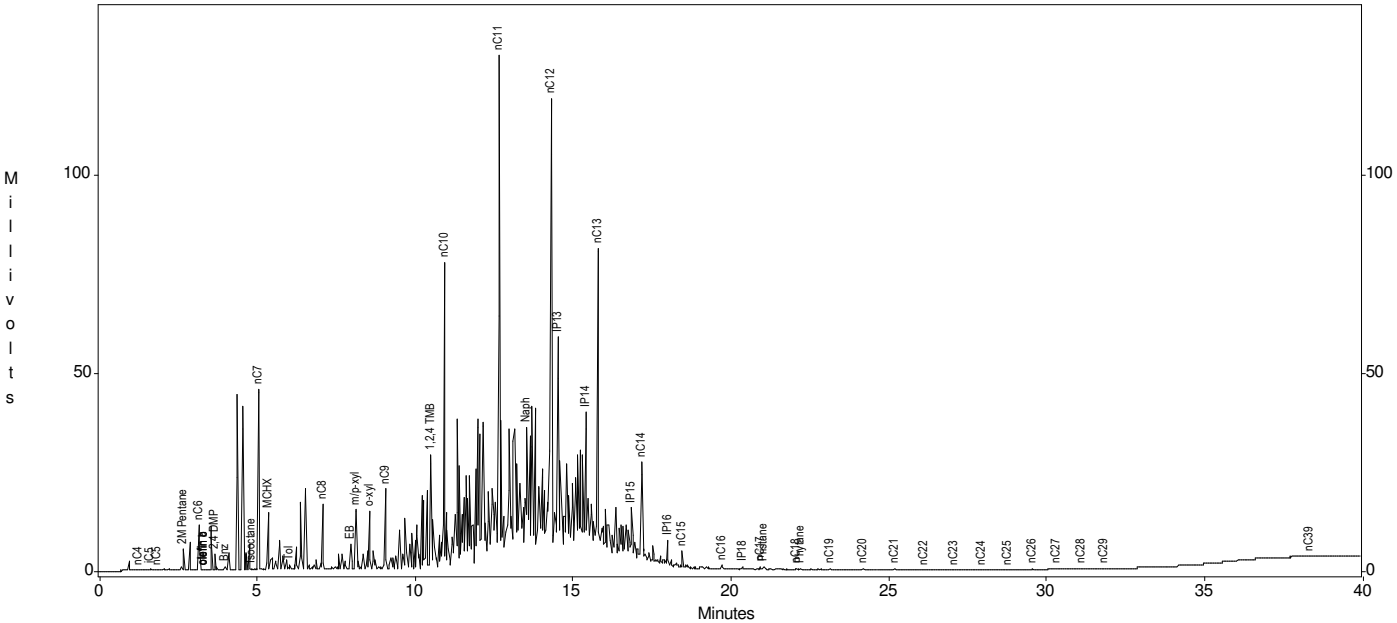


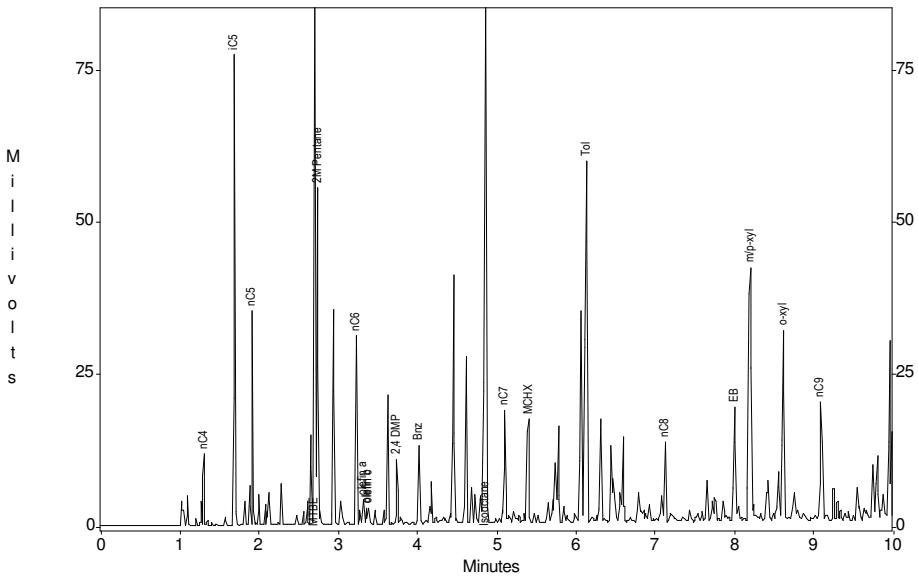
Channel A Results

Peak	Area	Height
nC4	34	51
iC5	366	532
nC5	277	371
MTBE	0	0
2M Pentane	4573	5168
nC6	10742	11575
olefin a	51	39
olefin b	32	30
olefin c	33	28
2,4 DMP	3840	3777
Bnz	944	859
Isooctane	117	83
nC7	54752	45752
MCHX	16937	14387
Tol	1696	1129
nC8	19965	16279
EB	8631	6481
m/p-xyl	34647	15002
o-xyl	19797	14512
nC9	31567	20315
1,2,4 TMB	45922	28470
nC10	143964	76810
nC11	307992	126780
Naph	76329	31415
nC12	313448	113214
IP13	122914	52552
IP14	52722	33743
nC13	171651	75933
IP15	30687	12757
nC14	54377	24650
IP16	10810	6040
nC15	6902	3986
nC16	1894	879
IP18	1459	585
nC17	888	529
Pristane	1669	846
nC18	654	346
Phytane	660	297
nC19	781	285
nC20	344	179
nC21	208	113
nC22	174	88
nC23	133	68
nC24	93	60
nC25	168	65
nC26	191	64
nC27	115	45
nC28	79	30
nC29	50	16
nC30	0	0
nC31	0	0
nC32	0	0
nC33	0	0
nC34	0	0
nC35	0	0
nC36	0	0
nC37	0	0
nC38	0	0
nC39	41	11
nC40	0	0

Torkelson Geochemistry, Inc.

Sunoco Refinery, Marcus Hook, AOI-5
Sample ID : Gas/Dies/Wax std
Acquired : Sep 04, 2013 13:22:56

c:\ezchrom\chrom\13130\gadiwax2 -- Channel A



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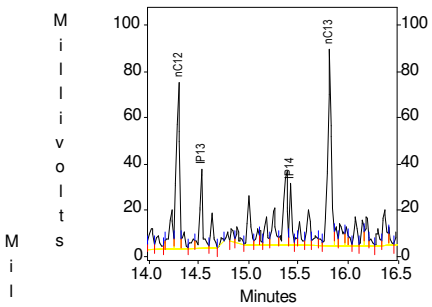

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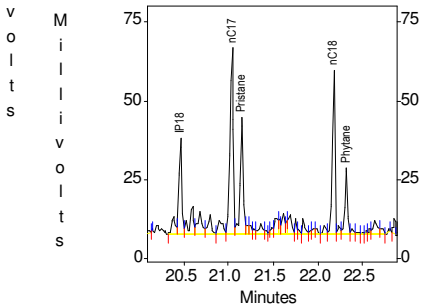

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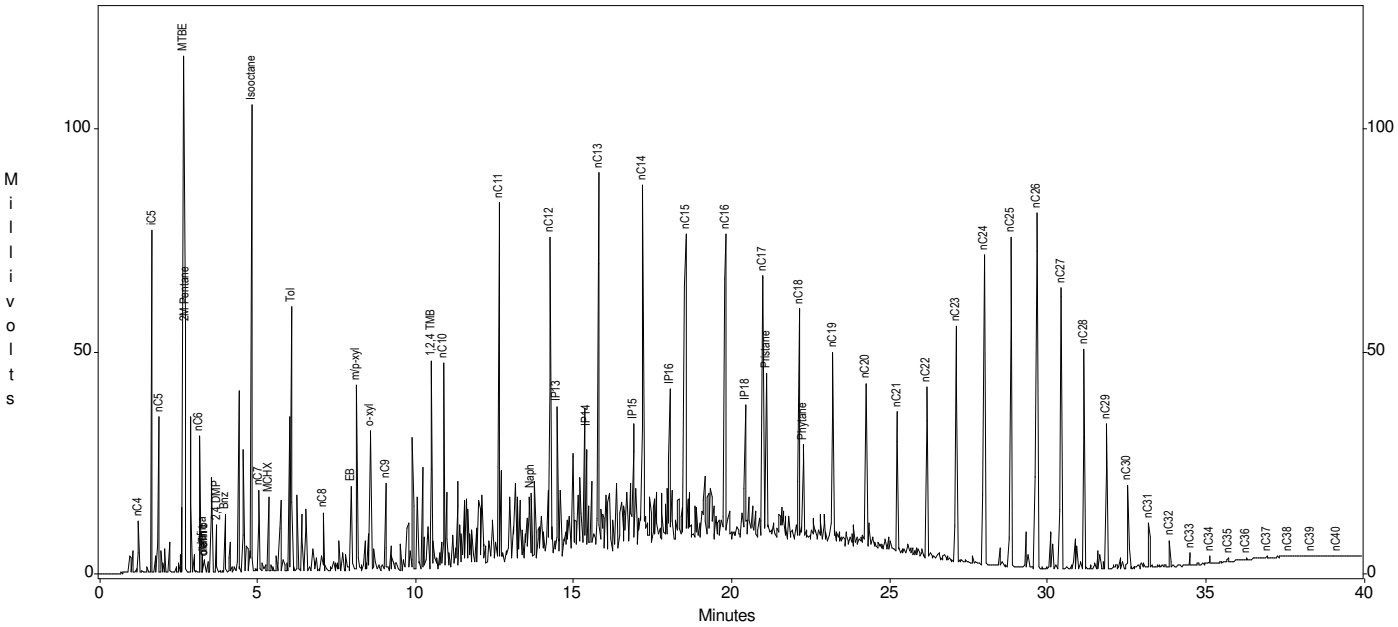


Channel A Results

Peak	Area	Height
nC4	6565	11695
iC5	50384	77202
nC5	24642	34925
MTBE	107103	116201
2M Pentane	47580	55249
nC6	29496	30806
olefin a	4597	4095
olefin b	2579	2693
olefin c	3203	2489
2,4 DMP	11063	10591
Bnz	14924	12736
Isooctane	154447	105288
nC7	22114	18403
MCHX	20927	16856
Tol	93341	59365
nC8	15542	13095
EB	25276	18740
m/p-xyl	85813	41154
o-xyl	45815	31466
nC9	29891	19442
1,2,4 TMB	81898	46768
nC10	73367	46143
nC11	144644	80904
Naph	24502	13735
nC12	141606	71968
IP13	67983	34020
IP14	39922	26622
nC13	190046	84847
IP15	54772	27182
nC14	203066	78788
IP16	73929	33688
nC15	157074	68649
nC16	161452	68856
IP18	66787	30032
nC17	132332	59033
Pristane	84524	36895
nC18	105568	51938
Phytane	44175	21057
nC19	99842	42783
nC20	74104	37077
nC21	60239	31813
nC22	75204	38322
nC23	122545	52946
nC24	133802	69917
nC25	131235	74220
nC26	177451	79834
nC27	192162	63409
nC28	123361	49559
nC29	68696	32451
nC30	31311	18183
nC31	17956	10065
nC32	9413	5686
nC33	5077	2921
nC34	2821	1669
nC35	1585	942
nC36	796	461
nC37	504	242
nC38	357	145
nC39	256	85
nC40	194	61

Torkelson Geochemistry, Inc.							
Physical Properties Measurements							
Sample	TGI Job Number	Density of NAPL (gm/ml)	Viscosity of NAPL (centipoise)	Surface Tension Air/Water (dynes/cm)	Interfacial Tension NAPL/Water (dynes/cm)	Surface Tension Air/NAPL (dynes/cm)	Temperature of Measurements
MW-472	13130	0.8058	NA	NA	NA	NA	60F

June 18, 2015

formerly ZymaX Forensics

Jenny DeBoer
Stantec Consulting Services, Inc.
1060 Andrew Drive, Ste. 140
West Chester, PA 19380

RE: Evergreen, Marcus Hook AOI1
Project Number: 213402493

Pace Analytical received 2 sample(s) received on April 17th, 2015 for analysis labeled MW-523 and Seep-A. Per client request, the following analyses were performed:

1. C3-C36 (ASTM 3328)
2. Bromine
3. Sulfur
4. Specific Gravity

The sample was performed in house under laboratory number **15714**.

Please call the lab at 412-660-0256, or you may email any questions or concerns to taryn.mancine@pacelabs.com regarding any analytical data reports.

Respectfully submitted,

Taryn Mancine

Taryn Mancine
Project Manager/Scientist

15714

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A
Required Client Information:

Company:	Stantec Consulting Services, Inc
Address:	1060 Andrew Drive, Suite 140
	West Chester, PA 19380
Email To:	Jenny.DeBoer@stantec.com
Phone: 610-250-2500	Fax: 610-840-2501
Requested Due Date/TAT:	Standard

Section B
Required Project Information:

Report To:	Jennifer.Menges@stantec.com
Copy To:	Chris.McCardell@stantec.com
	Jenny.DeBoer@stantec.com
Purchase Order No.:	
Project Name:	Evergreen, Marcus Hook AOI 1
Project Number:	213402493

Section C
Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: PA

Section D
Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/Grab DATE	COLLECTED Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N): C3-C36 (ASTM D3328)	Bromine	Sulfur	Specific Gravity	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-523	P	G	4/6/15	16:15				1	1								x	x	x	x		43953-1
2	Seep-A	P	G	4/6/15	14:15				1	1								x	x	x	x		43953-2
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Please report product identification (and relative proportions), degree of weathering, age information and any other intrepretive information available from the requested analyses. Questions can be directed to Jenny DeBoer (cell 610-209-2511).	J. DeBoer	4/13/15	1400		4/13/15	1400				
		4/13/15	1700	Scott Quantic Pace	4-14-15	0955	5.6	Y	N	Y
Hold additional volume for possible additional analyses.	Pace	4/15/15	1415	Pace	4/17/15	8:25				
	Pace	4-17-15	9:40	PASS	4-17-15	0940	1.2	Y	N	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jenny DeBoer

SIGNATURE of SAMPLER: J. DeBoer — DATE Signed (MM/DD/YY): 4/13/15

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

6/10/2015

ZymaX ID	15714-1
Sample ID	MW-523

Evaporation

n-Pentane / n-Heptane	0.00
2-Methylpentane / 2-Methylheptane	0.00

Waterwashing

Benzene / Cyclohexane	0.00
Toluene / Methylcyclohexane	1.04
Aromatics / Total Paraffins (n+iso+cyc)	28.42
Aromatics / Naphthenes	142.97

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	0.00
3-Methylhexane / n-Heptane	0.00
Methylcyclohexane / n-Heptane	0.00
Isoparaffins + Naphthenes / Paraffins	3.43

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	0.00

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	0.77
% Isoparaffinic	1.95
% Aromatic	96.45
% Naphthenic	0.67
% Olefinic	0.16

6/10/2015

ZymaX ID		15714-1
Sample ID		MW-523
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.00
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.00
8	Isopentane	0.00
9	1-Pentene	0.00
10	2-Methyl-1-butene	0.00
11	Pentane	0.00
12	trans-2-Pentene	0.00
13	cis-2-Pentene/t-Butanol	0.00
14	2-Methyl-2-butene	0.00
15	2,2-Dimethylbutane	0.00
16	Cyclopentane	0.00
17	2,3-Dimethylbutane/MTBE	0.00
18	2-Methylpentane	0.00
19	3-Methylpentane	0.00
20	Hexane	0.00
21	trans-2-Hexene	0.00
22	3-Methylcyclopentene	0.00
23	3-Methyl-2-pentene	0.00
24	cis-2-Hexene	0.00
25	3-Methyl-trans-2-pentene	0.00
26	Methylcyclopentane	0.00
27	2,4-Dimethylpentane	0.00
28	Benzene	0.00
29	5-Methyl-1-hexene	0.00
30	Cyclohexane	0.00
31	2-Methylhexane/TAME	0.00
32	2,3-Dimethylpentane	0.00
33	3-Methylhexane	0.00
34A	1-trans-3-Dimethylcyclopentane	0.00
34B	1-cis-3-Dimethylcyclopentane	0.00
35	2,2,4-Trimethylpentane	0.00
I.S. #1	à,à,à-Trifluorotoluene	0.00

6/10/2015

ZymaX ID 15714-1
Sample ID MW-523

		Relative Area %
36	n-Heptane	0.00
37	Methylcyclohexane	0.13
38	2,5-Dimethylhexane	0.00
39	2,4-Dimethylhexane	0.00
40	2,3,4-Trimethylpentane	0.13
41	Toluene/2,3,3-Trimethylpentane	0.14
42	2,3-Dimethylhexane	0.00
43	2-Methylheptane	0.09
44	4-Methylheptane	0.04
45	3,4-Dimethylhexane	0.00
46A	3-Ethyl-3-methylpentane	0.15
46B	1,4-Dimethylcyclohexane	0.11
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.00
49	n-Octane	0.00
50	2,2-Dimethylheptane	0.00
51	2,4-Dimethylheptane	0.00
52	Ethylcyclohexane	0.44
53	2,6-Dimethylheptane	0.18
54	Ethylbenzene	0.15
55	m+p Xylenes	0.21
56	4-Methyloctane	0.28
57	2-Methyloctane	0.00
58	3-Ethylheptane	0.07
59	3-Methyloctane	0.35
60	o-Xylene	0.00
61	1-Nonene	0.16
62	n-Nonane	0.14
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.07
64	3,3,5-Trimethylheptane	0.28
65	2,4,5-Trimethylheptane	0.21
66	n-Propylbenzene	1.26
67	1-Methyl-3-ethylbenzene	0.00
68	1-Methyl-4-ethylbenzene	0.35
69	1,3,5-Trimethylbenzene	1.56
70	3,3,4-Trimethylheptane	0.00

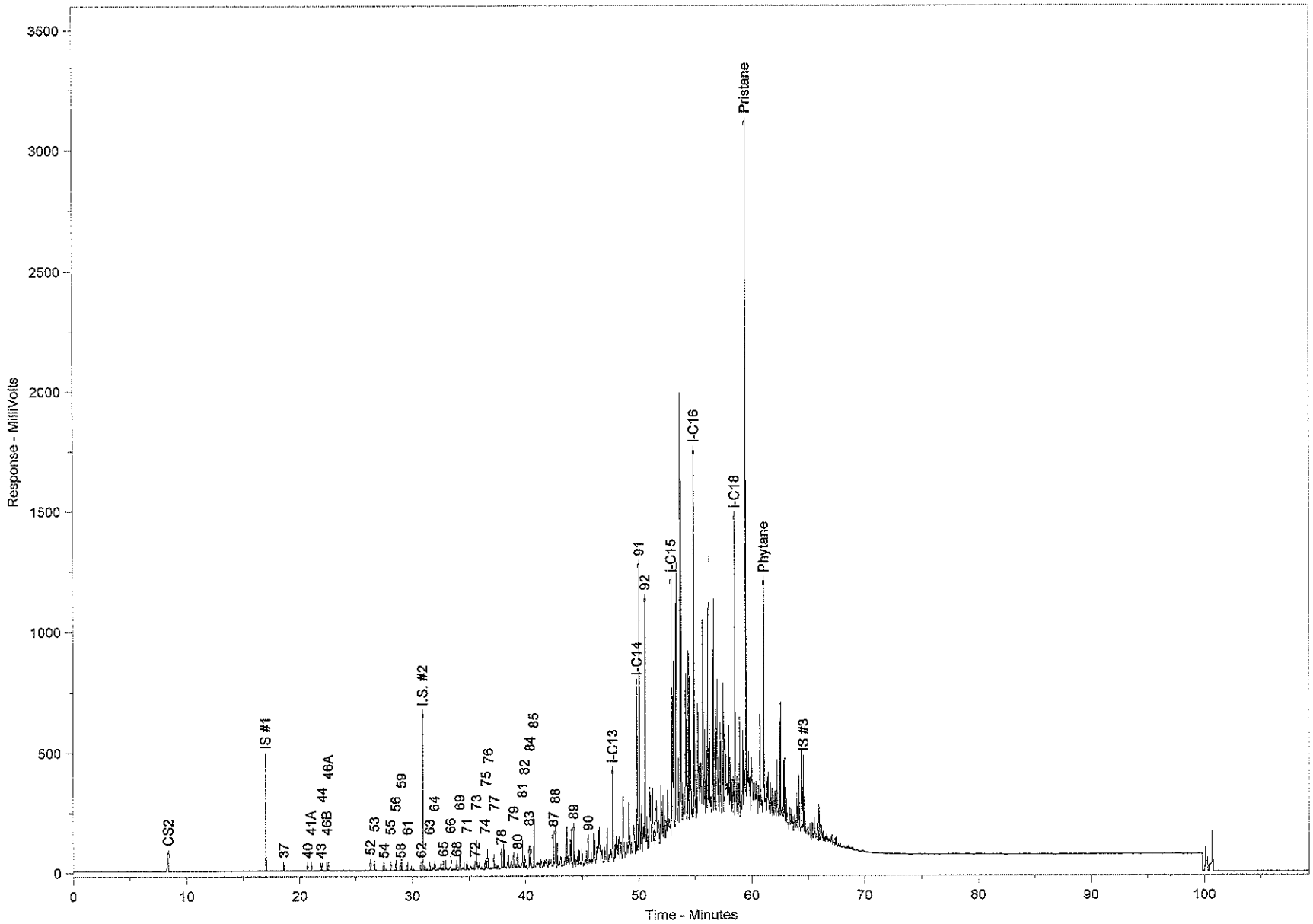
6/10/2015

ZymaX ID 15714-1
Sample ID MW-523

		Relative Area %
71	1-Methyl-2-ethylbenzene	0.26
72	3-Methylnonane	0.16
73	1,2,4-Trimethylbenzene	2.18
74	Isobutylbenzene	0.30
75	sec-Butylbenzene	0.33
76	n-Decane	0.63
77	1,2,3-Trimethylbenzene	0.75
78	Indan	2.02
79	1,3-Diethylbenzene	1.69
80	1,4-Diethylbenzene	0.67
81	n-Butylbenzene	2.19
82	1,3-Dimethyl-5-ethylbenzene	0.76
83	1,4-Dimethyl-2-ethylbenzene	1.96
84	1,3-Dimethyl-4-ethylbenzene	2.46
85	1,2-Dimethyl-4-ethylbenzene	4.64
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	3.21
88	1,2,3,5-Tetramethylbenzene	3.54
89	1,2,3,4-Tetramethylbenzene	4.14
90	Naphthalene	3.09
91	2-Methyl-naphthalene	31.01
92	1-Methyl-naphthalene	27.53

— C:\CPSpirit\2015\Jun15\061015\061015.0003.RAW

15714-1 [MW-523] [400+600CS2] + IS F-090913-1



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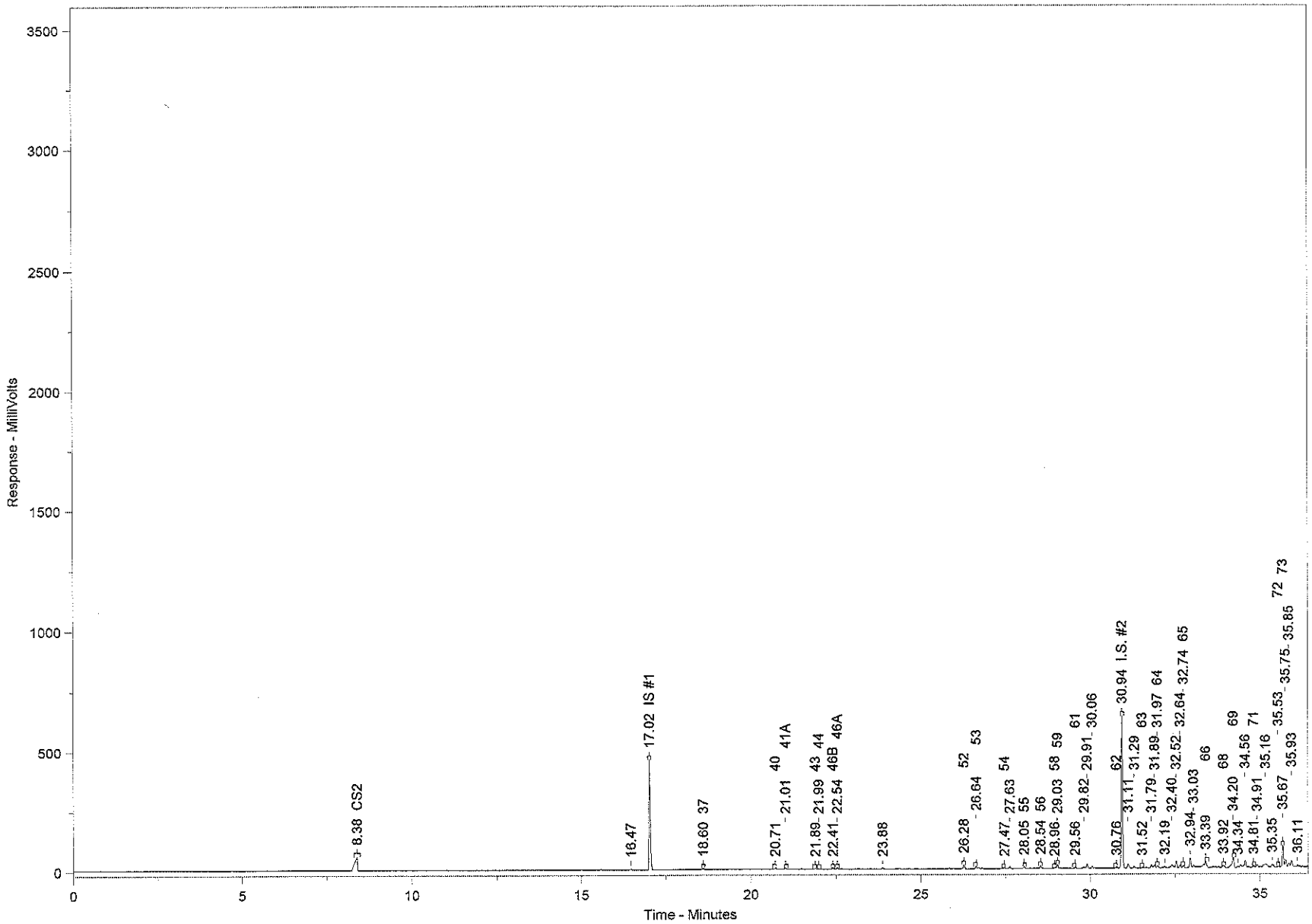
15714-1 [MW-523] [400+600CS2] + IS F-090913-1



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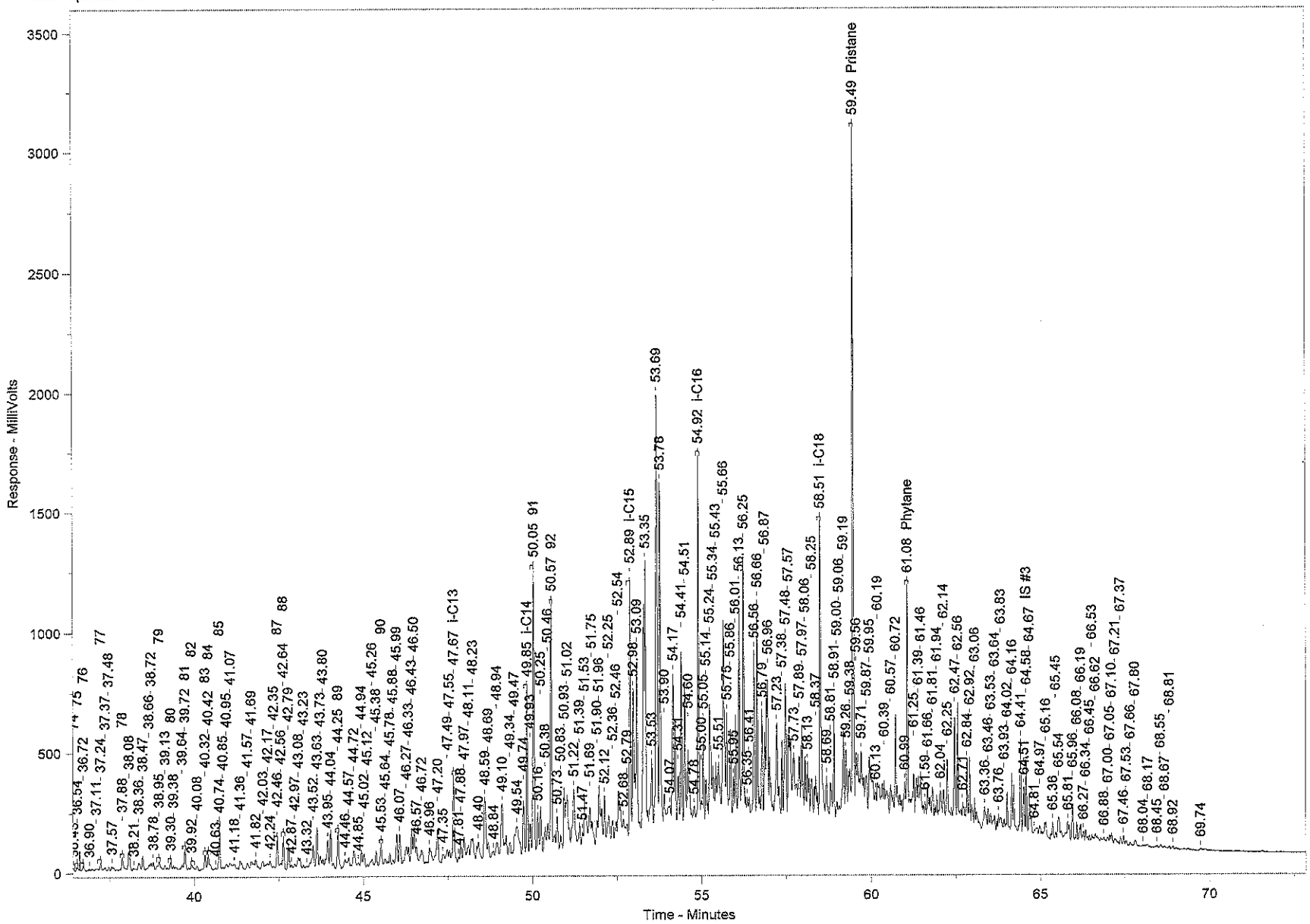
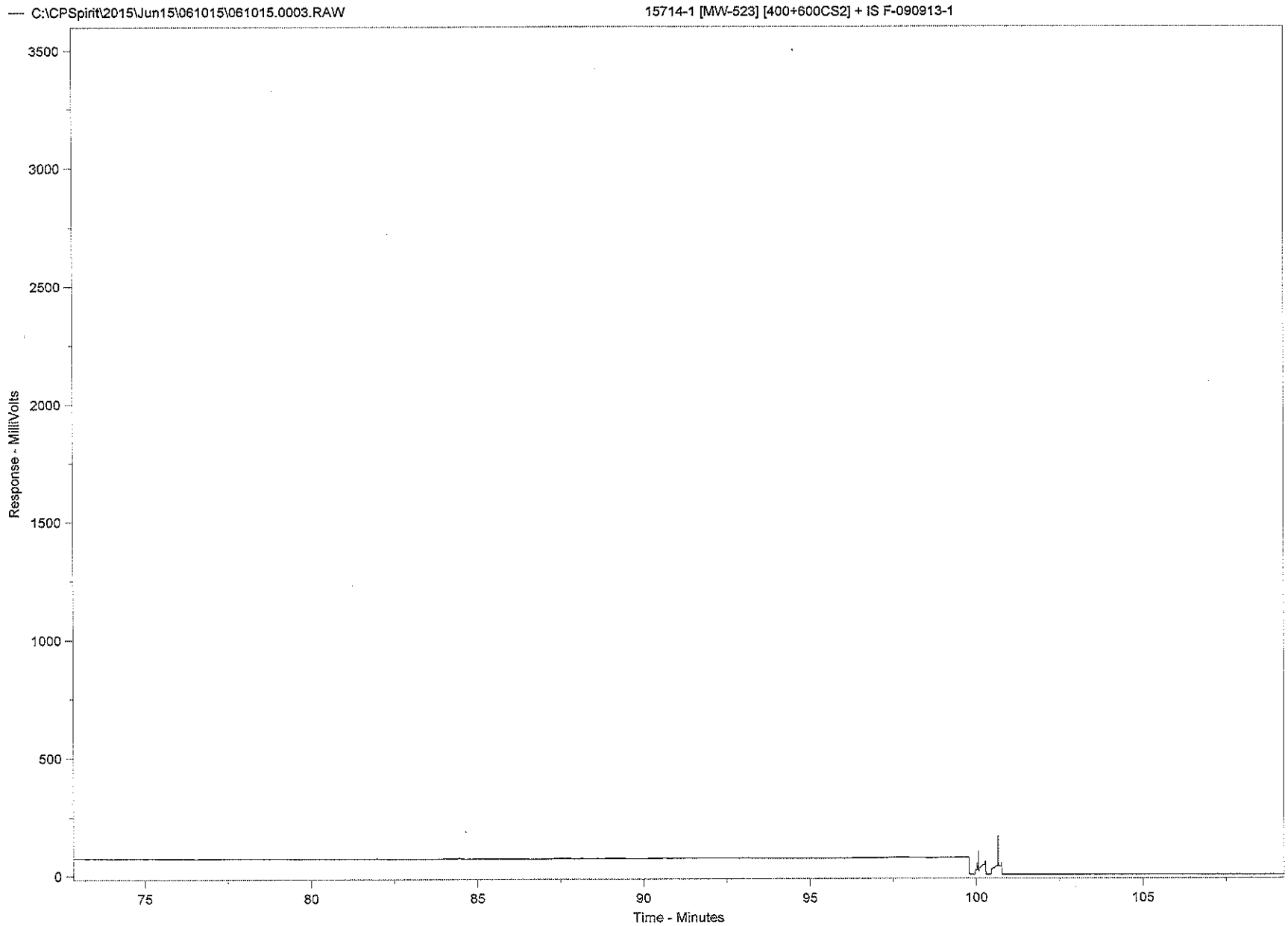
15714-1 [MW-523] [400+600CS2] + IS F-090913-1




C:\CPSpirit\2015\Jun15\061015\061015.0003.RAW
15714-1 [MW-523] [400+600CS2] + IS F-090913-1
Response - MilliVolts
3500
3000
2500
2000
1500
1000
500
0
75
80
85
90
95
100
105
Time - Minutes

Sample Name = 15714-1 [MW-523] [400+600CS2] + IS F-090913-1

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = C:\CPSpirit\2015\Jun15\061015\061015.0003.RAW
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\061615.cal

Date Taken (end) = 6/12/2015 12:05:50 PM
Method Version = 44
Calibration Version = 3

Peak Name	Ret. Time	Area %	Area
CS2	8.38	0.1334	331947.20
	16.47	0.0045	11207.27
IS #1	17.02	0.4610	1147295.00
37	18.60	0.0061	15248.67
40	20.71	0.0060	15026.83
41A	21.01	0.0064	15851.83
43	21.89	0.0044	11046.62
44	21.99	0.0020	4950.42
46B	22.41	0.0050	12524.22
46A	22.54	0.0070	17488.86
	23.88	0.0044	10950.97
52	26.28	0.0203	50440.07
53	26.64	0.0086	21455.00
54	27.47	0.0070	17543.43
	27.63	0.0091	22766.26
55	28.05	0.0099	24754.33
56	28.54	0.0129	32048.84
58	28.96	0.0031	7769.75
59	29.03	0.0163	40653.29
61	29.56	0.0073	18269.23
	29.82	0.0085	21051.64
	29.91	0.0200	49878.56
	30.06	0.0078	19466.99
62	30.76	0.0063	15692.76
I.S. #2	30.94	0.6752	1680630.00
	31.11	0.0223	55600.31
	31.29	0.0078	19398.79
63	31.52	0.0034	8550.83
	31.79	0.0157	39168.89
	31.89	0.0163	40656.60
64	31.97	0.0132	32852.92
	32.19	0.0112	27801.89
	32.40	0.0142	35452.20
	32.52	0.0278	69170.05
	32.64	0.0134	33436.81
65	32.74	0.0100	24971.94
	32.94	0.0414	103133.30
	33.03	0.0085	21155.77
66	33.39	0.0586	145967.00
68	33.92	0.0161	40091.71
69	34.20	0.0726	180647.60
	34.34	0.0079	19723.72
	34.56	0.0478	119032.40
71	34.81	0.0122	30379.83
	34.91	0.0185	46081.44
	35.16	0.0497	123659.00
	35.35	0.0241	59953.70
72	35.53	0.0073	18094.93
73	35.67	0.1017	253175.00
	35.75	0.0397	98779.18
	35.85	0.0234	58160.29
	35.93	0.0364	90697.07
	36.11	0.0169	41990.85
74	36.43	0.0139	34520.47
75	36.54	0.0153	38152.85

Peak Name	Ret. Time	Area %	Area
76	36.72	0.0294	73156.23
	36.90	0.0056	13842.89
	37.11	0.0150	37289.09
77	37.24	0.0349	86894.72
	37.37	0.0222	55207.90
	37.48	0.0195	48508.73
	37.57	0.0375	93292.24
78	37.88	0.0942	234361.50
	38.08	0.1463	364119.10
	38.21	0.0220	54662.08
	38.36	0.0544	135371.60
	38.47	0.0706	175639.70
	38.66	0.0381	94819.53
	38.72	0.0350	87031.24
	38.78	0.0353	87855.15
79	38.95	0.0785	195436.30
	39.13	0.0177	44054.67
80	39.30	0.0311	77286.57
	39.38	0.0129	32092.05
	39.64	0.0221	54931.69
81	39.72	0.1020	253820.80
82	39.92	0.0355	88327.59
	40.08	0.0226	56271.84
83	40.32	0.0913	227252.90
84	40.42	0.1145	284953.50
	40.63	0.0148	36823.93
85	40.74	0.2160	537502.30
	40.85	0.0177	43978.27
	40.95	0.0518	128999.40
	41.07	0.0593	147551.00
	41.18	0.0680	169133.30
	41.36	0.0829	206270.00
	41.57	0.0516	128516.30
	41.69	0.0578	143825.80
	41.82	0.0801	199433.10
	42.03	0.0681	169519.60
	42.17	0.0416	103426.90
	42.24	0.0599	149130.00
	42.35	0.0258	64268.03
87	42.46	0.1497	372539.60
	42.56	0.0459	114364.60
88	42.64	0.1647	409965.00
	42.79	0.1285	319838.70
	42.87	0.0218	54366.76
	42.97	0.0285	70939.84
	43.08	0.1149	286014.50
	43.23	0.0139	34525.45
	43.32	0.0106	26364.16
	43.52	0.1598	397775.70
	43.63	0.2034	506291.50
	43.73	0.0538	133832.60
	43.80	0.0342	85148.41
	43.95	0.1601	398488.20
	44.04	0.1542	383712.30
89	44.25	0.1927	479708.20
	44.46	0.0813	202364.00
	44.57	0.0671	167070.90
	44.72	0.1349	335821.40
	44.85	0.0272	67605.62
	44.94	0.0896	222967.00
	45.02	0.0678	168689.10
	45.12	0.0117	29099.60
	45.26	0.0668	166314.00
	45.38	0.0825	205309.20
90	45.53	0.1441	358759.10
	45.64	0.0478	118901.60
	45.78	0.0605	150680.80

Peak Name	Ret. Time	Area %	Area
	45.88	0.0274	68313.21
	45.99	0.1699	422951.50
	46.07	0.1706	424632.80
	46.27	0.1569	390552.60
	46.33	0.0814	202538.20
	46.43	0.1768	439977.90
	46.50	0.1915	476584.60
	46.57	0.1029	256063.30
	46.72	0.1409	350608.60
	46.96	0.1401	348707.50
	47.20	0.2531	629882.90
	47.35	0.0705	175529.10
	47.49	0.1008	250780.00
	47.55	0.0580	144381.20
i-C13	47.67	0.4661	1160053.00
	47.81	0.0189	46983.03
	47.88	0.0920	229012.40
	47.97	0.1641	408514.10
	48.11	0.1353	336858.80
	48.23	0.2526	628686.40
	48.40	0.2046	509290.00
	48.59	0.4545	1131114.00
	48.69	0.1026	255416.50
	48.84	0.0885	220295.90
	48.94	0.1638	407670.30
	49.10	0.6069	1510623.00
	49.34	0.1583	393910.60
	49.47	0.1183	294358.60
	49.54	0.4343	1080946.00
	49.74	0.3236	805494.80
i-C14	49.85	0.6817	1696634.00
	49.93	0.1743	433792.70
91	50.05	1.4442	3594441.00
	50.16	0.2576	641043.70
	50.25	0.2693	670294.70
	50.38	0.2151	535467.00
	50.46	0.2278	567016.40
92	50.57	1.2822	3191182.00
	50.73	0.2485	618462.70
	50.83	0.1511	376047.20
	50.93	0.3018	751182.20
	51.02	0.6433	1601154.00
	51.22	0.6500	1617868.00
	51.39	0.2411	600051.40
	51.47	0.1288	320542.10
	51.53	0.4952	1232463.00
	51.69	0.3659	910708.20
	51.75	0.2682	667574.80
	51.90	0.2041	507936.80
	51.96	0.6574	1636202.00
	52.12	0.3359	836118.20
	52.25	0.3711	923732.10
	52.36	0.2523	627894.10
	52.46	0.2352	585285.20
	52.54	0.6516	1621735.00
	52.68	0.3319	826129.90
	52.79	0.1826	454597.80
i-C15	52.89	1.1368	2829397.00
	52.98	1.0727	2669879.00
	53.09	1.1250	2800027.00
	53.35	2.7353	6807859.00
	53.53	0.7891	1963997.00
	53.69	2.6534	6604117.00
	53.78	1.8431	4587454.00
	53.90	0.4920	1224539.00
	54.07	0.5223	1300018.00
	54.17	1.6000	3982387.00

Peak Name	Ret. Time	Area %	Area
	54.31	0.4682	1165258.00
	54.41	0.9570	2381785.00
	54.51	0.9103	2265695.00
	54.60	0.9763	2429823.00
	54.78	0.3674	914382.20
i-C16	54.92	1.9019	4733622.00
	55.00	0.2343	583198.90
	55.05	0.5631	1401547.00
	55.14	0.5106	1270779.00
	55.24	0.9843	2449785.00
	55.34	0.5691	1416409.00
	55.43	0.3908	972607.00
	55.51	0.8327	2072622.00
	55.66	1.5680	3902721.00
	55.75	0.7646	1902932.00
	55.86	0.6589	1639905.00
	55.95	0.3756	934739.80
	56.01	0.6337	1577175.00
	56.13	1.1833	2945227.00
	56.25	1.6698	4156074.00
	56.35	0.2604	648169.40
	56.41	0.2782	692336.60
	56.56	1.2887	3207529.00
	56.66	1.2571	3128915.00
	56.79	0.6402	1593314.00
	56.87	0.5149	1281596.00
	56.96	1.9326	4810198.00
	57.23	1.3108	3262451.00
	57.38	0.4431	1102830.00
	57.48	1.0542	2623872.00
	57.57	1.2464	3102175.00
	57.73	1.0600	2638166.00
	57.89	0.5912	1471374.00
	57.97	0.7672	1909619.00
	58.06	0.4459	1109768.00
	58.13	0.5858	1457971.00
	58.25	0.5448	1355906.00
	58.37	0.7230	1799434.00
i-C18	58.51	2.1524	5357100.00
	58.69	0.5598	1393344.00
	58.81	0.4525	1126169.00
	58.91	0.5832	1451605.00
	59.00	0.2613	650476.90
	59.06	0.2253	560849.90
	59.19	0.8154	2029567.00
	59.26	0.5849	1455653.00
	59.38	0.6382	1588465.00
Pristane	59.49	3.1451	7827942.00
	59.56	1.1414	2840965.00
	59.71	0.8333	2073899.00
	59.87	0.5398	1343599.00
	59.95	1.1592	2885179.00
	60.13	0.2913	724950.40
	60.19	0.6042	1503758.00
	60.39	1.1965	2978103.00
	60.57	0.6211	1545857.00
	60.72	1.2227	3043138.00
	60.99	0.4095	1019282.00
Phytane	61.08	1.4875	3702269.00
	61.25	0.4168	1037504.00
	61.39	0.6351	1580712.00
	61.46	0.6067	1510011.00
	61.59	0.2207	549348.30
	61.66	0.5575	1387614.00
	61.81	0.4240	1055336.00
	61.94	0.3157	785743.00
	62.04	0.3849	958093.90

Peak Name	Ret. Time	Area %	Area
	62.14	0.2896	720852.90
	62.25	0.7187	1788766.00
	62.47	0.6547	1629380.00
	62.56	0.5579	1388685.00
	62.71	0.3069	763911.60
	62.84	0.3245	807726.90
	62.92	0.3262	811997.30
	63.06	0.6085	1514499.00
	63.36	0.2990	744073.10
	63.46	0.1458	362950.50
	63.53	0.1106	275330.20
	63.64	0.2059	512593.30
	63.76	0.0811	201825.90
	63.83	0.1363	339199.80
	63.93	0.1004	249955.00
	64.02	0.2024	503869.80
	64.16	0.4399	1094936.00
	64.41	0.3701	921139.80
	64.51	0.2247	559144.80
IS #3	64.58	0.2269	564711.20
	64.67	0.2106	524187.10
	64.81	0.0048	11868.38
	64.97	0.0672	167304.10
	65.16	0.1108	275762.40
	65.36	0.0957	238092.10
	65.45	0.0295	73474.48
	65.54	0.2241	557690.10
	65.81	0.1951	485698.30
	65.96	0.1841	458198.50
	66.08	0.0618	153775.80
	66.19	0.1054	262242.50
	66.27	0.0603	150097.30
	66.34	0.0711	177022.60
	66.45	0.0256	63680.11
	66.53	0.0521	129641.40
	66.62	0.0949	236243.90
	66.88	0.0437	108814.20
	67.00	0.0392	97635.71
	67.05	0.0385	95887.55
	67.10	0.0481	119695.60
	67.21	0.0428	106576.50
	67.37	0.0374	93206.55
	67.46	0.0361	89888.99
	67.53	0.0234	58228.71
	67.66	0.0147	36517.49
	67.80	0.0369	91856.49
	68.04	0.0111	27538.46
	68.17	0.0141	35122.26
	68.45	0.0078	19290.99
	68.55	0.0144	35800.96
	68.67	0.0075	18625.68
	68.81	0.0097	24178.17
	68.92	0.0105	26239.35
	69.74	0.0055	13719.01

Total Area = 2.488924E+08 Total Height = 6.402477E+07 Total Amount = 3

6/10/2015

ZymaX ID	15714-2
Sample ID	SEEP-A

Evaporation

n-Pentane / n-Heptane	0.76
2-Methylpentane / 2-Methylheptane	1.15

Waterwashing

Benzene / Cyclohexane	12.93
Toluene / Methylcyclohexane	108.29
Aromatics / Total Paraffins (n+iso+cyc)	1.64
Aromatics / Naphthenes	27.66

Biodegradation

(C4 - C8 Para + Isopara) / C4 - C8 Olefins	20.66
3-Methylhexane / n-Heptane	1.37
Methylcyclohexane / n-Heptane	0.36
Isoparaffins + Naphthenes / Paraffins	12.29

Octane rating

2,2,4,-Trimethylpentane / Methylcyclohexane	39.62

Relative percentages - Bulk hydrocarbon composition as PIANO

% Paraffinic	2.79
% Isoparaffinic	32.12
% Aromatic	61.06
% Naphthenic	2.21
% Olefinic	1.81

6/10/2015

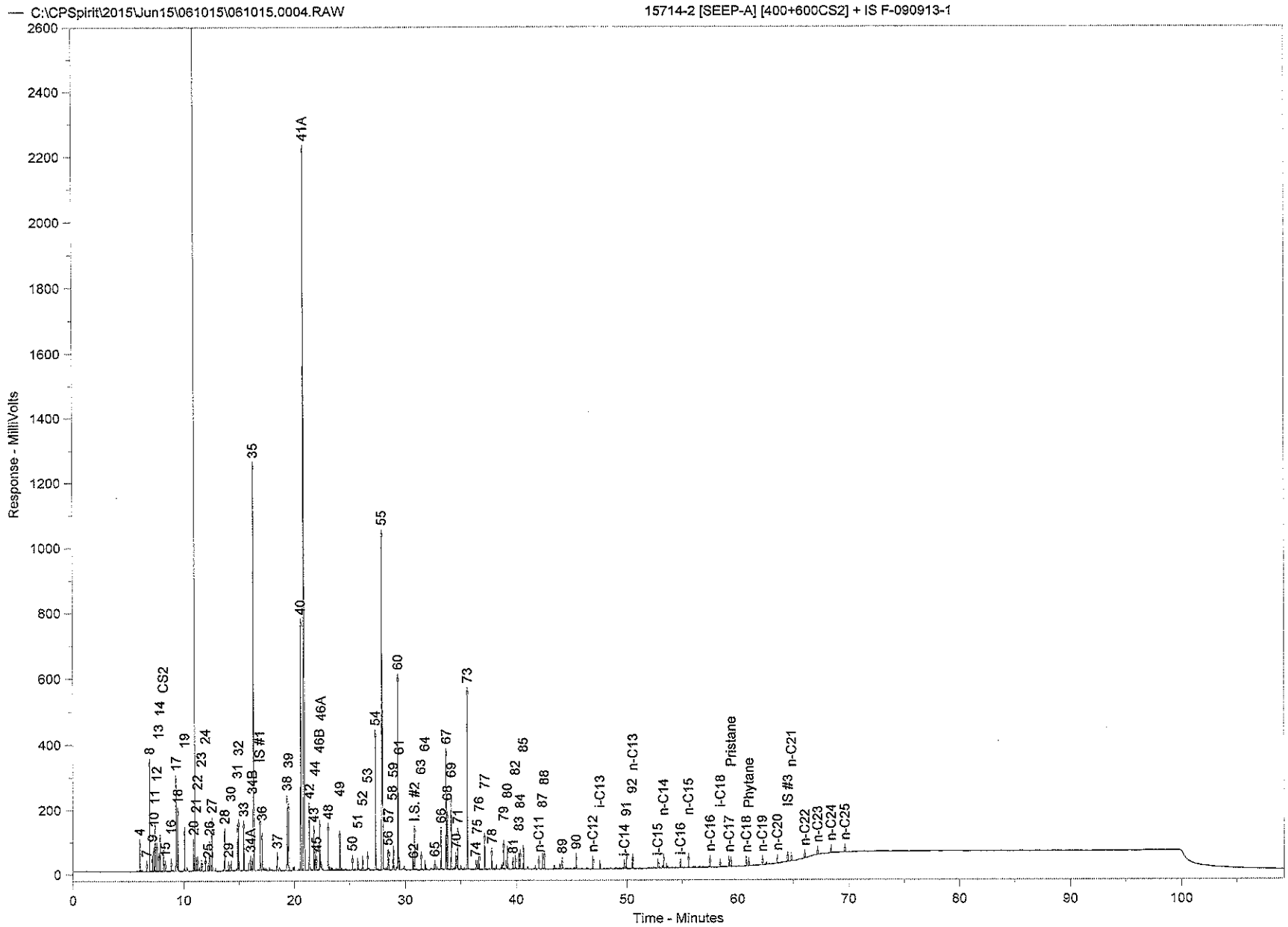
ZymaX ID		15714-2
Sample ID		SEEP-A
		Relative Area %
1	Propane	0.00
2	Isobutane	0.00
3	Isobutene	0.00
4	Butane/Methanol	0.23
5	trans-2-Butene	0.00
6	cis-2-Butene	0.00
7	3-Methyl-1-butene	0.03
8	Isopentane	1.17
9	1-Pentene	0.10
10	2-Methyl-1-butene	0.19
11	Pentane	0.50
12	trans-2-Pentene	0.26
13	cis-2-Pentene/t-Butanol	0.15
14	2-Methyl-2-butene	0.41
15	2,2-Dimethylbutane	0.04
16	Cyclopentane	0.06
17	2,3-Dimethylbutane/MTBE	1.69
18	2-Methylpentane	0.94
19	3-Methylpentane	0.62
20	Hexane	0.45
21	trans-2-Hexene	0.12
22	3-Methylcyclopentene	0.13
23	3-Methyl-2-pentene	0.07
24	cis-2-Hexene	0.13
25	3-Methyl-trans-2-pentene	0.03
26	Methylcyclopentane	0.42
27	2,4-Dimethylpentane	0.92
28	Benzene	0.81
29	5-Methyl-1-hexene	0.05
30	Cyclohexane	0.06
31	2-Methylhexane/TAME	0.83
32	2,3-Dimethylpentane	0.95
33	3-Methylhexane	0.90
34A	1-trans-3-Dimethylcyclopentane	0.15
34B	1-cis-3-Dimethylcyclopentane	0.13
35	2,2,4-Trimethylpentane	9.36
I.S. #1	à,à,à-Trifluorotoluene	0.00

6/10/2015

ZymaX ID		15714-2
Sample ID		SEEP-A
		Relative Area %
36	n-Heptane	0.66
37	Methylcyclohexane	0.24
38	2,5-Dimethylhexane	1.51
39	2,4-Dimethylhexane	1.39
40	2,3,4-Trimethylpentane	6.03
41	Toluene/2,3,3-Trimethylpentane	25.58
42	2,3-Dimethylhexane	1.37
43	2-Methylheptane	0.81
44	4-Methylheptane	0.37
45	3,4-Dimethylhexane	0.30
46A	3-Ethyl-3-methylpentane	0.00
46B	1,4-Dimethylcyclohexane	0.94
47	3-Methylheptane	0.00
48	2,2,5-Trimethylhexane	0.93
49	n-Octane	0.73
50	2,2-Dimethylheptane	0.18
51	2,4-Dimethylheptane	0.10
52	Ethylcyclohexane	0.20
53	2,6-Dimethylheptane	0.25
54	Ethylbenzene	2.91
55	m+p Xylenes	12.29
56	4-Methyloctane	0.30
57	2-Methyloctane	0.31
58	3-Ethylheptane	0.08
59	3-Methyloctane	0.38
60	o-Xylene	4.16
61	1-Nonene	0.13
62	n-Nonane	0.00
I.S.#2	p-Bromofluorobenzene	0.00
63	Isopropylbenzene	0.25
64	3,3,5-Trimethylheptane	0.04
65	2,4,5-Trimethylheptane	0.04
66	n-Propylbenzene	0.81
67	1-Methyl-3-ethylbenzene	2.52
68	1-Methyl-4-ethylbenzene	1.11
69	1,3,5-Trimethylbenzene	1.54
70	3,3,4-Trimethylheptane	0.31

6/10/2015

ZymaX ID		15714-2
Sample ID		SEEP-A
		Relative Area %
71	1-Methyl-2-ethylbenzene	0.76
72	3-Methylnonane	0.00
73	1,2,4-Trimethylbenzene	3.96
74	Isobutylbenzene	0.04
75	sec-Butylbenzene	0.07
76	n-Decane	0.21
77	1,2,3-Trimethylbenzene	0.71
78	Indan	0.33
79	1,3-Diethylbenzene	0.54
80	1,4-Diethylbenzene	0.36
81	n-Butylbenzene	0.13
82	1,3-Dimethyl-5-ethylbenzene	0.22
83	1,4-Dimethyl-2-ethylbenzene	0.23
84	1,3-Dimethyl-4-ethylbenzene	0.32
85	1,2-Dimethyl-4-ethylbenzene	0.39
86	Undecene	0.00
87	1,2,4,5-Tetramethylbenzene	0.20
88	1,2,3,5-Tetramethylbenzene	0.27
89	1,2,3,4-Tetramethylbenzene	0.08
90	Naphthalene	0.20
91	2-Methyl-naphthalene	0.18
92	1-Methyl-naphthalene	0.09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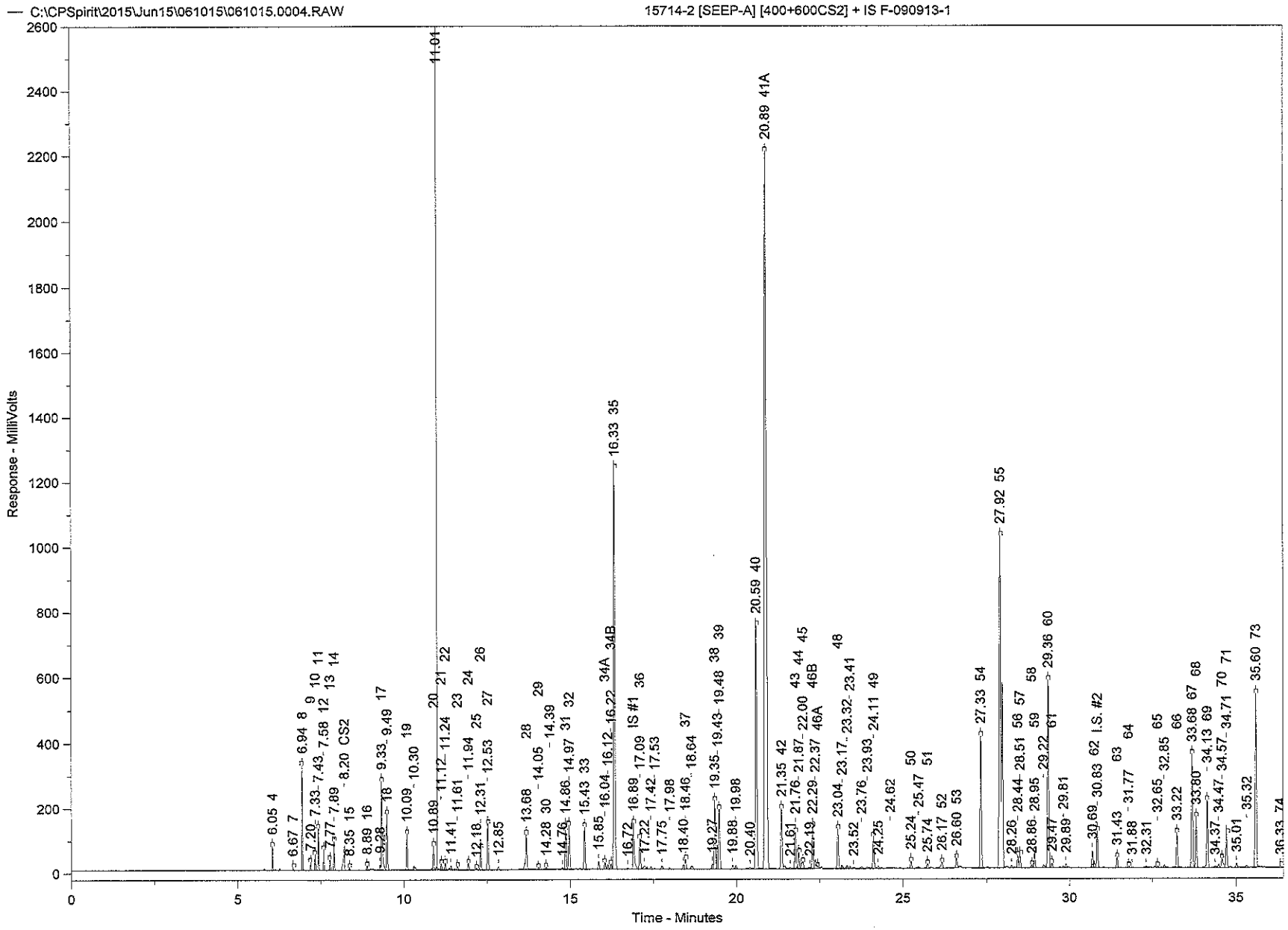
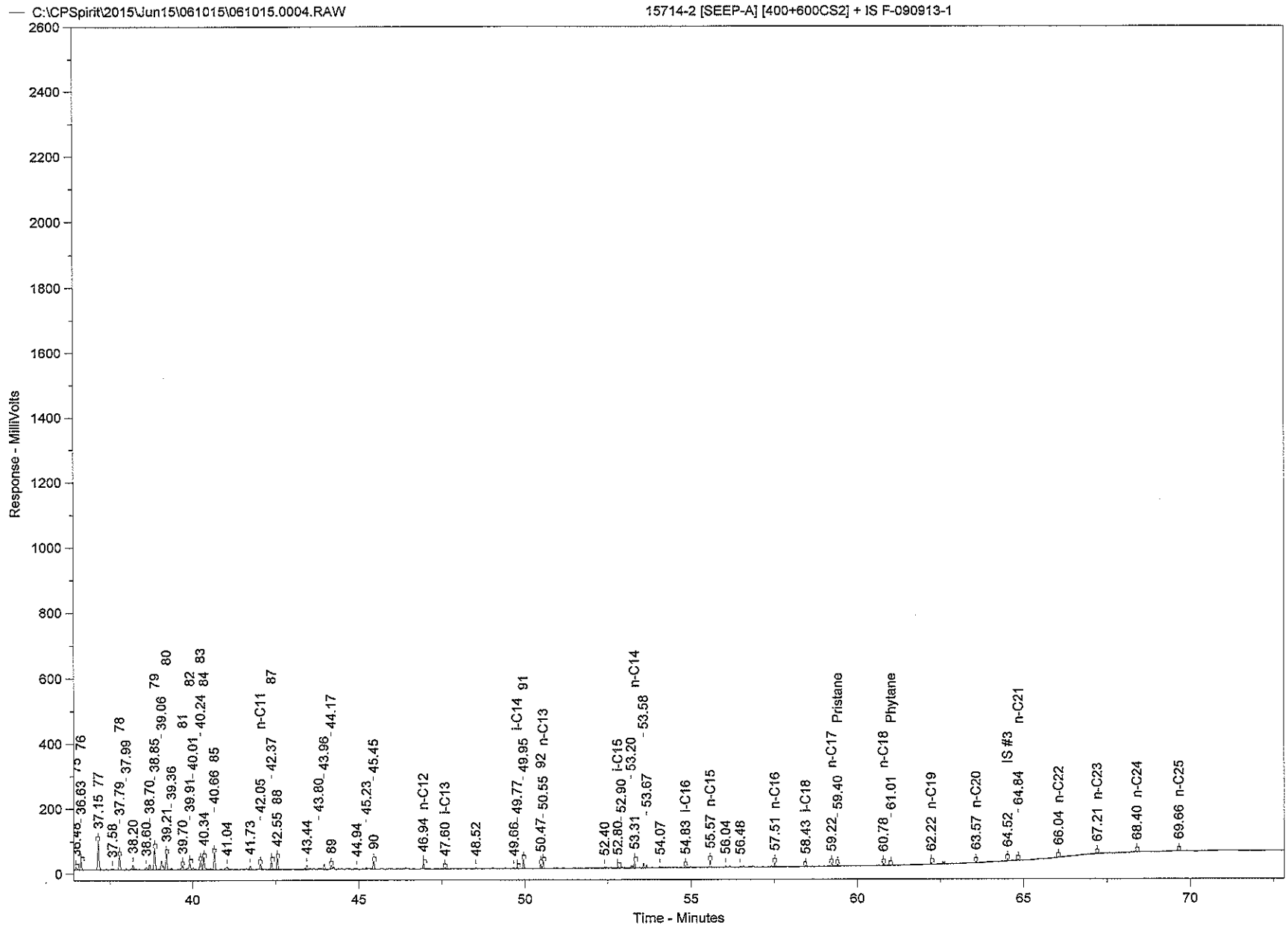
15714-2 [SEEP-A] [400+600CS2] + IS F-090913-1
Response - MilliVolts
Time - Minutes
CS2
IS #1
I.S. #2
IS #3
Pristane
Phytane
n-C13
n-C14
n-C15
n-C16
n-C17
n-C18
n-C19
n-C20
n-C21
n-C22
n-C23
n-C24
n-C25
i-C12
i-C13
i-C14
i-C15
i-C16
i-C18
n-C11
41A
46A
46B
35
55
60
73


C:\CPSpirit\2015\Jun15\061015\061015.0004.RAW
15714-2 [SEEP-A] [400+600CS2] + IS F-090913-1
Response - MilliVolts
Time - Minutes
11.01
20.89 41A
16.33 35
27.92 55
20.59 40
34B
34A
IS #1
I.S. #2
CS2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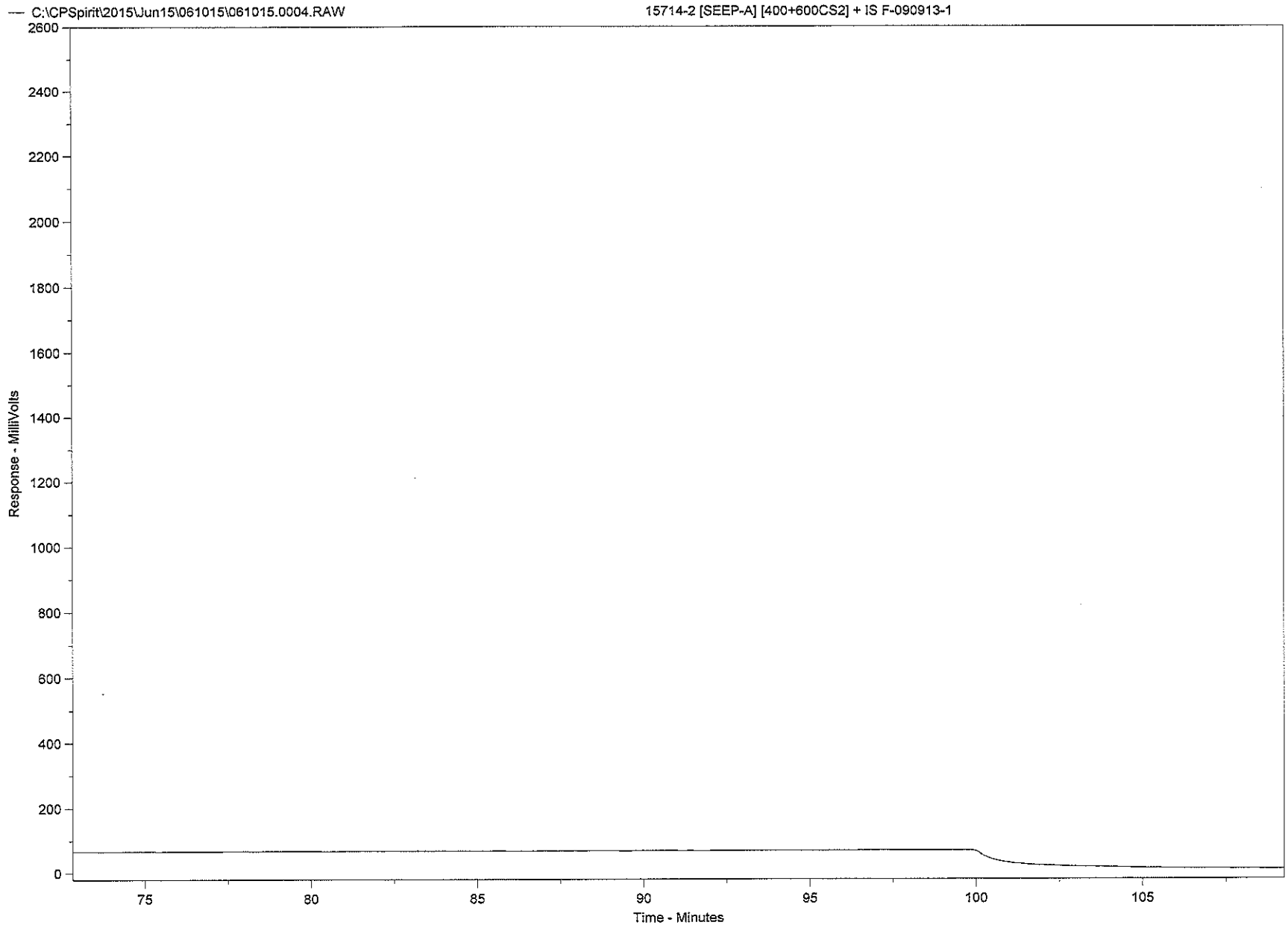
15714-2 [SEEP-A] [400+600CS2] + IS F-090913-1
Response - MilliVolts
Time - Minutes
n-C11
n-C12
i-C13
n-C13
i-C14
n-C14
i-C15
n-C15
i-C16
n-C16
i-C18
n-C17
Pristane
n-C18
Phytane
IS #3
n-C21
n-C22
n-C23
n-C24
n-C25


C:\CPSpirit\2015\Jun15\061015\061015.0004.RAW
15714-2 [SEEP-A] [400+600CS2] + IS F-090913-1
Response - MilliVolts
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
75
80
85
90
95
100
105
Time - Minutes

Sample Name = 15714-2 [SEEP-A] [400+600CS2] + IS F-090913-1

Instrument = Instrument 1
Heading 1 =
Heading 2 =

Acquisition Port = DP#

Raw File Name = C:\CPSpirit\2015\Jun15\061015\061015.0004.RAW
Method File Name = C:\CPSpirit\C344.met
Calibration File Name = C:\CPSpirit\061615.cal

Date Taken (end) = 6/12/2015 7:42:45 PM
Method Version = 44
Calibration Version = 3

Peak Name	Ret. Time	Area %	Area
4	6.05	0.1667	83356.52
7	6.67	0.0224	11198.88
8	6.94	0.8389	419552.80
9	7.20	0.0706	35322.25
10	7.33	0.1393	69670.34
11	7.43	0.3602	180147.60
12	7.58	0.1890	94511.37
13	7.77	0.1098	54902.52
14	7.89	0.2982	149138.40
CS2	8.20	0.3610	180522.00
15	8.35	0.0316	15814.32
16	8.89	0.0467	23371.21
	9.28	0.0602	30107.04
17	9.33	1.2133	606812.30
18	9.49	0.6736	336858.90
19	10.09	0.4484	224258.50
	10.30	0.0828	41398.91
20	10.89	0.3269	163503.90
	11.01	21.2140	10609460.00
21	11.12	0.0851	42545.59
22	11.24	0.0903	45164.43
	11.41	0.0811	40545.14
23	11.61	0.0486	24312.76
24	11.94	0.0945	47274.08
25	12.18	0.0215	10735.39
26	12.31	0.3042	152153.30
27	12.53	0.6614	330756.10
	12.85	0.0461	23056.85
28	13.68	0.5844	292258.60
29	14.05	0.0387	19360.19
30	14.28	0.0452	22600.00
	14.39	0.0157	7863.31
	14.76	0.0355	17767.61
31	14.86	0.5951	297607.70
32	14.97	0.6805	340340.70
33	15.43	0.6472	323654.30
	15.85	0.1220	61027.56
34A	16.04	0.1105	55250.84
	16.12	0.0830	41493.30
34B	16.22	0.0905	45243.96
35	16.33	6.7310	3366267.00
	16.72	0.0276	13811.83
IS #1	16.89	0.8008	400490.00
36	17.09	0.4737	236929.00
	17.22	0.0922	46088.99
	17.42	0.0419	20945.26
	17.53	0.0205	10234.46
	17.75	0.0719	35948.32
	17.98	0.0339	16948.02
	18.40	0.0719	35946.06
37	18.46	0.1699	84956.11
	18.64	0.0849	42438.91
	19.27	0.0799	39973.79
38	19.35	1.0875	543877.30
	19.43	0.3486	174346.10

Peak Name	Ret. Time	Area %	Area
39	19.48	1.0017	500983.10
	19.88	0.0597	29847.26
	19.98	0.0598	29910.35
	20.40	0.0469	23452.51
40	20.59	4.3396	2170307.00
41A	20.89	18.3963	9200243.00
42	21.35	0.9837	491974.70
	21.61	0.0233	11656.96
43	21.76	0.5854	292781.20
44	21.87	0.2646	132305.60
45	22.00	0.2137	106861.00
	22.19	0.0381	19063.21
46B	22.29	0.6747	337431.10
	22.37	0.2147	107384.70
48	23.04	0.6656	332886.70
	23.17	0.0637	31873.34
	23.32	0.0519	25949.51
	23.41	0.0409	20454.30
	23.52	0.0242	12088.82
	23.76	0.0391	19550.37
	23.93	0.0480	23989.47
49	24.11	0.5273	263729.80
	24.25	0.0454	22707.55
	24.62	0.0222	11080.28
50	25.24	0.1314	65693.02
	25.47	0.0532	26624.04
51	25.74	0.0736	36819.62
52	26.17	0.1460	73018.06
53	26.60	0.1788	89428.39
54	27.33	2.0937	1047079.00
55	27.92	8.8380	4420020.00
	28.26	0.0409	20437.33
56	28.44	0.2124	106246.60
57	28.51	0.2210	110530.10
58	28.86	0.0603	30144.93
59	28.95	0.2747	137387.20
	29.22	0.0827	41377.15
60	29.36	2.9948	1497741.00
61	29.47	0.0954	47687.93
	29.81	0.0267	13351.83
	29.89	0.0565	28277.75
	30.69	0.2788	139425.00
I.S. #2	30.83	0.5802	290168.00
63	31.43	0.1790	89542.41
64	31.77	0.0292	14607.91
	31.88	0.0277	13837.44
	32.31	0.0291	14578.35
65	32.65	0.0295	14743.70
	32.85	0.0405	20245.94
66	33.22	0.5825	291321.60
67	33.68	1.8140	907214.00
68	33.80	0.7961	398134.20
69	34.13	1.1073	553764.30
	34.37	0.0275	13775.10
	34.47	0.0581	29035.47
70	34.57	0.2251	112568.90
71	34.71	0.5451	272602.50
	35.01	0.0767	38339.88
	35.32	0.0462	23089.32
73	35.60	2.8470	1423812.00
74	36.33	0.0306	15316.91
75	36.48	0.0539	26934.32
76	36.63	0.1541	77090.95
77	37.15	0.5079	253994.60
	37.58	0.0222	11082.38
78	37.79	0.2371	118555.60
	37.99	0.0255	12738.97

Peak Name	Ret. Time	Area %	Area
	38.20	0.0709	35471.53
	38.60	0.0504	25208.97
	38.70	0.0901	45063.50
79	38.85	0.3873	193680.80
	39.06	0.2159	107956.30
80	39.21	0.2624	131211.20
	39.36	0.0280	13989.86
81	39.70	0.0924	46200.75
82	39.91	0.1548	77421.12
	40.01	0.0424	21183.87
83	40.24	0.1671	83560.45
84	40.34	0.2309	115482.80
85	40.66	0.2778	138917.90
	41.04	0.0876	43803.00
	41.73	0.0590	29496.82
n-C11	42.05	0.0907	45339.41
87	42.37	0.1413	70683.75
88	42.55	0.1957	97861.34
	43.44	0.0810	40487.03
	43.80	0.0390	19502.14
	43.96	0.0860	42989.09
89	44.17	0.0557	27835.03
	44.94	0.0413	20673.12
	45.23	0.0253	12643.21
90	45.45	0.1467	73360.59
n-C12	46.94	0.0841	42072.24
i-C13	47.60	0.0269	13437.53
	48.52	0.0272	13584.97
	49.66	0.0255	12755.75
i-C14	49.77	0.0188	9424.51
91	49.95	0.1277	63860.62
92	50.47	0.0612	30600.01
n-C13	50.55	0.0930	46524.24
	52.40	0.0274	13708.70
i-C15	52.80	0.0205	10245.50
	52.90	0.0267	13337.53
	53.20	0.0640	31992.81
n-C14	53.31	0.0827	41372.24
	53.58	0.0639	31978.76
	53.67	0.0384	19216.12
	54.07	0.0293	14631.88
i-C16	54.83	0.0286	14305.06
n-C15	55.57	0.0863	43182.60
	56.04	0.0167	8329.35
	56.48	0.0121	6055.42
n-C16	57.51	0.0606	30314.61
i-C18	58.43	0.0159	7934.35
n-C17	59.22	0.0442	22087.17
Pristane	59.40	0.0304	15192.57
n-C18	60.78	0.0253	12668.24
Phytane	61.01	0.0070	3504.86
n-C19	62.22	0.0215	10777.29
n-C20	63.57	0.0160	7980.08
IS #3	64.52	0.0284	14220.05
n-C21	64.84	0.0144	7179.26
n-C22	66.04	0.0095	4765.55
n-C23	67.21	0.0065	3232.82
n-C24	68.40	0.0049	2456.57
n-C25	69.66	0.0031	1542.91

Total Area = 5.00115E+07 Total Height = 6.635798E+07 Total Amount = 0

REPORT OF ANALYTICAL RESULTS

Client: Jennifer Menges Stantec 1060 Andrew Drive, Suite 140 West Chester, PA 19380	Lab Number: 15714 Collected: 4/6/2015 Received: 4/22/2015 Matrix: Product
Project: Evergreen, Marcus Hook AOI 1 Project Number: 213402493 Collected by: -	Sample Description: See Below Analyzed: 6/8/2015 Method: ASTM D 1217

SPECIFIC GRAVITY

LAB NUMBER	SAMPLE DESCRIPTION	SPECIFIC GRAVITY
15714-1	MW-523	0.884
15714-2	Seep-A	0.812

43953/
15714

Sample Condition Upon Receipt

Pace Analytical

Client Name: Stantec Project # 15714

Courier: [X] Fed Ex [ ] UPS [ ] USPS [ ] Client [ ] Commercial [ ] Pace Other _____

Tracking #: 780493004414

Custody Seal on Cooler/Box Present: [ ] yes [X] no Seals intact: [ ] yes [ ] no **Biological Tissue is Frozen:** Yes No

Packing Material: Bubble Wrap X Bubble Bags ___ None ___ Other foam

Thermometer Used #8 **Type of Ice:** Wet Blue None [ ] Samples on ice, cooling process has begun

Cooler Temp.: Observed Temp.: 5.5 °C **Correction Factor:** +0.1 °C **Final Temp:** 5.6 °C

Date and initials of person examining contents: SRA 4-14-15

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	[X] Yes	[ ] No	[ ] N/A	1.
Chain of Custody Filled Out:	[X] Yes	[ ] No	[ ] N/A	2.
Chain of Custody Relinquished:	[X] Yes	[ ] No	[ ] N/A	3.
Sampler Name & Signature on COC:	[X] Yes	[ ] No	[ ] N/A	4.
Samples Arrived within Hold Time:	[X] Yes	[ ] No	[ ] N/A	5.
Short Hold Time Analysis (<72hr):	[ ] Yes	[X] No	[ ] N/A	6.
Rush Turn Around Time Requested:	[ ] Yes	[X] No	[ ] N/A	7.
Sufficient Volume:	[X] Yes	[ ] No	[ ] N/A	8.
Correct Containers Used:	[X] Yes	[ ] No	[ ] N/A	9.
-Pace Containers Used:	[ ] Yes	[X] No	[ ] N/A	
Containers Intact:	[X] Yes	[ ] No	[ ] N/A	10.
Filtered volume received for Dissolved tests	[ ] Yes	[ ] No	[X] N/A	11.
Sample Labels match COC:	[X] Yes	[ ] No	[ ] N/A	12.
-Includes date/time/ID/Analysis Matrix: Oil				
All containers needing preservation have been checked.	[ ] Yes	[ ] No	[X] N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	[ ] Yes	[ ] No	[X] N/A	
exceptions: VOA, coliform, TOC, O&G, Phenols	[ ] Yes	[X] No		Initial when completed SRA / Lot # of added preservative
Samples checked for dechlorination:	[ ] Yes	[ ] No	[X] N/A	14.
Headspace in VOA Vials (>6mm):	[ ] Yes	[ ] No	[X] N/A	15.
Trip Blank Present:	[ ] Yes	[X] No	[ ] N/A	16.
Trip Blank Custody Seals Present	[ ] Yes	[ ] No	[X] N/A	
Pace Trip Blank Lot # (if purchased): _____				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Sample Date	30-NOV-15
Sample ID	204293260
Batch Number	
User SampleID	20151130-260
Sample Type	PBPSSO POLLOCK STREET SEWER OUTFALL
Tag	11/30/15 1100
Material Name	MISC. UNDEFINED PRODUCT
Material Type	PLANT SAMPLE
Condition	APPROVED
EPA Batch #	
Comments	LOCATION RW124

Component	Result	Units	Inspec	Low	High
API OBSERVED	36.7	deg API	N/A		
TEMPERATURE	60.0	deg F	N/A		
API GRAVITY	36.7	deg API	N/A		
INITIAL BOILING POINT (GC)	254.6	deg F	N/A		
01 % (GC)	277.6	deg F	N/A		
02 % (GC)	299.2	deg F	N/A		
03 % (GC)	313.2	deg F	N/A		
04 % (GC)	322.6	deg F	N/A		
05 % (GC)	329	deg F	N/A		
10 % (GC)	358.6	deg F	N/A		
20 % (GC)	406	deg F	N/A		
30 % (GC)	443.2	deg F	N/A		
40 % (GC)	477	deg F	N/A		
50 % (GC)	506.4	deg F	N/A		
60 % (GC)	536.6	deg F	N/A		
70 % (GC)	572	deg F	N/A		
80 % (GC)	606	deg F	N/A		
90 % (GC)	658.2	deg F	N/A		
95 % (GC)	694.8	deg F	N/A		
END POINT (GC)	792.2	deg F	N/A		
SULFUR	0.0111	wt.%	N/A		
SULFUR FOR COA	111	ppm	N/A		