

Laboratory Results Summary Table

Analytes (BDL = Below Detection Limit; ND = Non Detect)

Allowable Concentration -->				Organic Compounds in Soil (mg/kg [ppm])																		Inorganics in Soil			Metals in Soil (mg/kg [ppm])													
Location	Sample Date:	Sample Matrix	Matrix Notes	500	TPH-GRO (C6-C10) Low Fraction	TPH-DRO (C10-C36) High Fraction	0.17	85	100	175	1000	1000	0.22	0.22	2.2	0.022	22	0.022	1000	1000	0.22	23	1000	EC (<4 mmhos/cm or 2x background)	<12	(6-9)	0.39	15000	70	120000	23	3100	400	23	1600	390	390	23000
				TPH (total volatile and extractable petroleum hydrocarbons)																																		



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Chris Hines or Brad Kieding  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

## Report Summary

Monday February 21, 2011

Report Number: L501833

Samples Received: 02/16/11

Client Project:

Description: C160U Cuttings

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:

Jayred Willis , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487  
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140  
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233  
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,  
TX - T104704245, OK-9915

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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REPORT OF ANALYSIS

Chris Hines or Brad Kieding  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

February 21, 2011

Date Received : February 16, 2011  
Description : C160U Cuttings  
Sample ID : C160U-CUTTINGS-021511  
Collected By : Aaron Stacy  
Collection Date : 02/15/11 11:30

ESC Sample # : L501833-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chromium, Hexavalent	BDL	2.0	mg/kg	3060A/7196A	02/18/11	1
Chromium, Trivalent	11.	2.0	mg/kg	Calc.	02/17/11	1
ORP	55.		mV	2580	02/17/11	1
pH	9.3		su	9045D	02/17/11	1
Sodium Adsorption Ratio	52.			Calc.	02/18/11	1
Specific Conductance	4200		umhos/cm	9050AMod	02/18/11	1
Mercury	0.070	0.020	mg/kg	7471	02/17/11	1
Arsenic	2.7	1.0	mg/kg	6010B	02/17/11	1
Barium	5500	0.50	mg/kg	6010B	02/17/11	2
Cadmium	0.67	0.25	mg/kg	6010B	02/17/11	1
Chromium	11.	0.50	mg/kg	6010B	02/17/11	1
Copper	22.	1.0	mg/kg	6010B	02/17/11	1
Lead	6.3	0.25	mg/kg	6010B	02/17/11	1
Nickel	7.9	1.0	mg/kg	6010B	02/17/11	1
Selenium	BDL	1.0	mg/kg	6010B	02/17/11	1
Silver	BDL	0.50	mg/kg	6010B	02/17/11	1
Zinc	38.	1.5	mg/kg	6010B	02/17/11	1
Benzene	0.056	0.025	mg/kg	8021/8015	02/16/11	50
Toluene	BDL	0.25	mg/kg	8021/8015	02/16/11	50
Ethylbenzene	0.17	0.025	mg/kg	8021/8015	02/16/11	50
Total Xylene	0.83	0.075	mg/kg	8021/8015	02/16/11	50
TPH (GC/FID) Low Fraction	57.	5.0	mg/kg	GRO	02/16/11	50
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	105.		% Rec.	8021/8015	02/16/11	50
a,a,a-Trifluorotoluene(PID)	102.		% Rec.	8021/8015	02/16/11	50
TPH (GC/FID) High Fraction	760	20.	mg/kg	3546/DRO	02/17/11	5
Surrogate recovery(%)						
o-Terphenyl	69.7		% Rec.	3546/DRO	02/17/11	5
Polynuclear Aromatic Hydrocarbons						
Anthracene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
Acenaphthene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
Acenaphthylene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
Benzo(a)anthracene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
Benzo(a)pyrene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20

BDL - Below Detection Limit  
Det. Limit - Practical Quantitation Limit(PQL)  
L501833-01 (PH) - 9.3@20.0C  
L501833-01 (SV8270PAHSIM) - Dilution due to matrix



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February 21, 2011

Date Received : February 16, 2011  
Description : C160U Cuttings  
Sample ID : C160U-CUTTINGS-021511  
Collected By : Aaron Stacy  
Collection Date : 02/15/11 11:30

ESC Sample # : L501833-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzo(b)fluoranthene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
Benzo(g,h,i)perylene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
Benzo(k)fluoranthene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
Chrysene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
Dibenz(a,h)anthracene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
Fluoranthene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
Fluorene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
Indeno(1,2,3-cd)pyrene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
Naphthalene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
Phenanthrene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
Pyrene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
1-Methylnaphthalene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
2-Methylnaphthalene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
2-Chloronaphthalene	BDL	2.4	mg/kg	8270C-SIM	02/21/11	20
Surrogate Recovery						
Nitrobenzene-d5	0.00		% Rec.	8270C-SIM	02/21/11	20
2-Fluorobiphenyl	0.00		% Rec.	8270C-SIM	02/21/11	20
p-Terphenyl-d14	0.00		% Rec.	8270C-SIM	02/21/11	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 02/21/11 14:16 Printed: 02/21/11 14:16

L501833-01 (PH) - 9.3@20.0C

L501833-01 (SV8270PAHSIM) - Dilution due to matrix

Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L501833-01	WG521798	SAMP	Anthracene	R1578330	O
	WG521798	SAMP	Acenaphthene	R1578330	O
	WG521798	SAMP	Acenaphthylene	R1578330	O
	WG521798	SAMP	Benzo(a)anthracene	R1578330	O
	WG521798	SAMP	Benzo(a)pyrene	R1578330	O
	WG521798	SAMP	Benzo(b)fluoranthene	R1578330	O
	WG521798	SAMP	Benzo(g,h,i)perylene	R1578330	O
	WG521798	SAMP	Benzo(k)fluoranthene	R1578330	O
	WG521798	SAMP	Chrysene	R1578330	O
	WG521798	SAMP	Dibenz(a,h)anthracene	R1578330	O
	WG521798	SAMP	Fluoranthene	R1578330	O
	WG521798	SAMP	Fluorene	R1578330	O
	WG521798	SAMP	Indeno(1,2,3-cd)pyrene	R1578330	O
	WG521798	SAMP	Naphthalene	R1578330	O
	WG521798	SAMP	Phenanthrene	R1578330	O
	WG521798	SAMP	Pyrene	R1578330	O
	WG521798	SAMP	1-Methylnaphthalene	R1578330	O
	WG521798	SAMP	2-Methylnaphthalene	R1578330	O
	WG521798	SAMP	2-Chloronaphthalene	R1578330	O
	WG521798	SAMP	Nitrobenzene-d5	R1578330	J7
	WG521798	SAMP	2-Fluorobiphenyl	R1578330	J7
	WG521798	SAMP	p-Terphenyl-d14	R1578330	J7

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out
0	(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.

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  
02/21/11 at 14:16:45

TSR Signing Reports: 358  
R4 - Rush: Three Day

Log all samples beginning with different sample numbers to separate reports. Ex.- M34 N PIT and M34 S PIT go on one L#, but M34 S PIT and E34 S PIT go on separate L #s. Log project # as project name.

Sample: L501833-01 Account: ENCANACO Received: 02/16/11 08:45 Due Date: 02/21/11 00:00 RPT Date: 02/21/11 14:16



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Quality Assurance Report  
Level II

L501833

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February 21, 2011

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Benzene	< .0005	mg/kg			WG521733	02/16/11 08:39
Ethylbenzene	< .0005	mg/kg			WG521733	02/16/11 08:39
Toluene	< .005	mg/kg			WG521733	02/16/11 08:39
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG521733	02/16/11 08:39
Total Xylene	< .0015	mg/kg			WG521733	02/16/11 08:39
a,a,a-Trifluorotoluene(FID)		% Rec.	102.4	59-128	WG521733	02/16/11 08:39
a,a,a-Trifluorotoluene(PID)		% Rec.	102.0	54-144	WG521733	02/16/11 08:39
1-Methylnaphthalene	< .006	mg/kg			WG521798	02/17/11 09:54
2-Chloronaphthalene	< .006	mg/kg			WG521798	02/17/11 09:54
2-Methylnaphthalene	< .006	mg/kg			WG521798	02/17/11 09:54
Acenaphthene	< .006	mg/kg			WG521798	02/17/11 09:54
Acenaphthylene	< .006	mg/kg			WG521798	02/17/11 09:54
Anthracene	< .006	mg/kg			WG521798	02/17/11 09:54
Benzo(a)anthracene	< .006	mg/kg			WG521798	02/17/11 09:54
Benzo(a)pyrene	< .006	mg/kg			WG521798	02/17/11 09:54
Benzo(b)fluoranthene	< .006	mg/kg			WG521798	02/17/11 09:54
Benzo(g,h,i)perylene	< .006	mg/kg			WG521798	02/17/11 09:54
Benzo(k)fluoranthene	< .006	mg/kg			WG521798	02/17/11 09:54
Chrysene	< .006	mg/kg			WG521798	02/17/11 09:54
Dibenz(a,h)anthracene	< .006	mg/kg			WG521798	02/17/11 09:54
Fluoranthene	< .006	mg/kg			WG521798	02/17/11 09:54
Fluorene	< .006	mg/kg			WG521798	02/17/11 09:54
Indeno(1,2,3-cd)pyrene	< .006	mg/kg			WG521798	02/17/11 09:54
Naphthalene	< .006	mg/kg			WG521798	02/17/11 09:54
Phenanthrene	< .006	mg/kg			WG521798	02/17/11 09:54
Pyrene	< .006	mg/kg			WG521798	02/17/11 09:54
2-Fluorobiphenyl		% Rec.	80.80	21-120	WG521798	02/17/11 09:54
Nitrobenzene-d5		% Rec.	77.67	33-114	WG521798	02/17/11 09:54
p-Terphenyl-d14		% Rec.	81.24	18-142	WG521798	02/17/11 09:54
pH	4.50	su			WG521919	02/17/11 11:23
TPH (GC/FID) High Fraction	< 4	ppm			WG521785	02/17/11 09:09
o-Terphenyl		% Rec.	92.81	50-150	WG521785	02/17/11 09:09
Mercury	< .02	mg/kg			WG521859	02/17/11 10:59
Arsenic	< 1	mg/kg			WG521820	02/17/11 14:27
Barium	< .25	mg/kg			WG521820	02/17/11 14:27
Cadmium	< .25	mg/kg			WG521820	02/17/11 14:27
Chromium	< .5	mg/kg			WG521820	02/17/11 14:27
Copper	< 1	mg/kg			WG521820	02/17/11 14:27
Lead	< .25	mg/kg			WG521820	02/17/11 14:27
Nickel	< 1	mg/kg			WG521820	02/17/11 14:27
Selenium	< 1	mg/kg			WG521820	02/17/11 14:27
Silver	< .5	mg/kg			WG521820	02/17/11 14:27
Zinc	< 1.5	mg/kg			WG521820	02/17/11 14:27
Chromium,Hexavalent	< 2	mg/kg			WG521709	02/18/11 11:44
Specific Conductance	0.460	umhos/cm			WG522077	02/18/11 15:42
* 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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February 21, 2011

Analyte	Units	Result	Duplicate		RPD	Limit	Ref Samp	Batch
			Duplicate					
pH	su	9.40	9.30		1.07*	1	L501833-01	WG521919
pH	su	6.60	6.50		1.53*	1	L502055-11	WG521919
ORP	mV	0	0		0	20	L501836-01	WG521908
ORP	mV	74.0	73.0		1.36	20	L502055-09	WG521908
Mercury	mg/kg	0.0400	0.0326		20.1*	20	L501937-05	WG521859
Arsenic	mg/kg	11.0	4.59		83.7*	20	L501824-03	WG521820
Barium	mg/kg	14.0	12.8		9.67	20	L501824-03	WG521820
Cadmium	mg/kg	0.510	0.330		43.6*	20	L501824-03	WG521820
Chromium	mg/kg	3.50	3.37		2.92	20	L501824-03	WG521820
Copper	mg/kg	13.0	10.6		18.0	20	L501824-03	WG521820
Lead	mg/kg	5.50	4.94		11.3	20	L501824-03	WG521820
Nickel	mg/kg	6.70	5.16		25.8*	20	L501824-03	WG521820
Selenium	mg/kg	0	0		0	20	L501824-03	WG521820
Silver	mg/kg	0	0		0	20	L501824-03	WG521820
Zinc	mg/kg	48.0	32.3		39.5*	20	L501824-03	WG521820
Chromium, Hexavalent	mg/kg	0	0		0	20	L501544-21	WG521709
Chromium, Hexavalent	mg/kg	0	0		0	20	L501459-02	WG521709
Specific Conductance	umhos/cm	1800	1800		3.22	20	L502241-03	WG522077

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Benzene	mg/kg	.05	0.0465	92.9	76-113	WG521733
Ethylbenzene	mg/kg	.05	0.0515	103.	78-115	WG521733
Toluene	mg/kg	.05	0.0495	99.1	76-114	WG521733
Total Xylene	mg/kg	.15	0.161	107.	81-118	WG521733
a,a,a-Trifluorotoluene (PID)				98.43	54-144	WG521733
TPH (GC/FID) Low Fraction	mg/kg	5.5	6.43	117.	67-135	WG521733
a,a,a-Trifluorotoluene (FID)				93.55	59-128	WG521733
1-Methylnaphthalene	mg/kg	.033	0.0301	91.4	41-110	WG521798
2-Chloronaphthalene	mg/kg	.033	0.0311	94.3	43-109	WG521798
2-Methylnaphthalene	mg/kg	.033	0.0305	92.5	38-104	WG521798
Acenaphthene	mg/kg	.033	0.0292	88.5	48-103	WG521798
Acenaphthylene	mg/kg	.033	0.0299	90.6	43-106	WG521798
Anthracene	mg/kg	.033	0.0297	90.1	51-110	WG521798
Benzo(a)anthracene	mg/kg	.033	0.0281	85.3	38-126	WG521798
Benzo(a)pyrene	mg/kg	.033	0.0304	92.0	47-118	WG521798
Benzo(b)fluoranthene	mg/kg	.033	0.0293	88.8	47-118	WG521798
Benzo(g,h,i)perylene	mg/kg	.033	0.0357	108.	40-125	WG521798
Benzo(k)fluoranthene	mg/kg	.033	0.0316	95.8	45-121	WG521798
Chrysene	mg/kg	.033	0.0290	87.8	35-135	WG521798
Dibenz(a,h)anthracene	mg/kg	.033	0.0341	103.	41-124	WG521798
Fluoranthene	mg/kg	.033	0.0325	98.6	50-114	WG521798
Fluorene	mg/kg	.033	0.0298	90.2	49-109	WG521798
Indeno(1,2,3-cd)pyrene	mg/kg	.033	0.0346	105.	40-126	WG521798
Naphthalene	mg/kg	.033	0.0296	89.6	36-100	WG521798
Phenanthrene	mg/kg	.033	0.0301	91.3	46-108	WG521798

\* 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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February 21, 2011

Analyte	Units	Laboratory Control		Sample	% Rec	Limit	Batch
		Known	Val	Result			
Pyrene	mg/kg	.033		0.0293	88.7	30-136	WG521798
2-Fluorobiphenyl					87.70	33-114	WG521798
Nitrobenzene-d5					84.06	21-120	WG521798
p-Terphenyl-d14					84.01	18-142	WG521798
pH	su	6.3		6.30	100.	97.98-102.02	WG521919
ORP	mV	229		220.	96.1	95.6-104.37	WG521908
TPH (GC/FID) High Fraction	ppm	60		58.0	96.6	50-150	WG521785
o-Terphenyl					92.94	50-150	WG521785
Mercury	mg/kg	8.77		10.9	124.	71.6-127.7	WG521859
Arsenic	mg/kg	192		192.	100.	78.6-120.8	WG521820
Barium	mg/kg	420		418.	99.5	78.8-121.4	WG521820
Cadmium	mg/kg	70.1		67.4	96.1	78.5-121.5	WG521820
Chromium	mg/kg	168		167.	99.4	80.4-120.2	WG521820
Copper	mg/kg	122		119.	97.5	81.6-119.7	WG521820
Lead	mg/kg	113		115.	102.	77.3-122.1	WG521820
Nickel	mg/kg	74.1		73.8	99.6	78.8-121.2	WG521820
Selenium	mg/kg	176		177.	101.	75.6-125.0	WG521820
Silver	mg/kg	115		113.	98.3	66-133.9	WG521820
Zinc	mg/kg	437		420.	96.1	78.5-121.7	WG521820
Chromium, Hexavalent	mg/kg	100		118.	118.	50-143	WG521709
Specific Conductance	umhos/cm	561		560.	99.8	85-115	WG522077

Analyte	Units	Laboratory Control		Sample Duplicate	Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Benzene	mg/kg	0.0487	0.0465	97.0	76-113	4.73	20	WG521733
Ethylbenzene	mg/kg	0.0537	0.0515	107.	78-115	4.17	20	WG521733
Toluene	mg/kg	0.0517	0.0495	103.	76-114	4.20	20	WG521733
Total Xylene	mg/kg	0.167	0.161	112.	81-118	4.07	20	WG521733
a,a,a-Trifluorotoluene(PID)				99.22	54-144			WG521733
TPH (GC/FID) Low Fraction	mg/kg	5.87	6.43	107.	67-135	8.99	20	WG521733
a,a,a-Trifluorotoluene(FID)				91.87	59-128			WG521733
1-Methylnaphthalene	mg/kg	0.0288	0.0301	87.0	41-110	4.63	24	WG521798
2-Chloronaphthalene	mg/kg	0.0305	0.0311	92.0	43-109	2.10	21	WG521798
2-Methylnaphthalene	mg/kg	0.0290	0.0305	88.0	38-104	5.12	24	WG521798
Acenaphthene	mg/kg	0.0291	0.0292	88.0	48-103	0.167	20	WG521798
Acenaphthylene	mg/kg	0.0292	0.0299	88.0	43-106	2.32	20	WG521798
Anthracene	mg/kg	0.0291	0.0297	88.0	51-110	2.20	22	WG521798
Benzo(a)anthracene	mg/kg	0.0269	0.0281	81.0	38-126	4.71	20	WG521798
Benzo(a)pyrene	mg/kg	0.0290	0.0304	88.0	47-118	4.46	20	WG521798
Benzo(b)fluoranthene	mg/kg	0.0289	0.0293	88.0	47-118	1.27	29	WG521798
Benzo(g,h,i)perylene	mg/kg	0.0365	0.0357	110.	40-125	2.25	20	WG521798
Benzo(k)fluoranthene	mg/kg	0.0298	0.0316	90.0	45-121	5.80	31	WG521798

\* 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	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Chrysene	mg/kg	0.0294	0.0290	89.0	35-135	1.50	20	WG521798
Dibenz(a,h)anthracene	mg/kg	0.0347	0.0341	105.	41-124	1.70	20	WG521798
Fluoranthene	mg/kg	0.0317	0.0325	96.0	50-114	2.61	20	WG521798
Fluorene	mg/kg	0.0294	0.0298	89.0	49-109	1.12	19	WG521798
Indeno(1,2,3-cd)pyrene	mg/kg	0.0355	0.0346	108.	40-126	2.83	20	WG521798
Naphthalene	mg/kg	0.0279	0.0296	84.0	36-100	5.93	24	WG521798
Phenanthrene	mg/kg	0.0291	0.0301	88.0	46-108	3.49	21	WG521798
Pyrene	mg/kg	0.0294	0.0293	89.0	30-136	0.388	20	WG521798
2-Fluorobiphenyl				87.40	33-114			WG521798
Nitrobenzene-d5				79.82	21-120			WG521798
p-Terphenyl-d14				81.23	18-142			WG521798
pH	su	6.30	6.30	100.	97.98-102.02	0	20	WG521919
ORP	mV	220.	220.	96.0	95.6-104.37	0	20	WG521908
TPH (GC/FID) High Fraction	ppm	46.5	58.0	78.0	50-150	21.9	25	WG521785
o-Terphenyl				75.86	50-150			WG521785
Chromium, Hexavalent	mg/kg	111.	118.	111.	50-143	6.11	20	WG521709
Specific Conductance	umhos/	560.	560.	100.	85-115	0	20	WG522077

Analyte	Units	Matrix Spike			% Rec	Limit	Ref Samp	Batch
		MS Res	Ref Res	TV				
Benzene	mg/kg	0.0486	0.00750	.05	82.2	32-137	L501461-03	WG521733
Ethylbenzene	mg/kg	0.0482	0.00580	.05	84.9	10-150	L501461-03	WG521733
Toluene	mg/kg	0.0494	0.0140	.05	70.7	20-142	L501461-03	WG521733
Total Xylene	mg/kg	0.149	0.0130	.15	90.4	16-141	L501461-03	WG521733
a,a,a-Trifluorotoluene(PID)					99.39	54-144		WG521733
TPH (GC/FID) Low Fraction	mg/kg	4.94	0.797	5.5	75.3	55-109	L501461-03	WG521733
a,a,a-Trifluorotoluene(FID)					92.08	59-128		WG521733
TPH (GC/FID) High Fraction	ppm	50.9	0	60	84.9	50-150	L501919-01	WG521785
o-Terphenyl					75.49	50-150		WG521785
Mercury	mg/kg	0.214	0.0326	.25	72.6	70-130	L501937-05	WG521859
Mercury	mg/kg	0.159	0.0326	.25	50.6*	70-130	L501937-05	WG521859
Arsenic	mg/kg	58.2	4.59	50	107.	75-125	L501824-03	WG521820
Barium	mg/kg	60.1	12.8	50	94.6	75-125	L501824-03	WG521820
Cadmium	mg/kg	49.2	0.330	50	97.7	75-125	L501824-03	WG521820
Chromium	mg/kg	54.2	3.37	50	102.	75-125	L501824-03	WG521820
Copper	mg/kg	63.9	10.6	50	107.	75-125	L501824-03	WG521820
Lead	mg/kg	57.1	4.94	50	104.	75-125	L501824-03	WG521820
Nickel	mg/kg	55.1	5.16	50	99.9	75-125	L501824-03	WG521820
Selenium	mg/kg	50.9	0	50	102.	75-125	L501824-03	WG521820
Silver	mg/kg	49.4	0	50	98.8	75-125	L501824-03	WG521820
Zinc	mg/kg	95.5	32.3	50	126.*	75-125	L501824-03	WG521820

\* Performance of this Analyte is outside of established criteria.

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Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
Chromium, Hexavalent	mg/kg	7.24	4.80	20	12.2*	50-150	L501544-05	WG521709
1-Methylnaphthalene	mg/kg	0.0393	0	.033	119.	19-131	L501919-04	WG521798
2-Chloronaphthalene	mg/kg	0.0356	0	.033	108.	38-117	L501919-04	WG521798
2-Methylnaphthalene	mg/kg	0.0525	0	.033	159.*	18-125	L501919-04	WG521798
Acenaphthene	mg/kg	0.0393	0	.033	119.	31-120	L501919-04	WG521798
Acenaphthylene	mg/kg	0.0457	0	.033	138.*	34-116	L501919-04	WG521798
Anthracene	mg/kg	0.105	0.0230	.033	248.*	32-131	L501919-04	WG521798
Benzo(a)anthracene	mg/kg	0.143	0.0240	.033	360.*	32-131	L501919-04	WG521798
Benzo(a)pyrene	mg/kg	0.105	0.0180	.033	264.*	28-130	L501919-04	WG521798
Benzo(b)fluoranthene	mg/kg	0.145	0.0430	.033	308.*	37-130	L501919-04	WG521798
Benzo(g,h,i)perylene	mg/kg	0.0447	0.0160	.033	87.1	10-134	L501919-04	WG521798
Benzo(k)fluoranthene	mg/kg	0.167	0.0240	.033	432.*	31-129	L501919-04	WG521798
Chrysene	mg/kg	0.144	0.0390	.033	319.*	25-137	L501919-04	WG521798
Dibenz(a,h)anthracene	mg/kg	0.0300	0.00840	.033	65.3	20-134	L501919-04	WG521798
Fluoranthene	mg/kg	0.265	0.0860	.033	543.*	27-138	L501919-04	WG521798
Fluorene	mg/kg	0.0531	0.00690	.033	140.*	26-136	L501919-04	WG521798
Indeno(1,2,3-cd)pyrene	mg/kg	0.0488	0.0160	.033	99.3	16-135	L501919-04	WG521798
Naphthalene	mg/kg	0.0525	0.00720	.033	137.*	22-121	L501919-04	WG521798
Phenanthrene	mg/kg	0.123	0.0350	.033	267.*	27-133	L501919-04	WG521798
Pyrene	mg/kg	0.255	0.0740	.033	549.*	22-133	L501919-04	WG521798
2-Fluorobiphenyl					92.67	33-114		WG521798
Nitrobenzene-d5					167.4*	21-120		WG521798
p-Terphenyl-d14					108.2	18-142		WG521798

Analyte	Units	MSD	Matrix Spike	Duplicate	Limit	RPD	Limit	Ref	Samp	Batch
			Ref	%Rec						
Benzene	mg/kg	0.0458	0.0486	76.6	32-137	5.93	39	L501461-03		WG521733
Ethylbenzene	mg/kg	0.0450	0.0482	78.4	10-150	6.91	44	L501461-03		WG521733
Toluene	mg/kg	0.0458	0.0494	63.7	20-142	7.41	42	L501461-03		WG521733
Total Xylene	mg/kg	0.138	0.149	83.2	16-141	7.57	46	L501461-03		WG521733
a,a,a-Trifluorotoluene(PID)				97.85	54-144					WG521733
TPH (GC/FID) Low Fraction	mg/kg	4.06	4.94	59.4	55-109	19.4	20	L501461-03		WG521733
a,a,a-Trifluorotoluene(FID)				95.06	59-128					WG521733
TPH (GC/FID) High Fraction	ppm	48.7	50.9	81.1	50-150	4.50	25	L501919-01		WG521785
o-Terphenyl				73.10	50-150					WG521785
Mercury	mg/kg	0.231	0.214	79.4	70-130	7.64	20	L501937-05		WG521859
Mercury	mg/kg	0.00452	0.214	0*	70-130	192.*	20	L501937-05		WG521859
Arsenic	mg/kg	55.9	58.2	103.	75-125	4.03	20	L501824-03		WG521820
Barium	mg/kg	58.5	60.1	91.4	75-125	2.70	20	L501824-03		WG521820
Cadmium	mg/kg	49.8	49.2	98.9	75-125	1.21	20	L501824-03		WG521820
Chromium	mg/kg	54.2	54.2	102.	75-125	0	20	L501824-03		WG521820
Copper	mg/kg	61.7	63.9	102.	75-125	3.50	20	L501824-03		WG521820
Lead	mg/kg	56.5	57.1	103.	75-125	1.06	20	L501824-03		WG521820
Nickel	mg/kg	53.9	55.1	97.5	75-125	2.20	20	L501824-03		WG521820
Selenium	mg/kg	51.5	50.9	103.	75-125	1.17	20	L501824-03		WG521820
Silver	mg/kg	49.6	49.4	99.2	75-125	0.404	20	L501824-03		WG521820
Zinc	mg/kg	82.5	95.5	100.	75-125	14.6	20	L501824-03		WG521820

\* 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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Est. 1970

February 21, 2011

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Chromium,Hexavalent	mg/kg	12.4	7.24	38.0*	50-150	52.5*	20	L501544-05	WG521709
1-Methylnaphthalene	mg/kg	0.0387	0.0393	117.	19-131	1.40	30	L501919-04	WG521798
2-Chloronaphthalene	mg/kg	0.0392	0.0356	119.*	38-117	9.56	26	L501919-04	WG521798
2-Methylnaphthalene	mg/kg	0.0510	0.0525	154.*	18-125	2.94	29	L501919-04	WG521798
Acenaphthene	mg/kg	0.0396	0.0393	120.	31-120	0.800	30	L501919-04	WG521798
Acenaphthylene	mg/kg	0.0525	0.0457	159.*	34-116	13.9	29	L501919-04	WG521798
Anthracene	mg/kg	0.0841	0.105	185.*	32-131	22.1	26	L501919-04	WG521798
Benzo(a)anthracene	mg/kg	0.0980	0.143	224.*	32-131	37.3*	31	L501919-04	WG521798
Benzo(a)pyrene	mg/kg	0.0799	0.105	188.*	28-130	27.4	28	L501919-04	WG521798
Benzo(b)fluoranthene	mg/kg	0.152	0.145	331.*	37-130	5.13	41	L501919-04	WG521798
Benzo(g,h,i)perylene	mg/kg	0.0346	0.0447	56.3	10-134	25.6	26	L501919-04	WG521798
Benzo(k)fluoranthene	mg/kg	0.0832	0.167	179.*	31-129	66.8*	42	L501919-04	WG521798
Chrysene	mg/kg	0.0919	0.144	160.*	25-137	44.4*	22	L501919-04	WG521798
Dibenz(a,h)anthracene	mg/kg	0.0267	0.0300	55.6	20-134	11.4	25	L501919-04	WG521798
Fluoranthene	mg/kg	0.182	0.265	291.*	27-138	37.2*	35	L501919-04	WG521798
Fluorene	mg/kg	0.0494	0.0531	129.	26-136	7.26	30	L501919-04	WG521798
Indeno(1,2,3-cd)pyrene	mg/kg	0.0374	0.0488	64.7	16-135	26.5*	26	L501919-04	WG521798
Naphthalene	mg/kg	0.0570	0.0525	151.*	22-121	8.24	30	L501919-04	WG521798
Phenanthrene	mg/kg	0.101	0.123	200.*	27-133	19.9	36	L501919-04	WG521798
Pyrene	mg/kg	0.172	0.255	298.*	22-133	38.8*	33	L501919-04	WG521798
2-Fluorobiphenyl				105.6	33-114				WG521798
Nitrobenzene-d5				169.8*	21-120				WG521798
p-Terphenyl-d14				97.36	18-142				WG521798

Batch number /Run number / Sample number cross reference

WG521733: R1576690: L501833-01  
WG521798: R1578330: L501833-01  
WG521919: R1578689: L501833-01  
WG521908: R1578729: L501833-01  
WG521785: R1578871: L501833-01  
WG521859: R1579051: L501833-01  
WG521820: R1579771: L501833-01  
WG521890: R1580035: L501833-01  
WG521709: R1580050: L501833-01  
WG522077: R1580610: L501833-01

\* \* Calculations are performed prior to rounding of reported values.

\* 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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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.



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Chris Hines / Matt Kasten  
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2717 County Road 215, Suite 100  
Parachute, CO 81635

## Report Summary

Friday December 16, 2011

Report Number: L551245

Samples Received: 12/13/11

Client Project:

Description: C160U Cuttings

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:

Jayred Willis , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487  
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704, ND - R-140  
NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233  
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032008A,  
TX - T104704245, OK-9915, PA - 68-02979

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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REPORT OF ANALYSIS

Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

December 16, 2011

Date Received : December 13, 2011  
Description : C160U Cuttings  
Sample ID : C160U-CUT-121211  
Collected By : Brennen Graff  
Collection Date : 12/12/11 11:23

ESC Sample # : L551245-01

Site ID : C160U

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Benzene	BDL	0.025	mg/kg	8021/8015	12/16/11	50
Toluene	BDL	0.25	mg/kg	8021/8015	12/16/11	50
Ethylbenzene	0.24	0.025	mg/kg	8021/8015	12/16/11	50
Total Xylene	0.61	0.075	mg/kg	8021/8015	12/16/11	50
TPH (GC/FID) Low Fraction	110	5.0	mg/kg	GRO	12/16/11	50
Surrogate Recovery-%						
a,a,a-Trifluorotoluene(FID)	97.9		% Rec.	8021/8015	12/16/11	50
a,a,a-Trifluorotoluene(PID)	97.5		% Rec.	8021/8015	12/16/11	50
TPH (GC/FID) High Fraction	1300	80.	mg/kg	3546/DRO	12/14/11	20
Surrogate recovery(%)						
o-Terphenyl	0.00		% Rec.	3546/DRO	12/14/11	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 12/16/11 15:32 Printed: 12/16/11 15:32



Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L551245-01	WG569622	SAMP	o-Terphenyl	R1966556	J7

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out

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  
12/16/11 at 15:32:25

TSR Signing Reports: 358  
R5 - Desired TAT

Try not to report benzene as BDL above a 250x dilution.

Sample: L551245-01 Account: ENCANACO Received: 12/13/11 09:00 Due Date: 12/20/11 00:00 RPT Date: 12/16/11 15:32



**YOUR LAB OF CHOICE**

EnCana Oil & Gas Inc. - CO  
Chris Hines / Matt Kasten  
2717 County Road 215, Suite 100

Parachute, CO 81635

Quality Assurance Report  
Level II

L551245

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

December 16, 2011

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
TPH (GC/FID) High Fraction	< 4	ppm			WG569622	12/14/11 11:00
o-Terphenyl		% Rec.	68.36	50-150	WG569622	12/14/11 11:00
Benzene	< .0005	mg/kg			WG570022	12/15/11 14:42
Ethylbenzene	< .0005	mg/kg			WG570022	12/15/11 14:42
Toluene	< .005	mg/kg			WG570022	12/15/11 14:42
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG570022	12/15/11 14:42
Total Xylene	< .0015	mg/kg			WG570022	12/15/11 14:42
a,a,a-Trifluorotoluene(FID)		% Rec.	95.31	59-128	WG570022	12/15/11 14:42
a,a,a-Trifluorotoluene(PID)		% Rec.	95.49	54-144	WG570022	12/15/11 14:42

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
TPH (GC/FID) High Fraction	ppm	60	45.7	76.1	50-150	WG569622
o-Terphenyl				72.16	50-150	WG569622
Benzene	mg/kg	.05	0.0467	93.4	76-113	WG570022
Ethylbenzene	mg/kg	.05	0.0471	94.3	78-115	WG570022
Toluene	mg/kg	.05	0.0510	102.	76-114	WG570022
Total Xylene	mg/kg	.15	0.134	89.7	81-118	WG570022
a,a,a-Trifluorotoluene(PID)				95.66	54-144	WG570022
TPH (GC/FID) Low Fraction	mg/kg	5.5	6.13	112.	67-135	WG570022
a,a,a-Trifluorotoluene(FID)				102.0	59-128	WG570022

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
TPH (GC/FID) High Fraction	ppm	45.9	45.7	76.0	50-150	0.457	25	WG569622
o-Terphenyl				72.86	50-150			WG569622
Benzene	mg/kg	0.0465	0.0467	93.0	76-113	0.460	20	WG570022
Ethylbenzene	mg/kg	0.0467	0.0471	93.0	78-115	1.00	20	WG570022
Toluene	mg/kg	0.0502	0.0510	100.	76-114	1.48	20	WG570022
Total Xylene	mg/kg	0.133	0.134	89.0	81-118	1.19	20	WG570022
a,a,a-Trifluorotoluene(PID)				95.38	54-144			WG570022
TPH (GC/FID) Low Fraction	mg/kg	6.00	6.13	109.	67-135	2.22	20	WG570022
a,a,a-Trifluorotoluene(FID)				101.3	59-128			WG570022

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
TPH (GC/FID) High Fraction	ppm	45.8	0	60	76.3	50-150	L551090-06	WG569622
o-Terphenyl					71.17	50-150		WG569622
TPH (GC/FID) Low Fraction	mg/kg	40.1	0	5.5	146.*	55-109	L551520-01	WG570022
a,a,a-Trifluorotoluene(FID)					102.1	59-128		WG570022
Benzene	mg/kg	0.293	0.0172	.05	110.	32-137	L551598-01	WG570022
Ethylbenzene	mg/kg	0.281	0.00473	.05	110.	10-150	L551598-01	WG570022
Toluene	mg/kg	0.272	0.00179	.05	108.	20-142	L551598-01	WG570022
Total Xylene	mg/kg	0.816	0.0104	.15	107.	16-141	L551598-01	WG570022

\* 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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Parachute, CO 81635

Quality Assurance Report  
Level II

L551245

12065 Lebanon Rd.  
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Tax I.D. 62-0814289

Est. 1970

December 16, 2011

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
TPH (GC/FID) High Fraction	ppm	43.9	45.8	73.1	50-150	4.21	25	L551090-06	WG569622
o-Terphenyl				71.05	50-150				WG569622
TPH (GC/FID) Low Fraction	mg/kg	44.7	40.1	163.*	55-109	10.9	20	L551520-01	WG570022
a,a,a-Trifluorotoluene(FID)				103.9	59-128				WG570022
Benzene	mg/kg	0.285	0.293	107.	32-137	3.07	39	L551598-01	WG570022
Ethylbenzene	mg/kg	0.275	0.281	108.	10-150	1.93	44	L551598-01	WG570022
Toluene	mg/kg	0.269	0.272	107.	20-142	1.26	42	L551598-01	WG570022
Total Xylene	mg/kg	0.798	0.816	105.	16-141	2.23	46	L551598-01	WG570022

Batch number /Run number / Sample number cross reference

WG569622: R1966556: L551245-01  
WG570022: R1968332: L551245-01

\* \* 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.



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Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

## Report Summary

Thursday January 19, 2012

Report Number: L556045

Samples Received: 01/17/12

Client Project:

Description: C160U Cuttings

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:

Jayred Willis , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,  
FL - E87487, GA - 923, IN - C-TN-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

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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# REPORT OF ANALYSIS

Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

January 19, 2012

Date Received : January 17, 2012  
Description : C16OU Cuttings  
Sample ID : C16OU-CUT-N1-011612 10-12 IN  
Collected By : R. W.  
Collection Date : 01/16/12 13:45

ESC Sample # : L556045-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
BTUs	9.0		BTUs/lb	D240	01/18/12	1
TOC (Total Organic Carbon)	28000	10.	mg/kg	USDA LOI	01/19/12	1
TPH (GC/FID) Low Fraction	32.	0.50	mg/kg	8015D/GRO	01/17/12	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	77.1		% Rec.	602/8015	01/17/12	5
TPH (GC/FID) High Fraction	2200	80.	mg/kg	3546/DRO	01/18/12	20
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	01/18/12	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 01/19/12 17:08 Printed: 01/19/12 17:08



REPORT OF ANALYSIS

Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

January 19, 2012

Date Received : January 17, 2012  
Description : C16OU Cuttings  
Sample ID : C16OU-CUT-N2-011612 10-12 IN  
Collected By : R. W.  
Collection Date : 01/16/12 14:00

ESC Sample # : L556045-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
BTUs	910		BTUs/lb	D240	01/18/12	1
TOC (Total Organic Carbon)	34000	10.	mg/kg	USDA LOI	01/19/12	1
TPH (GC/FID) Low Fraction	1.7	0.50	mg/kg	8015D/GRO	01/17/12	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	81.2		% Rec.	602/8015	01/17/12	5
TPH (GC/FID) High Fraction	2900	80.	mg/kg	3546/DRO	01/18/12	20
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	01/18/12	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 01/19/12 17:08 Printed: 01/19/12 17:08



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# REPORT OF ANALYSIS

Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

January 19, 2012

Date Received : January 17, 2012  
Description : C16OU Cuttings  
Sample ID : C16OU-CUT-N3-011612 10-12 IN  
Collected By : R. W.  
Collection Date : 01/16/12 14:15

ESC Sample # : L556045-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
BTUs	2300		BTUs/lb	D240	01/18/12	1
TOC (Total Organic Carbon)	38000	10.	mg/kg	USDA LOI	01/19/12	1
TPH (GC/FID) Low Fraction	1.7	0.50	mg/kg	8015D/GRO	01/17/12	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	88.0		% Rec.	602/8015	01/17/12	5
TPH (GC/FID) High Fraction	2500	80.	mg/kg	3546/DRO	01/18/12	20
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	01/18/12	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 01/19/12 17:08 Printed: 01/19/12 17:08



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# REPORT OF ANALYSIS

Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

January 19, 2012

Date Received : January 17, 2012  
Description : C16OU Cuttings  
Sample ID : C16OU-CUT-N4-011612 10-12 IN  
Collected By : R. W.  
Collection Date : 01/16/12 14:30

ESC Sample # : L556045-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
BTUs	730		BTUs/lb	D240	01/18/12	1
TOC (Total Organic Carbon)	31000	10.	mg/kg	USDA LOI	01/19/12	1
TPH (GC/FID) Low Fraction	0.99	0.50	mg/kg	8015D/GRO	01/17/12	5
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	85.4		% Rec.	602/8015	01/17/12	5
TPH (GC/FID) High Fraction	2800	80.	mg/kg	3546/DRO	01/19/12	20
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	01/19/12	20

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: 01/19/12 17:08 Printed: 01/19/12 17:08

Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L556045-01	WG574433	SAMP	o-Terphenyl	R2004733	J7
L556045-02	WG574433	SAMP	o-Terphenyl	R2004733	J7
L556045-03	WG574433	SAMP	o-Terphenyl	R2004733	J7
L556045-04	WG574433	SAMP	o-Terphenyl	R2004733	J7

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery limits cannot be evaluated; surrogates were diluted out

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  
01/19/12 at 17:08:37

TSR Signing Reports: 358  
R3 - Rush: Two Day

Try not to report benzene as BDL above a 250x dilution. ONLY log soil samples under this account. Waters get logged under ENCRCO.

Sample: L556045-01 Account: ENCANACO Received: 01/17/12 09:00 Due Date: 01/19/12 00:00 RPT Date: 01/19/12 17:08  
Added TOC per JW MS 1/17  
Sample: L556045-02 Account: ENCANACO Received: 01/17/12 09:00 Due Date: 01/19/12 00:00 RPT Date: 01/19/12 17:08  
Added TOC per JW MS 1/17  
Sample: L556045-03 Account: ENCANACO Received: 01/17/12 09:00 Due Date: 01/19/12 00:00 RPT Date: 01/19/12 17:08  
Added TOC per JW MS 1/17  
Sample: L556045-04 Account: ENCANACO Received: 01/17/12 09:00 Due Date: 01/19/12 00:00 RPT Date: 01/19/12 17:08  
Added TOC per JW MS 1/17



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Quality Assurance Report  
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Est. 1970

January 19, 2012

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG574420	01/17/12 13:45
a,a,a-Trifluorotoluene(FID)		% Rec.	97.86	59-128	WG574420	01/17/12 13:45
TPH (GC/FID) High Fraction	< 4	ppm			WG574433	01/18/12 13:17
o-Terphenyl		% Rec.	76.87	50-150	WG574433	01/18/12 13:17
TOC (Total Organic Carbon)	< 10	mg/kg			WG574518	01/19/12 16:19

Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
BTUs	BTUs/lb	17000	17000	0	20	L555722-01	WG574510

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
TPH (GC/FID) Low Fraction	mg/kg	5.5	5.39	98.0	67-135	WG574420
a,a,a-Trifluorotoluene(FID)				103.5	59-128	WG574420
TPH (GC/FID) High Fraction	ppm	60	49.4	82.3	50-150	WG574433
o-Terphenyl				79.32	50-150	WG574433
BTUs	BTUs/lb	11373	9990	87.8	85-115	WG574510
TOC (Total Organic Carbon)	mg/kg	2780	3900	140.	50-150	WG574518

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
TPH (GC/FID) Low Fraction	mg/kg	5.00	5.39	91.0	67-135	7.52	20	WG574420
a,a,a-Trifluorotoluene(FID)				103.3	59-128			WG574420
TPH (GC/FID) High Fraction	ppm	50.6	49.4	84.0	50-150	2.47	25	WG574433
o-Terphenyl				79.52	50-150			WG574433
BTUs	BTUs/l	9980	9990	88.0	85-115	0.100	20	WG574510
TOC (Total Organic Carbon)	mg/kg	3800	3900	137.	50-150	2.60	20	WG574518

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
TPH (GC/FID) Low Fraction	mg/kg	21.8	6.40	5.5	55.9	55-109	L555779-03	WG574420
a,a,a-Trifluorotoluene(FID)					100.0	59-128		WG574420

Analyte	Units	Matrix Spike Duplicate			Limit	RPD	Limit	Ref Samp	Batch
		MSD	Ref	%Rec					
TPH (GC/FID) Low Fraction	mg/kg	21.9	21.8	56.5	55-109	0.700	20	L555779-03	WG574420
a,a,a-Trifluorotoluene(FID)				98.88	59-128				WG574420

\* 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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Est. 1970

January 19, 2012

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Batch number /Run number / Sample number cross reference

WG574420: R2003473: L556045-01 02 03 04  
WG574433: R2004733: L556045-01 02 03 04  
WG574510: R2005334: L556045-01 02 03 04  
WG574518: R2006312: L556045-01 02 03 04

\* \* Calculations are performed prior to rounding of reported values.

\* 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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January 19, 2012

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.



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Est. 1970

Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

## Report Summary

Monday April 30, 2012

Report Number: L570925

Samples Received: 04/19/12

Client Project:

Description: C160U Cuttings

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:

Jayred Willis , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,  
FL - E87487, GA - 923, IN - C-TN-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

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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# REPORT OF ANALYSIS

Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

April 30, 2012

Date Received : April 19, 2012  
Description : C16OU Cuttings  
Sample ID : C16OU-CUT-N-5-041812 5 FT  
Collected By : MATT KASTEN  
Collection Date : 04/18/12 12:30

ESC Sample # : L570925-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) Low Fraction	140	50.	mg/kg	8015D/GRO	04/20/12	500
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	98.8		% Rec.	602/8015	04/20/12	500
TPH (GC/FID) High Fraction	2200	80.	mg/kg	3546/DRO	04/27/12	20
Surrogate recovery(%) o-Terphenyl	60.6		% Rec.	3546/DRO	04/27/12	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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# REPORT OF ANALYSIS

Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

April 30, 2012

Date Received : April 19, 2012  
Description : C16OU Cuttings  
Sample ID : C16OU-CUT-NW-5-041812 5 FT  
Collected By : MATT KASTEN  
Collection Date : 04/18/12 12:40

ESC Sample # : L570925-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) Low Fraction	37.	5.0	mg/kg	8015D/GRO	04/20/12	50
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	98.5		% Rec.	602/8015	04/20/12	50
TPH (GC/FID) High Fraction	300	4.0	mg/kg	3546/DRO	04/26/12	1
Surrogate recovery(%) o-Terphenyl	64.2		% Rec.	3546/DRO	04/26/12	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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# REPORT OF ANALYSIS

Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

April 30, 2012

Date Received : April 19, 2012  
Description : C16OU Cuttings  
Sample ID : C16OU-CUT-NE-10-041812 10 FT  
Collected By : MATT KASTEN  
Collection Date : 04/18/12 12:50

ESC Sample # : L570925-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) Low Fraction	99.	25.	mg/kg	8015D/GRO	04/20/12	250
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	98.7		% Rec.	602/8015	04/20/12	250
TPH (GC/FID) High Fraction	3400	80.	mg/kg	3546/DRO	04/27/12	20
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	04/27/12	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

April 30, 2012

Date Received : April 19, 2012  
Description : C16OU Cuttings  
Sample ID : C16OU-CUT-SMID-10-041812 10 FT  
Collected By : MATT KASTEN  
Collection Date : 04/18/12 13:00

ESC Sample # : L570925-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) Low Fraction	20.	5.0	mg/kg	8015D/GRO	04/20/12	50
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	98.5		% Rec.	602/8015	04/20/12	50
TPH (GC/FID) High Fraction	160	4.0	mg/kg	3546/DRO	04/26/12	1
Surrogate recovery(%) o-Terphenyl	85.3		% Rec.	3546/DRO	04/26/12	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

April 30, 2012

Date Received : April 19, 2012  
Description : C16OU Cuttings  
Sample ID : C16OU-CUT-EMID-10-041812 10 FT  
Collected By : MATT KASTEN  
Collection Date : 04/18/12 13:10

ESC Sample # : L570925-05

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) Low Fraction	110	25.	mg/kg	8015D/GRO	04/21/12	250
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	99.1		% Rec.	602/8015	04/21/12	250
TPH (GC/FID) High Fraction	2500	80.	mg/kg	3546/DRO	04/27/12	20
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	04/27/12	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

April 30, 2012

Date Received : April 19, 2012  
Description : C16OU Cuttings  
Sample ID : C16OU-CUT-E-10-041812 10 FT  
Collected By : MATT KASTEN  
Collection Date : 04/18/12 13:20

ESC Sample # : L570925-06

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) Low Fraction	130	25.	mg/kg	8015D/GRO	04/21/12	250
Surrogate Recovery (70-130) a,a,a-Trifluorotoluene(FID)	99.0		% Rec.	602/8015	04/21/12	250
TPH (GC/FID) High Fraction	3300	80.	mg/kg	3546/DRO	04/27/12	20
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	04/27/12	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L570925-01	WG588992	SAMP	o-Terphenyl	R2143956	J7
L570925-03	WG588992	SAMP	o-Terphenyl	R2143956	J7
L570925-05	WG588992	SAMP	o-Terphenyl	R2143956	J7
L570925-06	WG588992	SAMP	o-Terphenyl	R2143956	J7

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.

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  
04/30/12 at 13:35:49

TSR Signing Reports: 358  
R5 - Desired TAT

Try not to report benzene as BDL above a 250x dilution. ONLY log soil samples under this account. Waters get logged under ENCRCO.

Sample: L570925-01 Account: ENCANACO Received: 04/19/12 09:00 Due Date: 04/26/12 00:00 RPT Date: 04/30/12 13:35  
Sample: L570925-02 Account: ENCANACO Received: 04/19/12 09:00 Due Date: 04/26/12 00:00 RPT Date: 04/30/12 13:35  
Sample: L570925-03 Account: ENCANACO Received: 04/19/12 09:00 Due Date: 04/26/12 00:00 RPT Date: 04/30/12 13:35  
Sample: L570925-04 Account: ENCANACO Received: 04/19/12 09:00 Due Date: 04/26/12 00:00 RPT Date: 04/30/12 13:35  
Sample: L570925-05 Account: ENCANACO Received: 04/19/12 09:00 Due Date: 04/26/12 00:00 RPT Date: 04/30/12 13:35  
Sample: L570925-06 Account: ENCANACO Received: 04/19/12 09:00 Due Date: 04/26/12 00:00 RPT Date: 04/30/12 13:35



**YOUR LAB OF CHOICE**

EnCana Oil & Gas Inc. - CO  
Chris Hines / Matt Kasten  
2717 County Road 215, Suite 100

Parachute, CO 81635

Quality Assurance Report  
Level II

L570925

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April 30, 2012

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
TPH (GC/FID) Low Fraction	< .1	mg/kg			WG588665	04/20/12 15:34
a,a,a-Trifluorotoluene(FID)		% Rec.	98.93	59-128	WG588665	04/20/12 15:34
TPH (GC/FID) High Fraction	< 4	ppm			WG588992	04/25/12 23:18
o-Terphenyl		% Rec.	80.69	50-150	WG588992	04/25/12 23:18

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
TPH (GC/FID) Low Fraction	mg/kg	5.5	6.42	117.	67-135	WG588665
a,a,a-Trifluorotoluene(FID)				104.8	59-128	WG588665
TPH (GC/FID) High Fraction	ppm	60	42.0	70.0	50-150	WG588992
o-Terphenyl				78.86	50-150	WG588992

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
TPH (GC/FID) Low Fraction	mg/kg	6.61	6.42	120.	67-135	2.93	20	WG588665
a,a,a-Trifluorotoluene(FID)				105.2	59-128			WG588665
TPH (GC/FID) High Fraction	ppm	45.0	42.0	75.0	50-150	6.73	23	WG588992
o-Terphenyl				84.77	50-150			WG588992

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
TPH (GC/FID) Low Fraction	mg/kg	29.9	0	5.5	109.	55-109	L570913-05	WG588665
a,a,a-Trifluorotoluene(FID)					104.0	59-128		WG588665

Analyte	Units	Matrix Spike Duplicate			Limit	RPD	Limit	Ref Samp	Batch
		MSD	Ref	%Rec					
TPH (GC/FID) Low Fraction	mg/kg	27.4	29.9	99.8	55-109	8.62	20	L570913-05	WG588665
a,a,a-Trifluorotoluene(FID)				103.5	59-128				WG588665

Batch number /Run number / Sample number cross reference

WG588665: R2137133: L570925-01 02 03 04 05 06  
WG588992: R2143956: L570925-01 02 03 04 05 06

\* \* Calculations are performed prior to rounding of reported values.  
\* 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  
2717 County Road 215, Suite 100

Parachute, CO 81635

Quality Assurance Report  
Level II

L570925

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April 30, 2012

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.

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Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

## Report Summary

Thursday July 12, 2012

Report Number: L583088

Samples Received: 06/30/12

Client Project:

Description: C160U Cuttings

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:

Jayred Willis , ESC Representative

### Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,  
FL - E87487, GA - 923, IN - C-TN-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

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Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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REPORT OF ANALYSIS

Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

July 12, 2012

Date Received : June 30, 2012  
Description : C160U Cuttings  
Sample ID : C160U-CUT1-062912 0-6 IN  
Collected By : Chris Bak  
Collection Date : 06/29/12 10:51

ESC Sample # : L583088-01

Site ID : C160U

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) High Fraction	2300	80.	mg/kg	3546/DRO	07/06/12	20
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	07/06/12	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

July 12, 2012

Date Received : June 30, 2012  
Description : C16OU Cuttings  
Sample ID : C16OU-CUT2-062912 0-6 IN  
Collected By : Chris Bak  
Collection Date : 06/29/12 11:11

ESC Sample # : L583088-02

Site ID : C16OU

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) High Fraction	3000	80.	mg/kg	3546/DRO	07/11/12	20
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	07/11/12	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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REPORT OF ANALYSIS

Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

July 12, 2012

Date Received : June 30, 2012  
Description : C160U Cuttings  
Sample ID : C160U-CUT3-062912 0-6 IN  
Collected By : Chris Bak  
Collection Date : 06/29/12 11:28

ESC Sample # : L583088-03

Site ID : C160U

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
TPH (GC/FID) High Fraction	2600	80.	mg/kg	3546/DRO	07/11/12	20
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	3546/DRO	07/11/12	20

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  
2717 County Road 215, Suite 100  
Parachute, CO 81635

July 12, 2012

Date Received : June 30, 2012  
Description : C160U Cuttings  
Sample ID : C160U-CUT1-062912 0-6 IN  
Collected By : Chris Bak  
Collection Date : 06/29/12 10:51

ESC Sample # : L583088-04

Site ID : C160U

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
SPLP Extraction	-			1312	07/03/12	1
TPH (GC/FID) High Fraction	1.1	0.10	mg/l	3510C / DRO	07/11/12	1
Surrogate recovery(%) o-Terphenyl	31.3		% Rec.	3510C / DRO	07/11/12	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 07/12/12 16:02 Printed: 07/12/12 16:04



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Est. 1970

REPORT OF ANALYSIS

Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

July 12, 2012

Date Received : June 30, 2012  
Description : C16OU Cuttings  
Sample ID : C16OU-CUT2-062912 0-6 IN  
Collected By : Chris Bak  
Collection Date : 06/29/12 11:11

ESC Sample # : L583088-05

Site ID : C16OU

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
SPLP Extraction	-			1312	07/03/12	1
TPH (GC/FID) High Fraction	1.5	0.10	mg/l	3510C / DRO	07/11/12	1
Surrogate recovery(%) o-Terphenyl	64.9		% Rec.	3510C / DRO	07/11/12	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

Chris Hines / Matt Kasten  
EnCana Oil & Gas Inc. - CO  
2717 County Road 215, Suite 100  
Parachute, CO 81635

July 12, 2012

Date Received : June 30, 2012  
Description : C160U Cuttings  
Sample ID : C160U-CUT3-062912 0-6 IN  
Collected By : Chris Bak  
Collection Date : 06/29/12 11:28

ESC Sample # : L583088-06

Site ID : C160U

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
SPLP Extraction	-			1312	07/03/12	1
TPH (GC/FID) High Fraction	1.4	0.10	mg/l	3510C / DRO	07/12/12	1
Surrogate recovery(%) o-Terphenyl	53.3		% Rec.	3510C / DRO	07/12/12	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 07/12/12 16:02 Printed: 07/12/12 16:04

Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L583088-01	WG601194	SAMP	o-Terphenyl	R2241813	J7
L583088-02	WG601199	SAMP	o-Terphenyl	R2247034	J7
L583088-03	WG601199	SAMP	o-Terphenyl	R2247034	J7
L583088-04	WG601915	SAMP	o-Terphenyl	R2249813	J2

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.

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  
07/12/12 at 16:04:36

TSR Signing Reports: 358  
R5 - Desired TAT

Try not to report benzene as BDL above a 250x dilution. ONLY log soil samples under this account. Waters get logged under ENCRCO. Log all PAHs as PAHSIM.

Sample: L583088-01 Account: ENCANACO Received: 06/30/12 09:00 Due Date: 07/10/12 00:00 RPT Date: 07/12/12 16:02

Sample: L583088-02 Account: ENCANACO Received: 06/30/12 09:00 Due Date: 07/10/12 00:00 RPT Date: 07/12/12 16:02

Sample: L583088-03 Account: ENCANACO Received: 06/30/12 09:00 Due Date: 07/10/12 00:00 RPT Date: 07/12/12 16:02

Sample: L583088-04 Account: ENCANACO Received: 06/30/12 09:00 Due Date: 07/10/12 00:00 RPT Date: 07/12/12 16:02  
Rotate for DRO

Sample: L583088-05 Account: ENCANACO Received: 06/30/12 09:00 Due Date: 07/10/12 00:00 RPT Date: 07/12/12 16:02  
Rotate for DRO

Sample: L583088-06 Account: ENCANACO Received: 06/30/12 09:00 Due Date: 07/10/12 00:00 RPT Date: 07/12/12 16:02  
Rotate for DRO



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EnCana Oil & Gas Inc. - CO  
Chris Hines / Matt Kasten  
2717 County Road 215, Suite 100

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Quality Assurance Report  
Level II

L583088

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July 12, 2012

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
TPH (GC/FID) High Fraction	< 4	ppm			WG601194	07/06/12 04:37
o-Terphenyl		% Rec.	79.39	50-150	WG601194	07/06/12 04:37
TPH (GC/FID) High Fraction	< 4	ppm			WG601199	07/10/12 09:46
o-Terphenyl		% Rec.	72.80	50-150	WG601199	07/10/12 09:46
TPH (GC/FID) High Fraction	< .1	ppm			WG601915	07/11/12 10:35
o-Terphenyl		% Rec.	74.48	50-150	WG601915	07/11/12 10:35
TPH (GC/FID) High Fraction	< .1	ppm			WG602158	07/12/12 08:54
o-Terphenyl		% Rec.	67.03	50-150	WG602158	07/12/12 08:54

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
TPH (GC/FID) High Fraction	ppm	60	50.6	84.4	50-150	WG601194
o-Terphenyl				74.60	50-150	WG601194
TPH (GC/FID) High Fraction	ppm	60	45.2	75.4	50-150	WG601199
o-Terphenyl				77.33	50-150	WG601199
TPH (GC/FID) High Fraction	ppm	1.5	1.25	83.5	50-150	WG601915
o-Terphenyl				75.59	50-150	WG601915
TPH (GC/FID) High Fraction	ppm	1.5	1.05	70.1	50-150	WG602158
o-Terphenyl				68.31	50-150	WG602158

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
TPH (GC/FID) High Fraction	ppm	53.8	50.6	90.0	50-150	5.98	25	WG601194
o-Terphenyl				79.70	50-150			WG601194
TPH (GC/FID) High Fraction	ppm	46.9	45.2	78.0	50-150	3.72	25	WG601199
o-Terphenyl				78.95	50-150			WG601199
TPH (GC/FID) High Fraction	ppm	1.38	1.25	92.0	50-150	9.42	25	WG601915
o-Terphenyl				82.24	50-150			WG601915
TPH (GC/FID) High Fraction	ppm	0.966	1.05	64.0	50-150	8.39	25	WG602158
o-Terphenyl				64.60	50-150			WG602158

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
TPH (GC/FID) High Fraction	ppm	42.3	0	60	70.6	50-150	L582908-09	WG601194
o-Terphenyl					60.44	50-150		WG601194
TPH (GC/FID) High Fraction	ppm	44.7	0	60	74.6	50-150	L583089-03	WG601199

\* 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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July 12, 2012

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
o-Terphenyl					72.14	50-150			
Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
TPH (GC/FID) High Fraction	ppm	46.5	42.3	77.5	50-150	9.35	25	L582908-09	WG601194
o-Terphenyl				74.83	50-150				WG601194
TPH (GC/FID) High Fraction	ppm	45.3	44.7	75.6	50-150	1.30	25	L583089-03	WG601199
o-Terphenyl				74.09	50-150				WG601199

Batch number /Run number / Sample number cross reference

WG600803: R2240554: L583088-04 05 06  
WG601194: R2241813: L583088-01  
WG601199: R2247034: L583088-02 03  
WG601915: R2249813: L583088-04 05  
WG602158: R2251593: L583088-06

\* \* Calculations are performed prior to rounding of reported values.

\* 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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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.



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

## Report Summary

Wednesday March 20, 2013

Report Number: L625044


Samples Received: 03/14/13

Client Project:

Description: C16OU

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

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

This report may not be reproduced, except in full, without written approval from ESC Lab Sciences. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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# REPORT OF ANALYSIS

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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBE01-031213 10-15FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 09:40

ESC Sample # : L625044-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	160000		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/16/13	1
Sulfate	510	50.	mg/kg	9056	03/16/13	1
Iron	10000	5.0	mg/kg	6010B	03/19/13	1
TPH (GC/FID) High Fraction	780	80.	mg/kg	8015D/DRO	03/19/13	20
Surrogate recovery(%) o-Terphenyl	37.2		% Rec.	8015D/DRO	03/19/13	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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# REPORT OF ANALYSIS

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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBE01-031213 15-19.5FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 09:45

ESC Sample # : L625044-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	41000		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/16/13	1
Sulfate	360	50.	mg/kg	9056	03/16/13	1
Iron	16000	5.0	mg/kg	6010B	03/19/13	1
TPH (GC/FID) High Fraction	310	80.	mg/kg	8015D/DRO	03/19/13	20
Surrogate recovery(%) o-Terphenyl	34.5		% Rec.	8015D/DRO	03/19/13	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 03/20/13 16:49 Printed: 03/20/13 16:49

Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L625044-01	WG651396	SAMP	o-Terphenyl	R2587057	J7
	WG651735	SAMP	Standard Plate Count	R2588918	T8
L625044-02	WG651396	SAMP	o-Terphenyl	R2587057	J7
	WG651735	SAMP	Standard Plate Count	R2588918	T8

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery cannot be used for control limit evaluation due to 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  
03/20/13 at 16:49:42

TSR Signing Reports: 358  
R5 - Desired TAT

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

Sample: L625044-01 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:49

Sample: L625044-02 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:49





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March 20, 2013

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Nitrate	< 1	mg/kg			WG651071	03/16/13 08:29
Sulfate	< 50	mg/kg			WG651071	03/16/13 08:29
Iron	< 5	mg/kg			WG651537	03/18/13 22:10
TPH (GC/FID) High Fraction	< 4	mg/kg			WG651396	03/19/13 12:55
o-Terphenyl		% Rec.	79.00	50-150	WG651396	03/19/13 12:55

Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
Nitrate	mg/kg	190.	192.	1.05	20	L624515-01	WG651071
Iron	mg/kg	12000	12200	1.65	20	L625554-03	WG651537

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Nitrate	mg/kg	20	19.8	99.0	80-120	WG651071
Sulfate	mg/kg	200	206.	103.	85-115	WG651071
Iron	mg/kg	13100	12300	93.9	50.8-150	WG651537
TPH (GC/FID) High Fraction	mg/kg	60	46.3	77.2	50-150	WG651396
o-Terphenyl				78.50	50-150	WG651396

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Nitrate	mg/kg	20.1	19.8	100.	80-120	1.50	20	WG651071
Sulfate	mg/kg	210.	206.	105.	85-115	1.92	20	WG651071
TPH (GC/FID) High Fraction	mg/kg	49.3	46.3	82.0	50-150	6.12	20	WG651396
o-Terphenyl				79.30	50-150			WG651396

Analyte	Units	Matrix Spike			% Rec	Limit	Ref Samp	Batch
		MS Res	Ref Res	TV				
Nitrate	mg/kg	70.6	20.0	50	101.	80-120	L624176-165	WG651071
Sulfate	mg/kg	553.	51.0	500	100.	80-120	L624176-165	WG651071
Iron	mg/kg	11900	12200	50	0*	75-125	L625554-03	WG651537
TPH (GC/FID) High Fraction	mg/kg	50.9	2.26	60	81.1	50-150	L625042-01	WG651396
o-Terphenyl					68.90	50-150		WG651396

Analyte	Units	Matrix Spike Duplicate			Limit	RPD	Limit	Ref Samp	Batch
		MSD	Ref	%Rec					
Nitrate	mg/kg	71.2	70.6	102.	80-120	0.846	20	L624176-165	WG651071
Sulfate	mg/kg	563.	553.	102.	80-120	1.79	20	L624176-165	WG651071

\* 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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March 20, 2013

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Iron	mg/kg	12600	11900	800.*	75-125	5.71	20	L625554-03	WG651537
TPH (GC/FID) High Fraction	mg/kg	43.0	50.9	67.8	50-150	16.9	20	L625042-01	WG651396
o-Terphenyl				67.20	50-150				WG651396

Batch number /Run number / Sample number cross reference

WG651071: R2584000: L625044-01 02  
WG651537: R2585878: L625044-01 02  
WG651396: R2587057: L625044-01 02  
WG651735: R2588918: L625044-01 02

\* \* Calculations are performed prior to rounding of reported values.  
\* 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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12065 Lebanon Rd.  
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(615) 758-5858  
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Est. 1970

March 20, 2013

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.



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

## Report Summary

Wednesday March 20, 2013

Report Number: L625042


Samples Received: 03/14/13

Client Project:

Description: C16OU

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

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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# REPORT OF ANALYSIS

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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBE02-031213 0-10FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 09:50

ESC Sample # : L625042-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	6400		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/16/13	1
Sulfate	880	50.	mg/kg	9056	03/16/13	1
Iron	11000	5.0	mg/kg	6010B	03/19/13	1
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	8015D/DRO	03/19/13	1
Surrogate recovery(%) o-Terphenyl	70.7		% Rec.	8015D/DRO	03/19/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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# REPORT OF ANALYSIS

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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBE02-031213 10-15FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 10:00

ESC Sample # : L625042-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	240000		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/16/13	1
Sulfate	160	50.	mg/kg	9056	03/16/13	1
Iron	7300	5.0	mg/kg	6010B	03/19/13	1
TPH (GC/FID) High Fraction	890	80.	mg/kg	8015D/DRO	03/19/13	20
Surrogate recovery(%) o-Terphenyl	84.6		% Rec.	8015D/DRO	03/19/13	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBE02-031213 15-17.5FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 10:10

ESC Sample # : L625042-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	290000		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/16/13	1
Sulfate	190	50.	mg/kg	9056	03/16/13	1
Iron	9400	5.0	mg/kg	6010B	03/19/13	1
TPH (GC/FID) High Fraction	1000	80.	mg/kg	8015D/DRO	03/19/13	20
Surrogate recovery(%) o-Terphenyl	94.6		% Rec.	8015D/DRO	03/19/13	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 03/20/13 16:49 Printed: 03/20/13 16:49

Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L625042-01	WG651733	SAMP	Standard Plate Count	R2588917	T8
L625042-02	WG651396	SAMP	o-Terphenyl	R2587057	J7
	WG651733	SAMP	Standard Plate Count	R2588917	T8
L625042-03	WG651396	SAMP	o-Terphenyl	R2587057	J7
	WG651733	SAMP	Standard Plate Count	R2588917	T8



Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J7	Surrogate recovery cannot be used for control limit evaluation due to 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  
03/20/13 at 16:49:34

TSR Signing Reports: 358  
R5 - Desired TAT

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

Sample: L625042-01 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:49

Sample: L625042-02 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:49

Sample: L625042-03 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:49



**YOUR LAB OF CHOICE**

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

Parachute, CO 81635

Quality Assurance Report  
Level II

L625042

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March 20, 2013

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Nitrate	< 1	mg/kg			WG651071	03/16/13 08:29
Sulfate	< 50	mg/kg			WG651071	03/16/13 08:29
Iron	< 5	mg/kg			WG651537	03/18/13 22:10
TPH (GC/FID) High Fraction	< 4	mg/kg			WG651396	03/19/13 12:55
o-Terphenyl		% Rec.	79.00	50-150	WG651396	03/19/13 12:55

Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
Nitrate	mg/kg	190.	192.	1.05	20	L624515-01	WG651071
Iron	mg/kg	12000	12200	1.65	20	L625554-03	WG651537

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Nitrate	mg/kg	20	19.8	99.0	80-120	WG651071
Sulfate	mg/kg	200	206.	103.	85-115	WG651071
Iron	mg/kg	13100	12300	93.9	50.8-150	WG651537
TPH (GC/FID) High Fraction	mg/kg	60	46.3	77.2	50-150	WG651396
o-Terphenyl				78.50	50-150	WG651396

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Nitrate	mg/kg	20.1	19.8	100.	80-120	1.50	20	WG651071
Sulfate	mg/kg	210.	206.	105.	85-115	1.92	20	WG651071
TPH (GC/FID) High Fraction	mg/kg	49.3	46.3	82.0	50-150	6.12	20	WG651396
o-Terphenyl				79.30	50-150			WG651396

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
Nitrate	mg/kg	70.6	20.0	50	101.	80-120	L624176-165	WG651071
Sulfate	mg/kg	553.	51.0	500	100.	80-120	L624176-165	WG651071
Iron	mg/kg	11900	12200	50	0*	75-125	L625554-03	WG651537
TPH (GC/FID) High Fraction	mg/kg	50.9	2.26	60	81.1	50-150	L625042-01	WG651396
o-Terphenyl					68.90	50-150		WG651396

Analyte	Units	Matrix Spike Duplicate			Limit	RPD	Limit	Ref Samp	Batch
		MSD	Ref	%Rec					
Nitrate	mg/kg	71.2	70.6	102.	80-120	0.846	20	L624176-165	WG651071
Sulfate	mg/kg	563.	553.	102.	80-120	1.79	20	L624176-165	WG651071

\* 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	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Iron	mg/kg	12600	11900	800.*	75-125	5.71	20	L625554-03	WG651537
TPH (GC/FID) High Fraction	mg/kg	43.0	50.9	67.8	50-150	16.9	20	L625042-01	WG651396
o-Terphenyl				67.20	50-150				WG651396

Batch number /Run number / Sample number cross reference

WG651071: R2584000: L625042-01 02 03  
WG651537: R2585878: L625042-01 02 03  
WG651396: R2587057: L625042-01 02 03  
WG651733: R2588917: L625042-01 02 03

\* \* Calculations are performed prior to rounding of reported values.

\* Performance of this Analyte is outside of established criteria.

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

## Report Summary

Wednesday March 20, 2013

Report Number: L625027


Samples Received: 03/14/13

Client Project:

Description: C16OU

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Entire Report Reviewed By:

  
Jarred Willis , ESC Representative

### Laboratory Certification Numbers

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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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Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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# REPORT OF ANALYSIS

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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBE03-031213 0-10FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 15:15

ESC Sample # : L625027-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	7100		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	1400	100	mg/kg	9056	03/20/13	2
Iron	9600	5.0	mg/kg	6010B	03/19/13	1
TPH (GC/FID) High Fraction	13.	4.0	mg/kg	8015D/DRO	03/18/13	1
Surrogate recovery(%) o-Terphenyl	87.6		% Rec.	8015D/DRO	03/18/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBE03-031213 10-15FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 15:20

ESC Sample # : L625027-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	11000		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	160	50.	mg/kg	9056	03/19/13	1
Iron	8600	5.0	mg/kg	6010B	03/19/13	1
TPH (GC/FID) High Fraction	1800	40.	mg/kg	8015D/DRO	03/18/13	10
Surrogate recovery(%) o-Terphenyl	117.		% Rec.	8015D/DRO	03/18/13	10

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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# REPORT OF ANALYSIS

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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBE03-031213 15-20FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 15:25

ESC Sample # : L625027-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	12000		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	170	50.	mg/kg	9056	03/19/13	1
Iron	9200	5.0	mg/kg	6010B	03/19/13	1
TPH (GC/FID) High Fraction	920	20.	mg/kg	8015D/DRO	03/18/13	5
Surrogate recovery(%) o-Terphenyl	87.2		% Rec.	8015D/DRO	03/18/13	5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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# REPORT OF ANALYSIS

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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBE03-031213 20-21.5FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 15:30

ESC Sample # : L625027-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	7300		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	180	50.	mg/kg	9056	03/19/13	1
Iron	8500	5.0	mg/kg	6010B	03/19/13	1
TPH (GC/FID) High Fraction	1100	20.	mg/kg	8015D/DRO	03/18/13	5
Surrogate recovery(%) o-Terphenyl	72.7		% Rec.	8015D/DRO	03/18/13	5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 03/20/13 16:19 Printed: 03/20/13 16:19

Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L625027-01	WG651395	SAMP	TPH (GC/FID) High Fraction	R2584538	J3
	WG651716	SAMP	Standard Plate Count	R2588877	T8
L625027-02	WG651716	SAMP	Standard Plate Count	R2588877	T8
L625027-03	WG651716	SAMP	Standard Plate Count	R2588877	T8
L625027-04	WG651716	SAMP	Standard Plate Count	R2588877	T8

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J3	The associated batch QC was outside the established quality control range for precision.
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  
03/20/13 at 16:19:40

TSR Signing Reports: 358  
R5 - Desired TAT

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

Sample: L625027-01 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:19

Sample: L625027-02 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:19

Sample: L625027-03 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:19

Sample: L625027-04 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:19



**YOUR LAB OF CHOICE**

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

Parachute, CO 81635

Quality Assurance Report  
Level II

L625027

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

March 20, 2013

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
TPH (GC/FID) High Fraction	< 4	mg/kg			WG651395	03/18/13 10:49
o-Terphenyl		% Rec.	101.0	50-150	WG651395	03/18/13 10:49
Iron	< 5	mg/kg			WG651537	03/18/13 22:10
Nitrate	< 1	mg/kg			WG651649	03/19/13 13:42
Sulfate	< 50	mg/kg			WG651649	03/19/13 13:42

Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
Iron	mg/kg	12000	12200	1.65	20	L625554-03	WG651537
Nitrate	mg/kg	0	0	0	20	L625022-04	WG651649
Sulfate	mg/kg	480.	480.	0	20	L625022-04	WG651649
Nitrate	mg/kg	1.80	1.85	2.74	20	L625028-01	WG651649
Sulfate	mg/kg	1300	1300	0	20	L625028-01	WG651649

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
TPH (GC/FID) High Fraction	mg/kg	60	50.6	84.4	50-150	WG651395
o-Terphenyl				107.0	50-150	WG651395
Iron	mg/kg	13100	12300	93.9	50.8-150	WG651537
Nitrate	mg/kg	20	20.2	101.	80-120	WG651649
Sulfate	mg/kg	200	210.	105.	85-115	WG651649

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
TPH (GC/FID) High Fraction	mg/kg	50.3	50.6	84.0	50-150	0.730	20	WG651395
o-Terphenyl				103.0	50-150			WG651395
Nitrate	mg/kg	20.0	20.2	100.	80-120	0.995	20	WG651649
Sulfate	mg/kg	207.	210.	104.	85-115	1.44	20	WG651649

Analyte	Units	Matrix Spike				% Rec	Limit	Ref Samp	Batch
		MS Res	Ref Res	TV					
TPH (GC/FID) High Fraction	mg/kg	61.3	13.0	60	80.4		50-150	L625027-01	WG651395
o-Terphenyl					77.20		50-150		WG651395
Iron	mg/kg	11900	12200	50	0*		75-125	L625554-03	WG651537
Nitrate	mg/kg	49.4	0	50	98.8		80-120	L625022-01	WG651649
Sulfate	mg/kg	1550	1100	500	90.0		80-120	L625022-01	WG651649

\* 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	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
TPH (GC/FID) High Fraction	mg/kg	48.8	61.3	59.7	50-150	22.6*	20	L625027-01	WG651395
o-Terphenyl				88.30	50-150				WG651395
Iron	mg/kg	12600	11900	800.*	75-125	5.71	20	L625554-03	WG651537
Nitrate	mg/kg	50.9	48.9	102.	80-120	4.01	20	L625022-01	WG651649
Sulfate	mg/kg	1650	1550	110.	80-120	6.25	20	L625022-01	WG651649

Batch number /Run number / Sample number cross reference

WG651395: R2584538: L625027-01 02 03 04  
WG651537: R2585878: L625027-01 02 03 04  
WG651649: R2588417: L625027-01 02 03 04  
WG651716: R2588877: L625027-01 02 03 04

\* \* 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.





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

## Report Summary

Wednesday March 20, 2013

Report Number: L625022

Samples Received: 03/14/13

Client Project:

Description: C16OU

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

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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# REPORT OF ANALYSIS

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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBN02-031213 0-5FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 12:50

ESC Sample # : L625022-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	10000		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	1200	100	mg/kg	9056	03/20/13	2
Iron	14000	5.0	mg/kg	6010B	03/18/13	1
TPH (GC/FID) High Fraction	17.	4.0	mg/kg	8015D/DRO	03/17/13	1
Surrogate recovery(%) o-Terphenyl	60.0		% Rec.	8015D/DRO	03/17/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 03/20/13 16:16 Printed: 03/20/13 16:17



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Est. 1970

REPORT OF ANALYSIS

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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBN02-031213 5-10FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 12:55

ESC Sample # : L625022-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	150000		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	230	50.	mg/kg	9056	03/19/13	1
Iron	8300	5.0	mg/kg	6010B	03/18/13	1
TPH (GC/FID) High Fraction	960	80.	mg/kg	8015D/DRO	03/18/13	20
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	8015D/DRO	03/18/13	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Reported: 03/20/13 16:16 Printed: 03/20/13 16:17



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REPORT OF ANALYSIS

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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBN02-031213 10-13FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 13:00

ESC Sample # : L625022-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	140000		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	150	50.	mg/kg	9056	03/19/13	1
Iron	9900	5.0	mg/kg	6010B	03/18/13	1
TPH (GC/FID) High Fraction	1400	200	mg/kg	8015D/DRO	03/18/13	50
Surrogate recovery(%) o-Terphenyl	0.00		% Rec.	8015D/DRO	03/18/13	50

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Reported: 03/20/13 16:16 Printed: 03/20/13 16:17



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# REPORT OF ANALYSIS

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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBN02-031213 13-15FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 13:02

ESC Sample # : L625022-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	540		col/g	9215B	03/15/13	1000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	480	50.	mg/kg	9056	03/19/13	1
Iron	13000	5.0	mg/kg	6010B	03/18/13	1
TPH (GC/FID) High Fraction	47.	4.0	mg/kg	8015D/DRO	03/17/13	1
Surrogate recovery(%) o-Terphenyl	86.3		% Rec.	8015D/DRO	03/17/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 03/20/13 16:16 Printed: 03/20/13 16:17

Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L625022-01	WG651649	SAMP	Sulfate	R2588417	J6
	WG651461	SAMP	Iron	R2586037	V
L625022-02	WG651701	SAMP	Standard Plate Count	R2588818	T8
	WG651157	SAMP	o-Terphenyl	R2584319	J7
L625022-03	WG651701	SAMP	Standard Plate Count	R2588818	T8
	WG651157	SAMP	o-Terphenyl	R2584319	J7
L625022-04	WG651701	SAMP	Standard Plate Count	R2588818	T8
	WG651701	SAMP	Standard Plate Count	R2588818	T8

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
T8	(ESC) - Additional method/sample information: Sample(s) received past/too close to holding time expiration.
V	(ESC) - Additional QC Info: The sample concentration is too high to evaluate accurate spike recoveries.

Qualifier Report Information

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- 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  
03/20/13 at 16:17:11

TSR Signing Reports: 358  
R5 - Desired TAT

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

Sample: L625022-01 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:16

Sample: L625022-02 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:16

Sample: L625022-03 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:16

Sample: L625022-04 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:16





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Tax I.D. 62-0814289

Est. 1970

March 20, 2013

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
TPH (GC/FID) High Fraction	< 4	mg/kg			WG651157	03/17/13 11:01
o-Terphenyl		% Rec.	62.80	50-150	WG651157	03/17/13 11:01
Iron	< 5	mg/kg			WG651461	03/18/13 18:45
Nitrate	< 1	mg/kg			WG651649	03/19/13 13:42
Sulfate	< 50	mg/kg			WG651649	03/19/13 13:42

Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
Iron	mg/kg	13000	14000	7.41	20	L625022-01	WG651461
Nitrate	mg/kg	0	0	0	20	L625022-04	WG651649
Sulfate	mg/kg	480.	480.	0	20	L625022-04	WG651649
Nitrate	mg/kg	1.80	1.85	2.74	20	L625028-01	WG651649
Sulfate	mg/kg	1300	1300	0	20	L625028-01	WG651649

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
TPH (GC/FID) High Fraction	mg/kg	60	52.1	86.8	50-150	WG651157
o-Terphenyl				81.50	50-150	WG651157
Iron	mg/kg	13100	10500	80.2	50.8-150	WG651461
Nitrate	mg/kg	20	20.2	101.	80-120	WG651649
Sulfate	mg/kg	200	210.	105.	85-115	WG651649

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
TPH (GC/FID) High Fraction	mg/kg	49.1	52.1	82.0	50-150	5.92	20	WG651157
o-Terphenyl				75.20	50-150			WG651157
Nitrate	mg/kg	20.0	20.2	100.	80-120	0.995	20	WG651649
Sulfate	mg/kg	207.	210.	104.	85-115	1.44	20	WG651649

Analyte	Units	Matrix Spike				% Rec	Limit	Ref Samp	Batch
		MS Res	Ref Res	TV					
Iron	mg/kg	12700	14000	50	0*		75-125	L625022-01	WG651461
TPH (GC/FID) High Fraction	mg/kg	47.9	4.25	60	72.7		50-150	L625025-01	WG651157
o-Terphenyl					69.20		50-150		WG651157
Nitrate	mg/kg	49.4	0	50	98.8		80-120	L625022-01	WG651649
Sulfate	mg/kg	1550	1100	500	90.0		80-120	L625022-01	WG651649

\* Performance of this Analyte is outside of established criteria.  
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March 20, 2013

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Iron	mg/kg	13400	12700	0*	75-125	5.36	20	L625022-01	WG651461
TPH (GC/FID) High Fraction	mg/kg	45.3	47.9	68.4	50-150	5.53	20	L625025-01	WG651157
o-Terphenyl				67.10	50-150				WG651157
Nitrate	mg/kg	50.9	48.9	102.	80-120	4.01	20	L625022-01	WG651649
Sulfate	mg/kg	1650	1550	110.	80-120	6.25	20	L625022-01	WG651649

Batch number /Run number / Sample number cross reference

WG651157: R2583719 R2584319: L625022-01 04 02 03  
WG651461: R2586037: L625022-01 02 03 04  
WG651649: R2588417: L625022-01 02 03 04  
WG651701: R2588818: L625022-01 02 03 04

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\* Performance of this Analyte is outside of established criteria.  
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March 20, 2013

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.

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Est. 1970

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

## Report Summary

Wednesday March 27, 2013

Report Number: L625026


Samples Received: 03/14/13

Client Project:

Description: C16OU

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

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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# REPORT OF ANALYSIS

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

March 27, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBN03-031213 0-5FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 14:20

ESC Sample # : L625026-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	6000		col/g	9215B	03/15/13	1000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	1100	100	mg/kg	9056	03/20/13	2
Iron	12000	5.0	mg/kg	6010B	03/18/13	1
TPH (GC/FID) High Fraction	13.	4.0	mg/kg	8015D/DRO	03/17/13	1
Surrogate recovery(%) o-Terphenyl	67.0		% Rec.	8015D/DRO	03/17/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 03/27/13 12:01 Printed: 03/27/13 12:02



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REPORT OF ANALYSIS

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

March 27, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBN03-031213 5-10FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 14:25

ESC Sample # : L625026-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	35000		col/g	9215B	03/15/13	1000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	290	50.	mg/kg	9056	03/19/13	1
Iron	8200	5.0	mg/kg	6010B	03/18/13	1
TPH (GC/FID) High Fraction	2000	80.	mg/kg	8015D/DRO	03/26/13	20
Surrogate recovery(%) o-Terphenyl	148.		% Rec.	8015D/DRO	03/26/13	20

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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# REPORT OF ANALYSIS

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

March 27, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBN03-031213 15-20FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 14:35

ESC Sample # : L625026-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	<11		col/g	9215B	03/15/13	1000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	580	50.	mg/kg	9056	03/19/13	1
Iron	14000	5.0	mg/kg	6010B	03/18/13	1
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	8015D/DRO	03/17/13	1
Surrogate recovery(%) o-Terphenyl	69.7		% Rec.	8015D/DRO	03/17/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 03/27/13 12:01 Printed: 03/27/13 12:02



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# REPORT OF ANALYSIS

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

March 27, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBN03-031213 10-15FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 14:30

ESC Sample # : L625026-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	130000		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	340	50.	mg/kg	9056	03/19/13	1
Iron	9700	5.0	mg/kg	6010B	03/19/13	1
TPH (GC/FID) High Fraction	1800	40.	mg/kg	8015D/DRO	03/21/13	10
Surrogate recovery(%) o-Terphenyl	168.		% Rec.	8015D/DRO	03/21/13	10

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 03/27/13 12:01 Printed: 03/27/13 12:02



Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L625026-01	WG651712	SAMP	Standard Plate Count	R2588837	T8
L625026-02	WG652119	SAMP	o-Terphenyl	R2596258	J7
	WG651712	SAMP	Standard Plate Count	R2588837	T8
L625026-03	WG651712	SAMP	Standard Plate Count	R2588837	T8
L625026-04	WG651636	SAMP	o-Terphenyl	R2590940	J1
	WG651712	SAMP	Standard Plate Count	R2588837	T8

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits
J7	Surrogate recovery cannot be used for control limit evaluation due to 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  
03/27/13 at 12:02:19

TSR Signing Reports: 358  
R5 - Desired TAT

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

Sample: L625026-01 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/22/13 00:00 RPT Date: 03/27/13 12:01

Sample: L625026-02 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/25/13 00:00 RPT Date: 03/27/13 12:01

Sample: L625026-03 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/22/13 00:00 RPT Date: 03/27/13 12:01

Sample: L625026-04 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/22/13 00:00 RPT Date: 03/27/13 12:01



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EnCana Oil & Gas Inc. - CO  
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Quality Assurance Report  
Level II

L625026

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March 27, 2013

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
TPH (GC/FID) High Fraction	< 4	mg/kg			WG651157	03/17/13 11:01
o-Terphenyl		% Rec.	62.80	50-150	WG651157	03/17/13 11:01
Iron	< 5	mg/kg			WG651537	03/18/13 22:10
Iron	< 5	mg/kg			WG651461	03/18/13 18:45
Nitrate	< 1	mg/kg			WG651649	03/19/13 13:42
Sulfate	< 50	mg/kg			WG651649	03/19/13 13:42
TPH (GC/FID) High Fraction	< 4	mg/kg			WG652119	03/26/13 14:45
o-Terphenyl		% Rec.	65.40	50-150	WG652119	03/26/13 14:45

Analyte	Units	Result	Duplicate		Limit	Ref Samp	Batch
			Duplicate	RPD			
Iron	mg/kg	12000	12200	1.65	20	L625554-03	WG651537
Iron	mg/kg	13000	14000	7.41	20	L625022-01	WG651461
Nitrate	mg/kg	0	0	0	20	L625022-04	WG651649
Sulfate	mg/kg	480.	480.	0	20	L625022-04	WG651649
Nitrate	mg/kg	1.80	1.85	2.74	20	L625028-01	WG651649
Sulfate	mg/kg	1300	1300	0	20	L625028-01	WG651649

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
TPH (GC/FID) High Fraction	mg/kg	60	52.1	86.8	50-150	WG651157
o-Terphenyl				81.50	50-150	WG651157
Iron	mg/kg	13100	12300	93.9	50.8-150	WG651537
Iron	mg/kg	13100	10500	80.2	50.8-150	WG651461
Nitrate	mg/kg	20	20.2	101.	80-120	WG651649
Sulfate	mg/kg	200	210.	105.	85-115	WG651649
TPH (GC/FID) High Fraction	mg/kg	60	42.3	70.5	50-150	WG652119
o-Terphenyl				67.10	50-150	WG652119

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
TPH (GC/FID) High Fraction	mg/kg	49.1	52.1	82.0	50-150	5.92	20	WG651157
o-Terphenyl				75.20	50-150			WG651157
Nitrate	mg/kg	20.0	20.2	100.	80-120	0.995	20	WG651649

\* 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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EnCana Oil & Gas Inc. - CO  
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Quality Assurance Report  
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Est. 1970

March 27, 2013

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Sulfate	mg/kg	207.	210.	104.	85-115	1.44	20	WG651649
TPH (GC/FID) High Fraction	mg/kg	47.1	42.3	78.0	50-150	10.7	20	WG652119
o-Terphenyl				76.30	50-150			WG652119

Analyte	Units	Matrix Spike			% Rec	Limit	Ref Samp	Batch
		MS Res	Ref Res	TV				
Iron	mg/kg	11900	12200	50	0*	75-125	L625554-03	WG651537
Iron	mg/kg	12700	14000	50	0*	75-125	L625022-01	WG651461
Nitrate	mg/kg	49.4	0	50	98.8	80-120	L625022-01	WG651649
Sulfate	mg/kg	1550	1100	500	90.0	80-120	L625022-01	WG651649
TPH (GC/FID) High Fraction	mg/kg	42.0	0.194	60	69.6	50-150	L625790-03	WG652119
o-Terphenyl					64.80	50-150		WG652119

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Iron	mg/kg	12600	11900	800.*	75-125	5.71	20	L625554-03	WG651537
Iron	mg/kg	13400	12700	0*	75-125	5.36	20	L625022-01	WG651461
Nitrate	mg/kg	50.9	48.9	102.	80-120	4.01	20	L625022-01	WG651649
Sulfate	mg/kg	1650	1550	110.	80-120	6.25	20	L625022-01	WG651649
TPH (GC/FID) High Fraction	mg/kg	46.3	42.0	76.9	50-150	9.89	20	L625790-03	WG652119
o-Terphenyl				70.20	50-150				WG652119

Batch number /Run number / Sample number cross reference

WG651157: R2583719: L625026-01 03  
WG651537: R2585878: L625026-04  
WG651461: R2586037: L625026-01 02 03  
WG651649: R2588417: L625026-01 02 03 04  
WG651712: R2588837: L625026-01 02 03 04  
WG651636: R2590940: L625026-04  
WG652119: R2596258: L625026-02

\* \* Calculations are performed prior to rounding of reported values.  
\* 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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March 27, 2013

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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.



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Chris Hines / Matt Kasten  
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143 Diamond Avenue  
Parachute, CO 81635

## Report Summary

Wednesday March 20, 2013

Report Number: L625047


Samples Received: 03/14/13

Client Project:

Description:

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

March 20, 2013

Date Received : March 14, 2013  
Description :  
Sample ID : C16OU-SBN04 15-20FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 14:50

ESC Sample # : L625047-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	<14		col/g	9215B	03/15/13	1000
Nitrate	BDL	1.0	mg/kg	9056	03/16/13	1
Sulfate	670	50.	mg/kg	9056	03/16/13	1
Iron	15000	5.0	mg/kg	6010B	03/20/13	1
TPH (GC/FID) High Fraction	BDL	4.0	mg/kg	8015D/DRO	03/19/13	1
Surrogate recovery(%) o-Terphenyl	67.6		% Rec.	8015D/DRO	03/19/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 03/20/13 16:45 Printed: 03/20/13 16:46



Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L625047-01	WG651736	SAMP	Standard Plate Count	R2588919	T8P1

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
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

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- 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  
03/20/13 at 16:46:07

TSR Signing Reports: 358  
R5 - Desired TAT

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

Sample: L625047-01 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:45



**YOUR LAB OF CHOICE**

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

Parachute, CO 81635

Quality Assurance Report  
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L625047

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Tax I.D. 62-0814289

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March 20, 2013

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Nitrate	< 1	mg/kg			WG651071	03/16/13 08:29
Sulfate	< 50	mg/kg			WG651071	03/16/13 08:29
TPH (GC/FID) High Fraction	< 4	mg/kg			WG651396	03/19/13 12:55
o-Terphenyl		% Rec.	79.00	50-150	WG651396	03/19/13 12:55

Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
Nitrate	mg/kg	190.	192.	1.05	20	L624515-01	WG651071

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Nitrate	mg/kg	20	19.8	99.0	80-120	WG651071
Sulfate	mg/kg	200	206.	103.	85-115	WG651071
TPH (GC/FID) High Fraction	mg/kg	60	46.3	77.2	50-150	WG651396
o-Terphenyl				78.50	50-150	WG651396

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Nitrate	mg/kg	20.1	19.8	100.	80-120	1.50	20	WG651071
Sulfate	mg/kg	210.	206.	105.	85-115	1.92	20	WG651071
TPH (GC/FID) High Fraction	mg/kg	49.3	46.3	82.0	50-150	6.12	20	WG651396
o-Terphenyl				79.30	50-150			WG651396

Analyte	Units	Matrix Spike			% Rec	Limit	Ref Samp	Batch
		MS Res	Ref Res	TV				
Nitrate	mg/kg	70.6	20.0	50	101.	80-120	L624176-165	WG651071
Sulfate	mg/kg	553.	51.0	500	100.	80-120	L624176-165	WG651071
TPH (GC/FID) High Fraction	mg/kg	50.9	2.26	60	81.1	50-150	L625042-01	WG651396
o-Terphenyl					68.90	50-150		WG651396

Analyte	Units	Matrix Spike Duplicate			Limit	RPD	Limit	Ref Samp	Batch
		MSD	Ref	%Rec					
Nitrate	mg/kg	71.2	70.6	102.	80-120	0.846	20	L624176-165	WG651071
Sulfate	mg/kg	563.	553.	102.	80-120	1.79	20	L624176-165	WG651071
TPH (GC/FID) High Fraction	mg/kg	43.0	50.9	67.8	50-150	16.9	20	L625042-01	WG651396
o-Terphenyl				67.20	50-150				WG651396

Batch number /Run number / Sample number cross reference

WG651071: R2584000: L625047-01  
WG651396: R2587057: L625047-01  
WG651736: R2588919: L625047-01  
WG651614: R2588924: L625047-01

\* \* Calculations are performed prior to rounding of reported values.

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

Parachute, CO 81635

Quality Assurance Report  
Level II

L625047

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

Tax I.D. 62-0814289

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March 20, 2013

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.



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

## Report Summary

Thursday March 21, 2013

Report Number: L625025


Samples Received: 03/14/13

Client Project:

Description: C16OU

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

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Note: The use of the preparatory EPA Method 3511 is not approved or endorsed by the CA ELAP.

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# REPORT OF ANALYSIS

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

March 21, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBW01-031213 0-5FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 10:15

ESC Sample # : L625025-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	5300		col/g	9215B	03/15/13	10000
Nitrate	3.9	1.0	mg/kg	9056	03/19/13	1
Sulfate	430	50.	mg/kg	9056	03/19/13	1
Iron	10000	5.0	mg/kg	6010B	03/18/13	1
TPH (GC/FID) High Fraction	4.2	4.0	mg/kg	8015D/DRO	03/18/13	1
Surrogate recovery(%) o-Terphenyl	70.8		% Rec.	8015D/DRO	03/18/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

The reported analytical results relate only to the sample submitted.

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Reported: 03/21/13 11:46 Printed: 03/21/13 11:46



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# REPORT OF ANALYSIS

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

March 21, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBW01-031213 5-10FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 10:20

ESC Sample # : L625025-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	20000		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	2300	250	mg/kg	9056	03/20/13	5
Iron	7900	5.0	mg/kg	6010B	03/18/13	1
TPH (GC/FID) High Fraction	200	4.0	mg/kg	8015D/DRO	03/21/13	1
Surrogate recovery(%) o-Terphenyl	71.1		% Rec.	8015D/DRO	03/21/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

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

March 21, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBW01-031213 10-15FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 10:25

ESC Sample # : L625025-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	150000		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	210	50.	mg/kg	9056	03/19/13	1
Iron	8800	5.0	mg/kg	6010B	03/18/13	1
TPH (GC/FID) High Fraction	1500	20.	mg/kg	8015D/DRO	03/18/13	5
Surrogate recovery(%) o-Terphenyl	126.		% Rec.	8015D/DRO	03/18/13	5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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# REPORT OF ANALYSIS

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

March 21, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBW01-031213 15-20FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 10:30

ESC Sample # : L625025-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	7800		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	160	50.	mg/kg	9056	03/19/13	1
Iron	8400	5.0	mg/kg	6010B	03/18/13	1
TPH (GC/FID) High Fraction	1200	20.	mg/kg	8015D/DRO	03/18/13	5
Surrogate recovery(%) o-Terphenyl	124.		% Rec.	8015D/DRO	03/18/13	5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Reported: 03/21/13 11:46 Printed: 03/21/13 11:46

Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L625025-01	WG651711	SAMP	Standard Plate Count	R2588820	T8
L625025-02	WG651711	SAMP	Standard Plate Count	R2588820	T8
L625025-03	WG651711	SAMP	Standard Plate Count	R2588820	T8
L625025-04	WG651711	SAMP	Standard Plate Count	R2588820	T8

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
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  
03/21/13 at 11:46:52

TSR Signing Reports: 358  
R5 - Desired TAT

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

Sample: L625025-01 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/21/13 11:46

Sample: L625025-02 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/21/13 11:46

Sample: L625025-03 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/21/13 11:46

Sample: L625025-04 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/21/13 11:46



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Chris Hines / Matt Kasten  
143 Diamond Avenue

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Quality Assurance Report  
Level II

L625025

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March 21, 2013

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Iron	< 5	mg/kg			WG651461	03/18/13 18:45
Nitrate	< 1	mg/kg			WG651649	03/19/13 13:42
Sulfate	< 50	mg/kg			WG651649	03/19/13 13:42
TPH (GC/FID) High Fraction	< 4	mg/kg			WG651636	03/20/13 15:56
o-Terphenyl		% Rec.	81.80	50-150	WG651636	03/20/13 15:56

Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
Iron	mg/kg	13000	14000	7.41	20	L625022-01	WG651461
Nitrate	mg/kg	0	0	0	20	L625022-04	WG651649
Sulfate	mg/kg	480.	480.	0	20	L625022-04	WG651649
Nitrate	mg/kg	1.80	1.85	2.74	20	L625028-01	WG651649
Sulfate	mg/kg	1300	1300	0	20	L625028-01	WG651649

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Iron	mg/kg	13100	10500	80.2	50.8-150	WG651461
Nitrate	mg/kg	20	20.2	101.	80-120	WG651649
Sulfate	mg/kg	200	210.	105.	85-115	WG651649
TPH (GC/FID) High Fraction	mg/kg	60	55.4	92.4	50-150	WG651636
o-Terphenyl				86.90	50-150	WG651636

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Nitrate	mg/kg	20.0	20.2	100.	80-120	0.995	20	WG651649
Sulfate	mg/kg	207.	210.	104.	85-115	1.44	20	WG651649
TPH (GC/FID) High Fraction	mg/kg	49.0	55.4	82.0	50-150	12.4	20	WG651636
o-Terphenyl				75.20	50-150			WG651636

Analyte	Units	Matrix Spike				Limit	Ref Samp	Batch
		MS Res	Ref Res	TV	% Rec			
Iron	mg/kg	12700	14000	50	0*	75-125	L625022-01	WG651461
TPH (GC/FID) High Fraction	mg/kg	47.9	4.25	60	72.7	50-150	L625025-01	WG651157
o-Terphenyl					69.20	50-150		WG651157
Nitrate	mg/kg	49.4	0	50	98.8	80-120	L625022-01	WG651649
Sulfate	mg/kg	1550	1100	500	90.0	80-120	L625022-01	WG651649
TPH (GC/FID) High Fraction	mg/kg	46.7	6.75	60	66.5	50-150	L625231-01	WG651636

\* 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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March 21, 2013

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref	Samp	Batch
			Ref	%Rec						
o-Terphenyl					61.50	50-150				
Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref	Samp	Batch
			Ref	%Rec						
Iron	mg/kg	13400	12700	0*	75-125	5.36	20	L625022-01		WG651461
TPH (GC/FID) High Fraction	mg/kg	45.3	47.9	68.4	50-150	5.53	20	L625025-01		WG651157
o-Terphenyl				67.10	50-150					WG651157
Nitrate	mg/kg	50.9	48.9	102.	80-120	4.01	20	L625022-01		WG651649
Sulfate	mg/kg	1650	1550	110.	80-120	6.25	20	L625022-01		WG651649
TPH (GC/FID) High Fraction	mg/kg	47.3	46.7	67.6	50-150	1.43	20	L625231-01		WG651636
o-Terphenyl				60.70	50-150					WG651636

Batch number / Run number / Sample number cross reference

WG651157: R2584319: L625025-01 03 04  
WG651461: R2586037: L625025-01 02 03 04  
WG651649: R2588417: L625025-01 02 03 04  
WG651711: R2588820: L625025-01 02 03 04  
WG651636: R2590337: L625025-02

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

## Report Summary

Wednesday March 20, 2013

Report Number: L625028

Samples Received: 03/14/13

Client Project:

Description: C16OU

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

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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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBW02-031213 0-5FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 10:50

ESC Sample # : L625028-01

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	44000		col/g	9215B	03/15/13	10000
Nitrate	1.8	1.0	mg/kg	9056	03/19/13	1
Sulfate	1300	100	mg/kg	9056	03/20/13	2
Iron	14000	5.0	mg/kg	6010B	03/19/13	1
TPH (GC/FID) High Fraction	6.8	4.0	mg/kg	8015D/DRO	03/18/13	1
Surrogate recovery(%) o-Terphenyl	90.5		% Rec.	8015D/DRO	03/18/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Est. 1970

REPORT OF ANALYSIS

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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBW02-031213 5-10FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 11:00

ESC Sample # : L625028-02

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	130000		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	1300	100	mg/kg	9056	03/20/13	2
Iron	8800	5.0	mg/kg	6010B	03/19/13	1
TPH (GC/FID) High Fraction	1300	20.	mg/kg	8015D/DRO	03/18/13	5
Surrogate recovery(%) o-Terphenyl	82.4		% Rec.	8015D/DRO	03/18/13	5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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# REPORT OF ANALYSIS

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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBW02-031213 10-15FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 11:05

ESC Sample # : L625028-03

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	16000		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	240	50.	mg/kg	9056	03/19/13	1
Iron	9300	5.0	mg/kg	6010B	03/19/13	1
TPH (GC/FID) High Fraction	830	20.	mg/kg	8015D/DRO	03/18/13	5
Surrogate recovery(%) o-Terphenyl	69.4		% Rec.	8015D/DRO	03/18/13	5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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REPORT OF ANALYSIS

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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBW02-031213 15-20FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 11:07

ESC Sample # : L625028-04

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	210000		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/19/13	1
Sulfate	240	50.	mg/kg	9056	03/19/13	1
Iron	8800	5.0	mg/kg	6010B	03/19/13	1
TPH (GC/FID) High Fraction	1100	20.	mg/kg	8015D/DRO	03/18/13	5
Surrogate recovery(%) o-Terphenyl	84.7		% Rec.	8015D/DRO	03/18/13	5

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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# REPORT OF ANALYSIS

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

March 20, 2013

Date Received : March 14, 2013  
Description : C160U  
Sample ID : C160U-SBW02-031213 20-25FT  
Collected By : Chris McKisson  
Collection Date : 03/12/13 11:10

ESC Sample # : L625028-05

Site ID :

Project # :

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Standard Plate Count	15000		col/g	9215B	03/15/13	10000
Nitrate	BDL	1.0	mg/kg	9056	03/16/13	1
Sulfate	660	50.	mg/kg	9056	03/16/13	1
Iron	14000	5.0	mg/kg	6010B	03/19/13	1
TPH (GC/FID) High Fraction	45.	4.0	mg/kg	8015D/DRO	03/18/13	1
Surrogate recovery(%) o-Terphenyl	84.2		% Rec.	8015D/DRO	03/18/13	1

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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Attachment A  
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L625028-01	WG651724	SAMP	Standard Plate Count	R2588897	T8
L625028-02	WG651724	SAMP	Standard Plate Count	R2588897	T8
L625028-03	WG651724	SAMP	Standard Plate Count	R2588897	T8
L625028-04	WG651724	SAMP	Standard Plate Count	R2588897	T8
L625028-05	WG651724	SAMP	Standard Plate Count	R2588897	T8

Attachment B  
Explanation of QC Qualifier Codes

Qualifier	Meaning
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  
03/20/13 at 16:20:30

TSR Signing Reports: 358  
R5 - Desired TAT

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

Sample: L625028-01 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:19

Sample: L625028-02 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:19

Sample: L625028-03 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:19

Sample: L625028-04 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:19

Sample: L625028-05 Account: ENCANACO Received: 03/14/13 09:00 Due Date: 03/21/13 00:00 RPT Date: 03/20/13 16:19



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Quality Assurance Report  
Level II

L625028

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Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Nitrate	< 1	mg/kg			WG651071	03/16/13 08:29
Sulfate	< 50	mg/kg			WG651071	03/16/13 08:29
TPH (GC/FID) High Fraction	< 4	mg/kg			WG651395	03/18/13 10:49
o-Terphenyl		% Rec.	101.0	50-150	WG651395	03/18/13 10:49
Iron	< 5	mg/kg			WG651537	03/18/13 22:10
Nitrate	< 1	mg/kg			WG651649	03/19/13 13:42
Sulfate	< 50	mg/kg			WG651649	03/19/13 13:42

Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
Nitrate	mg/kg	190.	192.	1.05	20	L624515-01	WG651071
Iron	mg/kg	12000	12200	1.65	20	L625554-03	WG651537
Nitrate	mg/kg	0	0	0	20	L625022-04	WG651649
Sulfate	mg/kg	480.	480.	0	20	L625022-04	WG651649
Nitrate	mg/kg	1.80	1.85	2.74	20	L625028-01	WG651649
Sulfate	mg/kg	1300	1300	0	20	L625028-01	WG651649

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Nitrate	mg/kg	20	19.8	99.0	80-120	WG651071
Sulfate	mg/kg	200	206.	103.	85-115	WG651071
TPH (GC/FID) High Fraction	mg/kg	60	50.6	84.4	50-150	WG651395
o-Terphenyl				107.0	50-150	WG651395
Iron	mg/kg	13100	12300	93.9	50.8-150	WG651537
Nitrate	mg/kg	20	20.2	101.	80-120	WG651649
Sulfate	mg/kg	200	210.	105.	85-115	WG651649

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Nitrate	mg/kg	20.1	19.8	100.	80-120	1.50	20	WG651071
Sulfate	mg/kg	210.	206.	105.	85-115	1.92	20	WG651071
TPH (GC/FID) High Fraction	mg/kg	50.3	50.6	84.0	50-150	0.730	20	WG651395
o-Terphenyl				103.0	50-150			WG651395
Nitrate	mg/kg	20.0	20.2	100.	80-120	0.995	20	WG651649
Sulfate	mg/kg	207.	210.	104.	85-115	1.44	20	WG651649

\* 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	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
Nitrate	mg/kg	70.6	20.0	50	101.	80-120	L624176-165	WG651071
Sulfate	mg/kg	553.	51.0	500	100.	80-120	L624176-165	WG651071
TPH (GC/FID) High Fraction	mg/kg	61.3	13.0	60	80.4	50-150	L625027-01	WG651395
o-Terphenyl					77.20	50-150		WG651395
Iron	mg/kg	11900	12200	50	0*	75-125	L625554-03	WG651537
Nitrate	mg/kg	49.4	0	50	98.8	80-120	L625022-01	WG651649
Sulfate	mg/kg	1550	1100	500	90.0	80-120	L625022-01	WG651649

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Nitrate	mg/kg	71.2	70.6	102.	80-120	0.846	20	L624176-165	WG651071
Sulfate	mg/kg	563.	553.	102.	80-120	1.79	20	L624176-165	WG651071
TPH (GC/FID) High Fraction	mg/kg	48.8	61.3	59.7	50-150	22.6*	20	L625027-01	WG651395
o-Terphenyl				88.30	50-150				WG651395
Iron	mg/kg	12600	11900	800.*	75-125	5.71	20	L625554-03	WG651537
Nitrate	mg/kg	50.9	48.9	102.	80-120	4.01	20	L625022-01	WG651649
Sulfate	mg/kg	1650	1550	110.	80-120	6.25	20	L625022-01	WG651649

Batch number /Run number / Sample number cross reference

WG651071: R2584000: L625028-05  
WG651395: R2584538: L625028-01 02 03 04 05  
WG651537: R2585878: L625028-01 02 03 04 05  
WG651649: R2588417: L625028-01 02 03 04  
WG651724: R2588897: L625028-01 02 03 04 05

\* \* Calculations are performed prior to rounding of reported values.  
\* 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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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.