



12065 Lebanon Rd.
Mt. Juliet, TN 37122
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Tax I.D. 62-0814289

Est. 1970

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

Report Summary

Tuesday April 23, 2013

Report Number: L630077


Samples Received: 04/11/13

Client Project: M14 PAD ASSESSMENT

Description: M14 PAD ASSESSMENT

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:


Jarred Willis , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-IN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364

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REPORT OF ANALYSIS

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

April 23, 2013

Date Received : April 11, 2013
Description : M14 PAD ASSESSMENT

Sample ID : M14-SVES02-040913 10-12 FT

Collected By : Ryan Zernis
Collection Date : 04/09/13 09:31

ESC Sample # : L630077-01

Site ID : M14
Project # : M14 PAD ASSESSMENT

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	10.	mg/kg	3060A/7196A	04/17/13	5
Chromium, Trivalent	37.	10.	mg/kg	Calc.	04/22/13	1
ORP	-3.0		mV	2580 B-2011	04/16/13	1
pH	12.		su	9045D	04/15/13	1
Sodium Adsorption Ratio	31.			Calc.	04/20/13	1
Specific Conductance	4200		umhos/cm	9050AMod	04/14/13	1
Mercury	0.057	0.020	mg/kg	7471	04/13/13	1
Arsenic	7.8	1.0	mg/kg	6010B	04/22/13	1
Barium	5100	0.25	mg/kg	6010B	04/22/13	1
Cadmium	0.88	0.25	mg/kg	6010B	04/22/13	1
Chromium	37.	0.50	mg/kg	6010B	04/22/13	1
Copper	14.	1.0	mg/kg	6010B	04/22/13	1
Lead	13.	0.25	mg/kg	6010B	04/22/13	1
Nickel	9.9	1.0	mg/kg	6010B	04/22/13	1
Selenium	3.4	1.0	mg/kg	6010B	04/22/13	1
Silver	BDL	0.50	mg/kg	6010B	04/22/13	1
Zinc	36.	1.5	mg/kg	6010B	04/22/13	1
Benzene	0.020	0.0025	mg/kg	8021/8015	04/14/13	5
Toluene	BDL	0.025	mg/kg	8021/8015	04/14/13	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	04/14/13	5
Total Xylene	0.013	0.0075	mg/kg	8021/8015	04/14/13	5
TPH (GC/FID) Low Fraction	0.52	0.50	mg/kg	GRO	04/14/13	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	98.5		% Rec.	8021/8015	04/14/13	5
a,a,a-Trifluorotoluene(PID)	97.7		% Rec.	8021/8015	04/14/13	5
TPH (GC/FID) High Fraction	39.	20.	mg/kg	8015D/DRO	04/15/13	5
Surrogate recovery(%)						
o-Terphenyl	79.5		% Rec.	8015D/DRO	04/15/13	5
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L630077-01 (CR6) - diluted due to sample color
L630077-01 (PH) - 12@22.7c



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143 Diamond Avenue
Parachute, CO 81635

April 23, 2013

Date Received : April 11, 2013
Description : M14 PAD ASSESSMENT

Sample ID : M14-SVES02-040913 10-12 FT

Collected By : Ryan Zernis
Collection Date : 04/09/13 09:31

ESC Sample # : L630077-01

Site ID : M14

Project # : M14 PAD ASSESSMENT

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Fluorene	0.011	0.0060	mg/kg	8270C-SIM	04/16/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Naphthalene	0.062	0.020	mg/kg	8270C-SIM	04/16/13	1
Phenanthrene	0.034	0.0060	mg/kg	8270C-SIM	04/16/13	1
Pyrene	0.0061	0.0060	mg/kg	8270C-SIM	04/16/13	1
1-Methylnaphthalene	0.056	0.020	mg/kg	8270C-SIM	04/16/13	1
2-Methylnaphthalene	0.10	0.020	mg/kg	8270C-SIM	04/16/13	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	04/16/13	1
Surrogate Recovery						
Nitrobenzene-d5	87.6		% Rec.	8270C-SIM	04/16/13	1
2-Fluorobiphenyl	77.5		% Rec.	8270C-SIM	04/16/13	1
p-Terphenyl-d14	57.6		% Rec.	8270C-SIM	04/16/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 04/23/13 08:18 Printed: 04/23/13 08:19
L630077-01 (CR6) - diluted due to sample color
L630077-01 (PH) - 12@22.7c



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EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

April 23, 2013

Date Received : April 11, 2013
Description : M14 PAD ASSESSMENT

Sample ID : M14-SVES02-040913 5-7 FT

Collected By : Ryan Zernis
Collection Date : 04/09/13 08:40

ESC Sample # : L630077-02

Site ID : M14

Project # : M14 PAD ASSESSMENT

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	0.0067	0.0025	mg/kg	8021/8015	04/14/13	5
Toluene	BDL	0.025	mg/kg	8021/8015	04/14/13	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	04/14/13	5
Total Xylene	0.014	0.0075	mg/kg	8021/8015	04/14/13	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	04/14/13	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	98.9		% Rec.	8021/8015	04/14/13	5
a,a,a-Trifluorotoluene(PID)	99.2		% Rec.	8021/8015	04/14/13	5
TPH (GC/FID) High Fraction	54.	20.	mg/kg	8015D/DRO	04/15/13	5
Surrogate recovery(%)						
o-Terphenyl	73.2		% Rec.	8015D/DRO	04/15/13	5
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Acenaphthene	0.0069	0.0060	mg/kg	8270C-SIM	04/16/13	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Chrysene	0.011	0.0060	mg/kg	8270C-SIM	04/16/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Fluorene	0.020	0.0060	mg/kg	8270C-SIM	04/16/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Naphthalene	0.16	0.020	mg/kg	8270C-SIM	04/16/13	1
Phenanthrene	0.071	0.0060	mg/kg	8270C-SIM	04/16/13	1
Pyrene	0.0089	0.0060	mg/kg	8270C-SIM	04/16/13	1
1-Methylnaphthalene	0.19	0.020	mg/kg	8270C-SIM	04/16/13	1
2-Methylnaphthalene	0.30	0.020	mg/kg	8270C-SIM	04/16/13	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	04/16/13	1
Surrogate Recovery						
Nitrobenzene-d5	84.5		% Rec.	8270C-SIM	04/16/13	1
2-Fluorobiphenyl	78.5		% Rec.	8270C-SIM	04/16/13	1
p-Terphenyl-d14	66.2		% Rec.	8270C-SIM	04/16/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

April 23, 2013

Date Received : April 11, 2013
Description : M14 PAD ASSESSMENT

Sample ID : M14-SVES02-040913 25-26 FT

Collected By : Ryan Zernis
Collection Date : 04/09/13 10:10

ESC Sample # : L630077-03

Site ID : M14

Project # : M14 PAD ASSESSMENT

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.0025	mg/kg	8021/8015	04/14/13	5
Toluene	BDL	0.025	mg/kg	8021/8015	04/14/13	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	04/14/13	5
Total Xylene	0.033	0.0075	mg/kg	8021/8015	04/14/13	5
TPH (GC/FID) Low Fraction	0.80	0.50	mg/kg	GRO	04/14/13	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	99.3		% Rec.	8021/8015	04/14/13	5
a,a,a-Trifluorotoluene(PID)	99.0		% Rec.	8021/8015	04/14/13	5
TPH (GC/FID) High Fraction	120	20.	mg/kg	8015D/DRO	04/15/13	5
Surrogate recovery(%)						
o-Terphenyl	53.9		% Rec.	8015D/DRO	04/15/13	5
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Fluorene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Naphthalene	BDL	0.020	mg/kg	8270C-SIM	04/16/13	1
Phenanthrene	0.0068	0.0060	mg/kg	8270C-SIM	04/16/13	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
1-Methylnaphthalene	BDL	0.020	mg/kg	8270C-SIM	04/16/13	1
2-Methylnaphthalene	0.036	0.020	mg/kg	8270C-SIM	04/16/13	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	04/16/13	1
Surrogate Recovery						
Nitrobenzene-d5	99.8		% Rec.	8270C-SIM	04/16/13	1
2-Fluorobiphenyl	79.9		% Rec.	8270C-SIM	04/16/13	1
p-Terphenyl-d14	69.4		% Rec.	8270C-SIM	04/16/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

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EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

April 23, 2013

Date Received : April 11, 2013
Description : M14 PAD ASSESSMENT

Sample ID : M14-SVES01-040913 5-7 FT

Collected By : Ryan Zernis
Collection Date : 04/09/13 11:43

ESC Sample # : L630077-04

Site ID : M14

Project # : M14 PAD ASSESSMENT

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.0025	mg/kg	8021/8015	04/14/13	5
Toluene	BDL	0.025	mg/kg	8021/8015	04/14/13	5
Ethylbenzene	BDL	0.0025	mg/kg	8021/8015	04/14/13	5
Total Xylene	BDL	0.0075	mg/kg	8021/8015	04/14/13	5
TPH (GC/FID) Low Fraction	BDL	0.50	mg/kg	GRO	04/14/13	5
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	99.4		% Rec.	8021/8015	04/14/13	5
a,a,a-Trifluorotoluene(PID)	99.2		% Rec.	8021/8015	04/14/13	5
TPH (GC/FID) High Fraction	27.	4.0	mg/kg	8015D/DRO	04/15/13	1
Surrogate recovery(%)						
o-Terphenyl	75.0		% Rec.	8015D/DRO	04/15/13	1
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Acenaphthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Fluorene	0.0096	0.0060	mg/kg	8270C-SIM	04/16/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Naphthalene	0.062	0.020	mg/kg	8270C-SIM	04/16/13	1
Phenanthrene	0.032	0.0060	mg/kg	8270C-SIM	04/16/13	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
1-Methylnaphthalene	0.070	0.020	mg/kg	8270C-SIM	04/16/13	1
2-Methylnaphthalene	0.12	0.020	mg/kg	8270C-SIM	04/16/13	1
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	04/16/13	1
Surrogate Recovery						
Nitrobenzene-d5	88.3		% Rec.	8270C-SIM	04/16/13	1
2-Fluorobiphenyl	86.8		% Rec.	8270C-SIM	04/16/13	1
p-Terphenyl-d14	76.0		% Rec.	8270C-SIM	04/16/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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143 Diamond Avenue
Parachute, CO 81635

April 23, 2013

Date Received : April 11, 2013
Description : M14 PAD ASSESSMENT

Sample ID : M14-SVES01-040913 15-20 FT

Collected By : Ryan Zernis
Collection Date : 04/09/13 12:05

ESC Sample # : L630077-05

Site ID : M14

Project # : M14 PAD ASSESSMENT

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	10.	mg/kg	3060A/7196A	04/17/13	5
Chromium, Trivalent	15.	10.	mg/kg	Calc.	04/22/13	1
ORP	-16.		mV	2580 B-2011	04/16/13	1
pH	12.		su	9045D	04/15/13	1
Sodium Adsorption Ratio	48.			Calc.	04/20/13	1
Specific Conductance	4200		umhos/cm	9050AMod	04/14/13	1
Mercury	0.029	0.020	mg/kg	7471	04/13/13	1
Arsenic	8.0	1.0	mg/kg	6010B	04/22/13	1
Barium	4200	0.25	mg/kg	6010B	04/22/13	1
Cadmium	0.69	0.25	mg/kg	6010B	04/22/13	1
Chromium	15.	0.50	mg/kg	6010B	04/22/13	1
Copper	20.	1.0	mg/kg	6010B	04/22/13	1
Lead	17.	0.25	mg/kg	6010B	04/22/13	1
Nickel	10.	1.0	mg/kg	6010B	04/22/13	1
Selenium	2.4	1.0	mg/kg	6010B	04/22/13	1
Silver	BDL	0.50	mg/kg	6010B	04/22/13	1
Zinc	36.	1.5	mg/kg	6010B	04/22/13	1
Benzene	BDL	1.2	mg/kg	8021/8015	04/14/13	2500
Toluene	BDL	12.	mg/kg	8021/8015	04/14/13	2500
Ethylbenzene	2.0	1.2	mg/kg	8021/8015	04/14/13	2500
Total Xylene	13.	3.8	mg/kg	8021/8015	04/14/13	2500
TPH (GC/FID) Low Fraction	640	250	mg/kg	GRO	04/14/13	2500
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	100.		% Rec.	8021/8015	04/14/13	2500
a,a,a-Trifluorotoluene(PID)	100.		% Rec.	8021/8015	04/14/13	2500
TPH (GC/FID) High Fraction	410	20.	mg/kg	8015D/DRO	04/15/13	5
Surrogate recovery(%)						
o-Terphenyl	80.7		% Rec.	8015D/DRO	04/15/13	5
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Acenaphthene	0.020	0.0060	mg/kg	8270C-SIM	04/16/13	1
Acenaphthylene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(a)anthracene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(a)pyrene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
L630077-05 (CR6) - diluted due to sample color
L630077-05 (PH) - 12@22.8c



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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Chris Hines / Matt Kasten
EnCana Oil & Gas Inc. - CO
143 Diamond Avenue
Parachute, CO 81635

April 23, 2013

Date Received : April 11, 2013
Description : M14 PAD ASSESSMENT

Sample ID : M14-SVES01-040913 15-20 FT

Collected By : Ryan Zernis
Collection Date : 04/09/13 12:05

ESC Sample # : L630077-05

Site ID : M14

Project # : M14 PAD ASSESSMENT

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(g,h,i)perylene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Benzo(k)fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Chrysene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Dibenz(a,h)anthracene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Fluoranthene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Fluorene	0.057	0.0060	mg/kg	8270C-SIM	04/16/13	1
Indeno(1,2,3-cd)pyrene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
Naphthalene	BDL	0.20	mg/kg	8270C-SIM	04/16/13	10
Phenanthrene	0.049	0.0060	mg/kg	8270C-SIM	04/16/13	1
Pyrene	BDL	0.0060	mg/kg	8270C-SIM	04/16/13	1
1-Methylnaphthalene	0.21	0.20	mg/kg	8270C-SIM	04/16/13	10
2-Methylnaphthalene	0.56	0.20	mg/kg	8270C-SIM	04/16/13	10
2-Chloronaphthalene	BDL	0.020	mg/kg	8270C-SIM	04/16/13	1
Surrogate Recovery						
Nitrobenzene-d5	81.2		% Rec.	8270C-SIM	04/16/13	10
2-Fluorobiphenyl	101.		% Rec.	8270C-SIM	04/16/13	1
p-Terphenyl-d14	75.7		% Rec.	8270C-SIM	04/16/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

This report shall not be reproduced, except in full, without the written approval from ESC.

Reported: 04/23/13 08:18 Printed: 04/23/13 08:19
L630077-05 (CR6) - diluted due to sample color
L630077-05 (PH) - 12@22.8c

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L630077-01	WG655868	SAMP	TPH (GC/FID) Low Fraction	R2618980	J6
	WG655841	SAMP	p-Terphenyl-d14	R2621282	J2
	WG656395	SAMP	ORP	R2621943	T8
	WG656359	SAMP	Chromium, Hexavalent	R2622960	O
L630077-02	WG655841	SAMP	p-Terphenyl-d14	R2622061	J2
L630077-03	WG655841	SAMP	p-Terphenyl-d14	R2621282	J2
	WG655851	SAMP	TPH (GC/FID) High Fraction	R2619460	J6J3
L630077-05	WG656395	SAMP	ORP	R2621943	T8
	WG656359	SAMP	Chromium, Hexavalent	R2622960	O

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low
O	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.
T8	(ESC) - Additional method/sample information: Sample(s) received past/too close to holding time expiration.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

- Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.
- Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.
- Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.
- TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
04/23/13 at 08:19:33

TSR Signing Reports: 358
RX - Priority Rush

Log ALL samples for EDD (COGCC EDD). Log all PAHs as PAHSIM. Try not to report benzene as BDL
above a 250x dilution.

Sample: L630077-01 Account: ENCANACO Received: 04/11/13 09:00 Due Date: 04/23/13 00:00 RPT Date: 04/23/13 08:18
Sample: L630077-02 Account: ENCANACO Received: 04/11/13 09:00 Due Date: 04/18/13 00:00 RPT Date: 04/23/13 08:18
Sample: L630077-03 Account: ENCANACO Received: 04/11/13 09:00 Due Date: 04/18/13 00:00 RPT Date: 04/23/13 08:18
Sample: L630077-04 Account: ENCANACO Received: 04/11/13 09:00 Due Date: 04/18/13 00:00 RPT Date: 04/23/13 08:18
Sample: L630077-05 Account: ENCANACO Received: 04/11/13 09:00 Due Date: 04/23/13 00:00 RPT Date: 04/23/13 08:18



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Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Mercury	< .02	mg/kg			WG656010	04/13/13 14:36
Specific Conductance	1.52	umhos/cm			WG656114	04/14/13 08:15
Benzene	< .0005	mg/kg			WG655868	04/14/13 00:57
Ethylbenzene	< .0005	mg/kg			WG655868	04/14/13 00:57
Toluene	< .005	mg/kg			WG655868	04/14/13 00:57
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG655868	04/14/13 00:57
Total Xylene	< .0015	mg/kg			WG655868	04/14/13 00:57
a,a,a-Trifluorotoluene(FID)		% Rec.	100.4	59-128	WG655868	04/14/13 00:57
a,a,a-Trifluorotoluene(PID)		% Rec.	100.8	54-144	WG655868	04/14/13 00:57
TPH (GC/FID) High Fraction	< 4	mg/kg			WG655851	04/15/13 20:20
o-Terphenyl		% Rec.	98.00	50-150	WG655851	04/15/13 20:20
Arsenic	< 1	mg/kg			WG656437	04/16/13 22:47
Barium	< .25	mg/kg			WG656437	04/16/13 22:47
Cadmium	< .25	mg/kg			WG656437	04/16/13 22:47
Chromium	< .5	mg/kg			WG656437	04/16/13 22:47
Lead	0.260	mg/kg			WG656437	04/16/13 22:47
Nickel	< 1	mg/kg			WG656437	04/16/13 22:47
Selenium	< 1	mg/kg			WG656437	04/16/13 22:47
Silver	< .5	mg/kg			WG656437	04/16/13 22:47
Zinc	< 1.5	mg/kg			WG656437	04/16/13 22:47
Chromium, Hexavalent	< 2	mg/kg			WG656359	04/17/13 13:43
Copper	< 1	mg/kg			WG656437	04/22/13 11:02

Analyte	Units	Result	Duplicate		RPD	Limit	Ref Samp	Batch
			Duplicate					
Mercury	mg/kg	0	0.00172		2.92	20	L630211-04	WG656010
Specific Conductance	umhos/cm	420.	380.		11.2	20	L629779-01	WG656114
Specific Conductance	umhos/cm	3500	3500		0.570	20	L630353-03	WG656114
pH	su	8.30	8.40		0.837	1	L628748-02	WG656134
pH	su	7.60	7.60		0.660	1	L630410-01	WG656134
Arsenic	mg/kg	2.70	2.50		7.69	20	L630211-04	WG656437
Barium	mg/kg	58.0	58.7		1.20	20	L630211-04	WG656437
Cadmium	mg/kg	0	0		0	20	L630211-04	WG656437
Chromium	mg/kg	14.0	14.0		0	20	L630211-04	WG656437
Nickel	mg/kg	7.70	8.20		6.29	20	L630211-04	WG656437
Selenium	mg/kg	3.20	2.50		24.6*	20	L630211-04	WG656437
Zinc	mg/kg	18.0	18.0		0	20	L630211-04	WG656437
Lead	mg/kg	8.70	8.90		2.27	20	L630211-04	WG656437
Silver	mg/kg	0	0		0	20	L630211-04	WG656437

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
ORP	mV	140.	140.	0.712	20	L629779-01	WG656395
ORP	mV	0	0	0	20	L630541-01	WG656395
Chromium,Hexavalent	mg/kg	0	0	0	20	L630253-05	WG656359
Chromium,Hexavalent	mg/kg	0	0	0	20	L629643-01	WG656359
Copper	mg/kg	6.90	8.40	19.6	20	L630211-04	WG656437

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Mercury	mg/kg	12.4	13.6	110.	71.6-127.7	WG656010
Specific Conductance	umhos/cm	878	887.	101.	85-115	WG656114
pH	su	5.79	5.83	101.	98.3-101.7	WG656134
Benzene	mg/kg	.05	0.0453	90.7	76-113	WG655868
Ethylbenzene	mg/kg	.05	0.0468	93.5	78-115	WG655868
Toluene	mg/kg	.05	0.0459	91.7	76-114	WG655868
Total Xylene	mg/kg	.15	0.144	95.9	81-118	WG655868
a,a,a-Trifluorotoluene(PID)				102.1	54-144	WG655868
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.04	91.6	67-135	WG655868
a,a,a-Trifluorotoluene(FID)				100.5	59-128	WG655868
TPH (GC/FID) High Fraction	mg/kg	60	45.7	76.1	50-150	WG655851
o-Terphenyl				97.40	50-150	WG655851
Arsenic	mg/kg	237	214.	90.3	83.1-117	WG656437
Barium	mg/kg	252	242.	96.0	84.1-116	WG656437
Cadmium	mg/kg	191	170.	89.0	83.2-117	WG656437
Chromium	mg/kg	128	121.	94.5	81.3-118	WG656437
Lead	mg/kg	103	92.2	89.5	83.1-117	WG656437
Nickel	mg/kg	118	105.	89.0	82-118	WG656437
Selenium	mg/kg	110	103.	93.6	78.7-122	WG656437
Silver	mg/kg	47.3	44.4	93.9	66.2-134	WG656437
Zinc	mg/kg	183	159.	86.9	82-118	WG656437
ORP	mV	228	237.	104.	95.6-104.	WG656395
Chromium,Hexavalent	mg/kg	146	127.	87.0	80-120	WG656359
Copper	mg/kg	123	119.	96.7	83.7-116	WG656437

Analyte	Units	Laboratory Control Sample Duplicate		Limit	RPD	Limit	Batch	
		Result	%Rec					
Specific Conductance	umhos/	881.	887.	100.	85-115	0.679	20	WG656114

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Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
pH	su	5.84	5.83	101.	98.3-101.7	0.171	20	WG656134
Benzene	mg/kg	0.0468	0.0453	94.0	76-113	3.07	20	WG655868
Ethylbenzene	mg/kg	0.0486	0.0468	97.0	78-115	3.77	20	WG655868
Toluene	mg/kg	0.0469	0.0459	94.0	76-114	2.30	20	WG655868
Total Xylene	mg/kg	0.149	0.144	99.0	81-118	3.53	20	WG655868
a,a,a-Trifluorotoluene(PID)				101.6	54-144			WG655868
TPH (GC/FID) Low Fraction	mg/kg	4.99	5.04	91.0	67-135	0.930	20	WG655868
a,a,a-Trifluorotoluene(FID)				100.7	59-128			WG655868
TPH (GC/FID) High Fraction	mg/kg	45.9	45.7	76.0	50-150	0.580	20	WG655851
o-Terphenyl				94.30	50-150			WG655851
ORP	mV	236.	237.	104.	95.6-104.	0.423	20	WG656395
Chromium,Hexavalent	mg/kg	127.	127.	87.0	80-120	0	20	WG656359

Analyte	Units	Matrix Spike			% Rec	Limit	Ref Samp	Batch
		MS Res	Ref Res	TV				
Mercury	mg/kg	0.272	0.00172	.25	108.	80-120	L630211-04	WG656010
Benzene	mg/kg	0.223	0.0200	.05	81.0	32-137	L630077-01	WG655868
Ethylbenzene	mg/kg	0.209	0	.05	83.5	10-150	L630077-01	WG655868
Toluene	mg/kg	0.292	0.0129	.05	112.	20-142	L630077-01	WG655868
Total Xylene	mg/kg	0.691	0.0133	.15	90.4	16-141	L630077-01	WG655868
a,a,a-Trifluorotoluene(PID)					99.90	54-144		WG655868
TPH (GC/FID) Low Fraction	mg/kg	14.7	0.519	5.5	51.5*	55-109	L630077-01	WG655868
a,a,a-Trifluorotoluene(FID)					95.65	59-128		WG655868
TPH (GC/FID) High Fraction	mg/kg	69.8	124.	12	0*	50-150	L630077-03	WG655851
o-Terphenyl					22.80*	50-150		WG655851
1-Methylnaphthalene	mg/kg	0.0724	0	.08	90.5	70-130	L630009-05	WG655841
2-Chloronaphthalene	mg/kg	0.0703	0	.08	87.9	70-130	L630009-05	WG655841
2-Methylnaphthalene	mg/kg	0.0724	0	.08	90.5	70-130	L630009-05	WG655841
Acenaphthene	mg/kg	0.0713	0.000627	.08	88.3	70-130	L630009-05	WG655841
Acenaphthylene	mg/kg	0.0764	0	.08	95.5	70-130	L630009-05	WG655841
Anthracene	mg/kg	0.0769	0.00202	.08	93.6	70-130	L630009-05	WG655841
Benzo(a)anthracene	mg/kg	0.0951	0.0394	.08	69.7*	70-130	L630009-05	WG655841
Benzo(a)pyrene	mg/kg	0.0875	0.0366	.08	63.6*	70-130	L630009-05	WG655841
Benzo(b)fluoranthene	mg/kg	0.0921	0.0469	.08	56.5*	70-130	L630009-05	WG655841
Benzo(g,h,i)perylene	mg/kg	0.0828	0.0210	.08	77.3	70-130	L630009-05	WG655841
Benzo(k)fluoranthene	mg/kg	0.0719	0.0228	.08	61.4*	70-130	L630009-05	WG655841
Chrysene	mg/kg	0.0839	0.0402	.08	54.6*	70-130	L630009-05	WG655841
Dibenz(a,h)anthracene	mg/kg	0.0730	0.00521	.08	84.8	70-130	L630009-05	WG655841
Fluoranthene	mg/kg	0.118	0.0677	.08	62.7*	70-130	L630009-05	WG655841
Fluorene	mg/kg	0.0753	0	.08	94.1	70-130	L630009-05	WG655841
Indeno(1,2,3-cd)pyrene	mg/kg	0.0816	0.0182	.08	79.3	70-130	L630009-05	WG655841
Naphthalene	mg/kg	0.0679	0.000713	.08	84.0	70-130	L630009-05	WG655841
Phenanthrene	mg/kg	0.0765	0.0126	.08	79.9	70-130	L630009-05	WG655841
Pyrene	mg/kg	0.108	0.0668	.08	51.6*	70-130	L630009-05	WG655841

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Analyte	Units	MS Res	Matrix Spike		TV	% Rec	Limit	Ref Samp	Batch
			Ref Res	TV					
2-Fluorobiphenyl						86.20	70-130		
Nitrobenzene-d5						91.60	70-130		
p-Terphenyl-d14						85.50	70-130		
Arsenic	mg/kg	40.7	2.50	50		76.4	75-125	L630211-04	WG656437
Barium	mg/kg	104.	58.7	50		90.6	75-125	L630211-04	WG656437
Cadmium	mg/kg	37.8	0	50		75.6	75-125	L630211-04	WG656437
Chromium	mg/kg	55.1	14.0	50		82.2	75-125	L630211-04	WG656437
Nickel	mg/kg	45.0	8.20	50		73.6*	75-125	L630211-04	WG656437
Selenium	mg/kg	41.9	2.50	50		78.8	75-125	L630211-04	WG656437
Zinc	mg/kg	55.3	18.0	50		74.6*	75-125	L630211-04	WG656437
Lead	mg/kg	53.4	8.90	10		89.0	75-125	L630211-04	WG656437
Silver	mg/kg	45.7	0	10		91.4	75-125	L630211-04	WG656437
Chromium, Hexavalent	mg/kg	7.08	0	20		35.4*	75-125	L629779-01	WG656359
Copper	mg/kg	57.0	8.40	50		97.2	75-125	L630211-04	WG656437

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Mercury	mg/kg	0.277	0.272	110.	80-120	1.62	20	L630211-04	WG656010
Benzene	mg/kg	0.258	0.223	95.2	32-137	14.7	39	L630077-01	WG655868
Ethylbenzene	mg/kg	0.211	0.209	84.3	10-150	1.01	44	L630077-01	WG655868
Toluene	mg/kg	0.241	0.292	91.3	20-142	19.0	42	L630077-01	WG655868
Total Xylene	mg/kg	0.658	0.691	86.0	16-141	4.83	46	L630077-01	WG655868
a,a,a-Trifluorotoluene(PID)				98.10	54-144				WG655868
TPH (GC/FID) Low Fraction	mg/kg	15.6	14.7	55.0	55-109	6.31	20	L630077-01	WG655868
a,a,a-Trifluorotoluene(FID)				96.36	59-128				WG655868
TPH (GC/FID) High Fraction	mg/kg	163.	69.8	65.0	50-150	80.1*	20	L630077-03	WG655851
o-Terphenyl				46.30*	50-150				WG655851
1-Methylnaphthalene	mg/kg	0.0690	0.0724	86.2	70-130	4.79	25	L630009-05	WG655841
2-Chloronaphthalene	mg/kg	0.0671	0.0703	83.9	70-130	4.65	25	L630009-05	WG655841
2-Methylnaphthalene	mg/kg	0.0694	0.0724	86.7	70-130	4.28	25	L630009-05	WG655841
Acenaphthene	mg/kg	0.0678	0.0713	83.9	70-130	5.06	25	L630009-05	WG655841
Acenaphthylene	mg/kg	0.0730	0.0764	91.2	70-130	4.57	25	L630009-05	WG655841
Anthracene	mg/kg	0.0720	0.0769	87.4	70-130	6.62	25	L630009-05	WG655841
Benzo(a)anthracene	mg/kg	0.0905	0.0951	63.9*	70-130	5.00	25	L630009-05	WG655841
Benzo(a)pyrene	mg/kg	0.0831	0.0875	58.1*	70-130	5.17	25	L630009-05	WG655841
Benzo(b)fluoranthene	mg/kg	0.0852	0.0921	47.9*	70-130	7.77	25	L630009-05	WG655841
Benzo(g,h,i)perylene	mg/kg	0.0792	0.0828	72.8	70-130	4.46	25	L630009-05	WG655841
Benzo(k)fluoranthene	mg/kg	0.0690	0.0719	57.7*	70-130	4.15	25	L630009-05	WG655841
Chrysene	mg/kg	0.0791	0.0839	48.6*	70-130	5.93	25	L630009-05	WG655841
Dibenz(a,h)anthracene	mg/kg	0.0699	0.0730	80.8	70-130	4.43	25	L630009-05	WG655841
Fluoranthene	mg/kg	0.105	0.118	47.1*	70-130	11.2	25	L630009-05	WG655841
Fluorene	mg/kg	0.0704	0.0753	88.0	70-130	6.67	25	L630009-05	WG655841
Indeno(1,2,3-cd)pyrene	mg/kg	0.0782	0.0816	75.0	70-130	4.30	25	L630009-05	WG655841
Naphthalene	mg/kg	0.0643	0.0679	79.5	70-130	5.42	25	L630009-05	WG655841
Phenanthrene	mg/kg	0.0717	0.0765	73.8	70-130	6.51	25	L630009-05	WG655841
Pyrene	mg/kg	0.0988	0.108	40.0*	70-130	9.03	25	L630009-05	WG655841
2-Fluorobiphenyl				84.40	70-130				WG655841
Nitrobenzene-d5				91.70	70-130				WG655841

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

EnCana Oil & Gas Inc. - CO
Chris Hines / Matt Kasten
143 Diamond Avenue

Parachute, CO 81635

Quality Assurance Report
Level II

L630077

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

April 23, 2013

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref	Samp	Batch
			Ref	%Rec						
p-Terphenyl-d14				85.00	70-130					
Arsenic	mg/kg	42.3	40.7	79.6	75-125	3.86	20	L630211-04	WG656437	
Barium	mg/kg	109.	104.	101.	75-125	4.69	20	L630211-04	WG656437	
Cadmium	mg/kg	39.5	37.8	79.0	75-125	4.40	20	L630211-04	WG656437	
Chromium	mg/kg	56.6	55.1	85.2	75-125	2.69	20	L630211-04	WG656437	
Nickel	mg/kg	47.4	45.0	78.4	75-125	5.19	20	L630211-04	WG656437	
Selenium	mg/kg	43.0	41.9	81.0	75-125	2.59	20	L630211-04	WG656437	
Zinc	mg/kg	58.2	55.3	80.4	75-125	5.11	20	L630211-04	WG656437	
Lead	mg/kg	58.0	53.4	98.2	75-125	8.26	20	L630211-04	WG656437	
Silver	mg/kg	48.5	45.7	97.0	75-125	5.94	20	L630211-04	WG656437	
Chromium, Hexavalent	mg/kg	7.08	7.08	35.4*	75-125	0	20	L629779-01	WG656359	
Copper	mg/kg	57.7	57.0	98.6	75-125	1.22	20	L630211-04	WG656437	

Serial Dilution

Batch number / Run number / Sample number cross reference

WG656010: R2616741: L630077-01 05
WG656114: R2617640: L630077-01 05
WG656134: R2618481: L630077-01 05
WG655868: R2618980: L630077-01 02 03 04 05
WG655851: R2619460: L630077-01 02 03 04 05
WG655841: R2621282 R2622061: L630077-01 03 04 05 02
WG656437: R2621900: L630077-01 05
WG656395: R2621943: L630077-01 05
WG656359: R2622960: L630077-01 05
WG656683: R2629981: L630077-01 05

* * Calculations are performed prior to rounding of reported values.
* Performance of this Analyte is outside of established criteria.
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The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.