



**ENCANA CORPORATION
WAHIGAN RESERVOIR
WELL: 08-05-062-24W5
GAS CONDENSATE - PVT STUDY**

FINAL REPORT

Prepared for

ENCANA CORPORATION

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CONSTANT VOLUME DEPLETION

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RESULTS AND DISCUSSION

The reservoir fluid study was conducted on the RECOMBINED sample collected from 08-05-062-24W5 of the DUVERNAY reservoir.

Multirate sampling was performed on the field to evaluate Production Rate versus Production GOR ratio and select representative fluids and GOR for recombination. Five different sets of samples were taken and the summary of the results is shown in table below and the full report is shown in Appendix B. Samples from rate four with the lowest GOR were selected for recombination.

	Gas Rate m3/d	GOR m3/m3	Meter Temperature °C	Static Pressure Psia
Rate 0	77000	278.7	37	1020
Rate 1	124000	546.3	40	1022
Rate 2	95000	541.3	40	1022
Rate 3	47000	536.4	30	1031
Rate 4	81000	514.7	36	1030

The PVT cell was charged with a portion of the fluid sample and a constant composition expansion experiment (CCE) was performed on the fluid. The compositional analysis of reservoir fluid is given in Table 2.

Table 3 provides the CCE results of the average compressibility of the reservoir fluid at pressures above the saturation pressure. Table 4 contains the complete CCE results with the exception of the data already presented in Table 3. Figure 1 is the relative total volume (V/V_{sat}) data and Y -function. Figure 2 shows the liquid drop out during constant composition expansion experiment.

Table 5 contains fluid recovery data from the constant volume depletion including liquid drop out, cumulative produced fluid, cumulative liquid recovery and separator condensate-gas ratios, which are shown in Figures 3 through 6, respectively.

Table 6 contains a summary of the properties of the constant volume depletion wellstream produced including densities, viscosities, deviation factors, two-phase deviation factors, P/Z parameters. The gas deviation factor (Z) and two-phase deviation factor, density, viscosity and the P/Z parameters are shown in Figures 7 through 10, respectively.

Table 7 summarizes the wellstream produced compositions from each pressure stage during the constant volume depletion experiment. Figure 11 shows this data plotted on semi-log co-ordinates. Table 8 presents the compositional analysis of the yields and cumulative compositional recovery, respectively.

SUMMARY

**ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
RESERVOIR FLUID STUDY
MAIN PVT RESULTS**

INITIAL RESERVOIR CONDITIONS

Reservoir Pressure	11168 psia	77.00 MPa
Reservoir Temperature:	240.8 F	116 C

CONSTANT COMPOSITION EXPANSION @ 240.8 F (116.0 C)

Saturation Pressure	4141 psia	28.55 MPa
Compressibility @ Reservoir Pressure	4.92558E-05 psia ⁻¹	7.14397E-03 MPa ⁻¹
Compressibility @ Saturation Pressure	8.81479E-05 psia ⁻¹	1.27848E-02 MPa ⁻¹
Maximum Liquid Drop (% of Vtot)	26.87 @ 3,233 psia (22.29 MPa)	

CONSTANT VOLUME DEPLETION @ 240.8 F (116.0 C)

At Saturation Pressure		
Fluid Density	0.3708 g/cm ³	370.8 kg/m ³
Fluid Viscosity	0.0468 cp	0.0468 mPa.s
Maximum Liquid Drop (% of Vsat)	29.51 @ 2,813 psia (19.39 MPa)	

SINGLE-STAGE SEPARATOR TEST

At Saturation Pressure		
Fluid Formation Volume Factor	4.7370 res.bbl/STB	4.7370 res.m ³ /m ³
Solution Gas-Oil Ratio	5564.23 scf/STB	990.99 m ³ /m ³
At Tank Conditions		
Flashed Oil Density	0.7661 g/cm ³	766.1 kg/m ³
API Gravity	53.20	53.20

**TABLE 1
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
SAMPLE COLLECTION DATA**

Project File:	CL-63169	
Operator Name:	ENCANA CORPORATION	
Pool or Zone:	DUVERNAY	
Field or Area:	WAHIGAN	
Well Location:	08-05-062-24W5	
Fluid Sample:	RECOMBINED	
Sampling Company:	WEATHERFORD LABS	
Name of Sampler:	NICK	
Sampling Date:	14-Apr-13	
Sampling Point:	SEPARATOR	
Sampling Temperature:	96.8 F	36.0 C
Sampling Pressure:	1030.0 psia	7.10 MPa
Reservoir Temperature:	240.8 F	116.0 C
Reservoir Pressure:	11168.0 psia	77.00 MPa

TABLE 2
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
COMPOSITIONAL ANALYSIS OF RESERVOIR FLUID

Boiling Point (K)			Mole Fraction	Mass Fraction	Calculated Properties
77.4	Nitrogen	N2	0.0090	0.0068	Total Sample
194.6	Carbon Dioxide	CO2	0.0048	0.0058	
212.8	Hydrogen Sulphide	H2S	0.0000	0.0000	Molecular Weight 37.05
111.5	Methane	C1	0.6216	0.2693	
184.3	Ethane	C2	0.1303	0.1058	
231.0	Propane	C3	0.0663	0.0789	C6+ Fraction
261.5	i-Butane	i-C4	0.0123	0.0193	
272.6	n-Butane	n-C4	0.0266	0.0417	Molecular Weight 148.84
301.0	i-Pentane	i-C5	0.0100	0.0195	Mole Fraction 0.1069
309.3	n-Pentane	n-C5	0.0122	0.0238	Density (g/cc) 0.7990
309.3 - 342	Hexanes	C6	0.0188	0.0438	
342 - 371.4	Heptanes	C7	0.0110	0.0298	
371.4 - 398.8	Octanes	C8	0.0124	0.0382	C7+ Fraction
398.8 - 423.8	Nonanes	C9	0.0094	0.0324	
423.8 - 447	Decanes	C10	0.0068	0.0261	Molecular Weight 160.93
447 - 469.3	Undecanes	C11	0.0059	0.0233	Mole Fraction 0.0878
469.3 - 488.2	Dodecanes	C12	0.0045	0.0194	Density (g/cc) 0.8145
488.2 - 508.2	Tridecanes	C13	0.0042	0.0198	
508.2 - 525.4	Tetradecanes	C14	0.0031	0.0161	
525.4 - 543.8	Pentadecanes	C15	0.0023	0.0128	C12+ Fraction
543.8 - 560.9	Hexadecanes	C16	0.0017	0.0104	
560.9 - 564.8	Heptadecanes	C17	0.0015	0.0096	Molecular Weight 256.18
564.8 - 590.4	Octadecanes	C18	0.0014	0.0093	Mole Fraction 0.0289
590.4 - 603.2	Nonadecanes	C19	0.0012	0.0083	Density (g/cc) 0.8645
603.2 - 617.5	Eicosanes	C20	0.0009	0.0069	
617.5 - 630.4	Heneicosanes	C21	0.0008	0.0062	C30+ Fraction
630.4 - 642.5	Docosanes	C22	0.0007	0.0056	
642.5 - 653.2	Tricosanes	C23	0.0006	0.0051	Molecular Weight 533.05
653.2 - 664.3	Tetracosanes	C24	0.0005	0.0045	Mole Fraction 0.0021
664.3 - 674.9	Pentacosanes	C25	0.0005	0.0043	Density (g/cc) 0.9782
674.9 - 685.4	Hexacosanes	C26	0.0004	0.0038	
685.4 - 695.4	Heptacosanes	C27	0.0003	0.0034	
695.4 - 704.9	Octacosanes	C28	0.0003	0.0030	Recombination Parameters
704.9 - 714.3	Nonacosanes	C29	0.0020	0.0214	
Above 714.3	Tricontanes Plus	C30+	0.0021	0.0299	Gas-Oil Ratio (cc/cc) 990.99
					Dead Oil Density (g/cc) 0.7661
					Dead Oil MW (g/mol) 141.21
322.0	Cyclopentane	C5H10	0.0003	0.0005	
345.4	Methylcyclopentane	C6H12	0.0016	0.0036	
354.3	Cyclohexane	C6H12	0.0019	0.0043	
374.3	Methylcyclohexane	C7H14	0.0045	0.0119	
353.2	Benzene	C6H6	0.0002	0.0005	
383.8	Toluene	C7H8	0.0015	0.0037	
409.3 - 412	Ethylbenzene & p,m-Xylene	C8H10	0.0013	0.0037	
417.5	o-Xylene	C8H10	0.0009	0.0026	
442.0	1, 2, 4-Trimethylbenzene	C9H12	0.0016	0.0051	
Total			1.0000	1.0000	

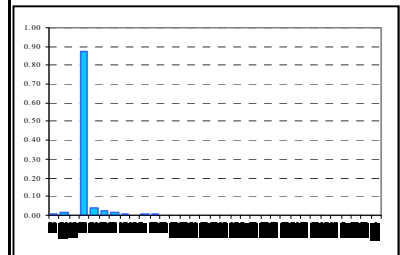


TABLE 3
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
FLUID COMPRESSIBILITY @ 240.8 F (116.0 C)

Pressure Range		Average Compressibility (psi ⁻¹)
From (psia)	To (psia)	
6018	5519	4.9256E-05
5519	5008	5.6230E-05
5008	4830	6.5348E-05
4830	4627	6.9285E-05
4627	4447	7.4312E-05
4447	4286	7.9594E-05
4286	4141 Psat	8.8148E-05

Pressure Range		Average Compressibility (MPa ⁻¹)
From (MPa)	To (MPa)	
41.49	38.05	7.1440E-03
38.05	34.53	8.1554E-03
34.53	33.30	9.4779E-03
33.30	31.90	1.0049E-02
31.90	30.66	1.0778E-02
30.66	29.55	1.1544E-02
29.55	28.55 Psat	1.2785E-02

Psat - Saturation Pressure

TABLE 4
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
CONSTANT COMPOSITION EXPANSION @ 240.8 F (116.0 C)

Pressure		Relative Volume [1]	Z-Factor (-)	Y-Function [2]	Liquid Volume (% of Vtot)	Fluid Density (g/cc)
(psia)	(MPa)					
6018	41.49	0.88769	1.13746			0.4177
5519	38.05	0.91006	1.06943			0.4074
5008	34.53	0.93698	0.99911			0.3957
4830	33.30	0.94801	0.97494			0.3911
4627	31.90	0.96153	0.94729			0.3856
4447	30.66	0.97457	0.92278			0.3805
4286	29.55	0.98722	0.90091			0.3756
4141 Psat	28.55	1.00000	0.88170		0.00	0.3708
4020	27.72	1.01758		1.7121	9.26	
3826	26.38	1.04910		1.6768	19.89	
3730	25.72	1.06641		1.6593	22.06	
3566	24.59	1.09897		1.6294	24.12	
3333	22.98	1.15277		1.5869	26.41	
3233	22.29	1.17905		1.5687	26.87	
2902	20.01	1.28307		1.5084	25.82	
2649	18.26	1.38520		1.4623	24.52	
2400	16.55	1.51201		1.4169	22.07	
2199	15.16	1.63987		1.3803	19.97	
2037	14.04	1.76474		1.3508	17.95	
1899	13.09	1.89071		1.3256	16.33	
1669	11.51	2.15392		1.2837	13.71	

[1] Volume at indicated pressure per volume at saturation pressure

[2] Y Function = ((Psat-P)/P)/(Relative Volume - 1)

Psat - Saturation Pressure

TABLE 5
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
CONSTANT VOLUME DEPLETION FLUID RECOVERY @ 240.8 F (116.0 C)

Pressure		Liquid Drop Out (% of Vsat)	Cumulative Produced Fluid (mole %)	Cumulative Liquid Recovery		Separator Condensate - Gas Ratio	
(psia)	(MPa)			(STB/MMscf)	(m ³ /10 ⁶ m ³)	(STB/MMscf)	(m ³ /10 ⁶ m ³)
6018	41.49			0.00	0.00	179.72	1009.09
5519	38.05			0.00	0.00	179.72	1009.09
5008	34.53			0.00	0.00	179.72	1009.09
4830	33.30			0.00	0.00	179.72	1009.09
4627	31.90			0.00	0.00	179.72	1009.09
4447	30.66			0.00	0.00	179.72	1009.09
4286	29.55			0.00	0.00	179.72	1009.09
4141 Psat	28.55	0.0000	0.0000	0.00	0.00	179.72	1009.09
3913	26.98	15.2338	2.9930	3.48	19.56	127.66	716.80
3613	24.91	22.6747	7.6707	7.79	43.72	98.83	554.90
3213	22.15	27.2499	14.3466	12.02	67.49	66.74	374.75
2813	19.39	29.5123	22.1559	15.46	86.79	45.67	256.41
2413	16.64	29.2609	31.0985	17.61	98.90	24.61	138.19
2013	13.88	28.1297	40.0831	18.49	103.82	9.85	55.30
1613	11.12	27.0488	49.2324	18.59	104.36	1.05	5.89
1213	8.36	25.8924	58.5118	18.83	105.73	2.64	14.80
813	5.60	24.8115	67.1697	19.22	107.91	4.49	25.22
513	3.54	24.2333	73.4780	19.61	110.10	6.23	34.97

[1] Barrels (Cubic meters) of oil at indicated pressure and temperature per barrel (cubic meter) of residual oil @ 60 F (288.7 K).
 [2] Total barrels (cubic meters) of oil and liberated gas at the indicated pressure and temperature per barrel (cubic meter) of residual oil @ 60 F (288.7 K).
 Psat - Saturation Pressure
 - Tank conditions: 60 F (288.7 K) @ 13 psia (0.0896 MPa); Standard conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa).

TABLE 6
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
CONSTANT VOLUME DEPLETION PRODUCED WELLSTREAM PROPERTIES @ 240.8 F (116.0 C)

Pressure		Gas Density (g/cm ³)	Gas Viscosity (cp=mPa.s)	Gas Deviation Factor (-)	Two-Phase Gas Deviation Factor (Z _{2ph})	P/Z		P/Z _{2ph}	
(psia)	(MPa)					(psia)	(MPa)	(psia)	(MPa)
6018	41.49								
5519	38.05								
5008	34.53								
4830	33.30								
4627	31.90								
4447	30.66								
4286	29.55								
4141 Psat	28.55	0.3708	0.0468	0.8817	0.8817	4696	32.38	4696	32.38
3913	26.98	0.3234	0.0377	0.8677	0.8585	4509	31.09	4557	31.42
3613	24.91	0.2821	0.0316	0.8516	0.8330	4242	29.25	4337	29.90
3213	22.15	0.2314	0.0259	0.8320	0.7988	3861	26.62	4022	27.73
2813	19.39	0.1930	0.0226	0.8136	0.7699	3457	23.84	3654	25.19
2413	16.64	0.1558	0.0199	0.8131	0.7466	2967	20.46	3232	22.28
2013	13.88	0.1236	0.0180	0.8226	0.7168	2447	16.87	2808	19.36
1613	11.12	0.0951	0.0166	0.8416	0.6787	1916	13.21	2376	16.38
1213	8.36	0.0704	0.0154	0.8640	0.6256	1404	9.68	1939	13.37
813	5.61	0.0468	0.0144	0.8954	0.5312	911	6.28	1530	10.55
513	3.54	0.0298	0.0137	0.9230	0.4160	559	3.85	1233	8.50

Psat - Saturation pressure
- Standard conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

TABLE 7
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
CVD - PRODUCED WELLSTREAM COMPOSITIONAL ANALYSIS @ 240.8 F (116.0 C)

Component Name	Chemical Symbol	Constant Volume Depletion Stage Pressure (psia/MPa)						
		3913	3613	3213	2813	2413	2013	1613
		26.98	24.91	22.15	19.39	16.64	13.88	11.12
Nitrogen	N2	0.0090	0.0091	0.0093	0.0092	0.0092	0.0092	0.0091
Carbon Dioxide	CO2	0.0048	0.0051	0.0053	0.0054	0.0055	0.0055	0.0055
Hydrogen Sulphide	H2S	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Methane	C1	0.6357	0.6606	0.6842	0.7026	0.7148	0.7212	0.7215
Ethane	C2	0.1309	0.1311	0.1356	0.1349	0.1348	0.1360	0.1382
Propane	C3	0.0655	0.0645	0.0626	0.0615	0.0630	0.0631	0.0638
i-Butane	i-C4	0.0122	0.0116	0.0112	0.0106	0.0103	0.0105	0.0106
n-Butane	n-C4	0.0259	0.0247	0.0235	0.0224	0.0216	0.0211	0.0212
i-Pentane	i-C5	0.0097	0.0080	0.0072	0.0069	0.0066	0.0064	0.0063
n-Pentane	n-C5	0.0116	0.0101	0.0085	0.0078	0.0073	0.0073	0.0073
Hexanes	C6	0.0184	0.0152	0.0082	0.0058	0.0051	0.0079	0.0090
Heptanes	C7	0.0122	0.0081	0.0069	0.0065	0.0059	0.0045	0.0043
Octanes	C8	0.0124	0.0097	0.0082	0.0068	0.0049	0.0029	0.0022
Nonanes	C9	0.0088	0.0075	0.0060	0.0044	0.0027	0.0012	0.0002
Decanes	C10	0.0063	0.0054	0.0044	0.0029	0.0018	0.0008	0.0002
Undecanes	C11	0.0054	0.0046	0.0035	0.0022	0.0012	0.0005	0.0001
Dodecanes	C12	0.0040	0.0034	0.0023	0.0014	0.0008	0.0003	0.0001
Tridecanes	C13	0.0037	0.0030	0.0020	0.0012	0.0006	0.0002	0.0001
Tetradecanes	C14	0.0027	0.0022	0.0014	0.0008	0.0004	0.0001	0.0000
Pentadecanes	C15	0.0020	0.0016	0.0010	0.0005	0.0002	0.0001	0.0000
Hexadecanes	C16	0.0015	0.0012	0.0007	0.0003	0.0001	0.0000	0.0000
Heptadecanes	C17	0.0012	0.0010	0.0005	0.0003	0.0001	0.0000	0.0000
Octadecanes	C18	0.0011	0.0008	0.0005	0.0002	0.0001	0.0000	0.0000
Nonadecanes	C19	0.0009	0.0007	0.0004	0.0001	0.0000	0.0000	0.0000
Eicosanes	C20	0.0007	0.0005	0.0003	0.0001	0.0000	0.0000	0.0000
Heneicosanes	C21	0.0006	0.0004	0.0002	0.0001	0.0000	0.0000	0.0000
Docosanes	C22	0.0005	0.0004	0.0002	0.0000	0.0000	0.0000	0.0000
Tricosanes	C23	0.0004	0.0003	0.0001	0.0000	0.0000	0.0000	0.0000
Tetracosanes	C24	0.0003	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000
Pentacosanes	C25	0.0003	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000
Hexacosanes	C26	0.0002	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000
Heptacosanes	C27	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
Octacosanes	C28	0.0002	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
Nonacosanes	C29	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
Tricontanes Plus	C30+	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NAPHTHENES								
Cyclopentane	C5H10	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000	0.0000
Methylcyclopentane	C6H12	0.0009	0.0006	0.0005	0.0004	0.0002	0.0001	0.0000
Cyclohexane	C6H12	0.0012	0.0009	0.0000	0.0005	0.0003	0.0001	0.0000
Methylcyclohexane	C7H14	0.0034	0.0027	0.0021	0.0017	0.0009	0.0004	0.0000
AROMATICS								
Benzene	C6H6	0.0002	0.0001	0.0001	0.0001	0.0000	0.0000	0.0000
Toluene	C7H8	0.0011	0.0009	0.0007	0.0005	0.0003	0.0001	0.0000
Ethylbenzene & p,m-Xylene	C8H10	0.0011	0.0010	0.0008	0.0006	0.0004	0.0002	0.0000
o-Xylene	C8H10	0.0009	0.0007	0.0005	0.0004	0.0003	0.0001	0.0000
1, 2, 4-Trimethylbenzene	C9H12	0.0015	0.0013	0.0009	0.0007	0.0004	0.0002	0.0000
Total		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Calculated Properties of C12+ Fraction								
Molecular Weight		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mole Fraction		0.0207	0.0165	0.0098	0.0052	0.0024	0.0009	0.0002
Density (g/cc)		N/A	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 7 (Cont'd)
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
CONSTANT VOLUME DEPLETION WELLSTREAM COMPOSITIONS @ 240.8 F (116.0 C)

Component Name	Chemical Symbol	Constant Volume Depletion Stage Pressure (psia/MPa)					
		1213 8.36	813 5.61	513 3.54			
Nitrogen	N2	0.0093	0.0091	0.0092			
Carbon Dioxide	CO2	0.0056	0.0055	0.0056			
Hydrogen Sulphide	H2S	0.0000	0.0000	0.0000			
Methane	C1	0.7140	0.6963	0.6686			
Ethane	C2	0.1406	0.1454	0.1481			
Propane	C3	0.0654	0.0706	0.0799			
i-Butane	i-C4	0.0109	0.0119	0.0143			
n-Butane	n-C4	0.0226	0.0259	0.0304			
i-Pentane	i-C5	0.0066	0.0072	0.0091			
n-Pentane	n-C5	0.0074	0.0080	0.0102			
Hexanes	C6	0.0081	0.0097	0.0123			
Heptanes	C7	0.0049	0.0045	0.0052			
Octanes	C8	0.0029	0.0027	0.0032			
Nonanes	C9	0.0004	0.0007	0.0010			
Decanes	C10	0.0004	0.0007	0.0008			
Undecanes	C11	0.0003	0.0005	0.0006			
Dodecanes	C12	0.0001	0.0003	0.0004			
Tridecanes	C13	0.0001	0.0002	0.0002			
Tetradecanes	C14	0.0001	0.0001	0.0001			
Pentadecanes	C15	0.0000	0.0001	0.0001			
Hexadecanes	C16	0.0000	0.0000	0.0000			
Heptadecanes	C17	0.0000	0.0000	0.0000			
Octadecanes	C18	0.0000	0.0000	0.0000			
Nonadecanes	C19	0.0000	0.0000	0.0000			
Eicosanes	C20	0.0000	0.0000	0.0000			
Heneicosanes	C21	0.0000	0.0000	0.0000			
Docosanes	C22	0.0000	0.0000	0.0000			
Tricosanes	C23	0.0000	0.0000	0.0000			
Tetracosanes	C24	0.0000	0.0000	0.0000			
Pentacosanes	C25	0.0000	0.0000	0.0000			
Hexacosanes	C26	0.0000	0.0000	0.0000			
Heptacosanes	C27	0.0000	0.0000	0.0000			
Octacosanes	C28	0.0000	0.0000	0.0000			
Nonacosanes	C29	0.0000	0.0000	0.0000			
Tricontanes Plus	C30+	0.0000	0.0000	0.0000			
NAPHTHENES							
Cyclopentane	C5H10	0.0000	0.0000	0.0000			
Methylcyclopentane	C6H12	0.0000	0.0000	0.0000			
Cyclohexane	C6H12	0.0000	0.0000	0.0000			
Methylcyclohexane	C7H14	0.0001	0.0001	0.0002			
AROMATICS							
Benzene	C6H6	0.0000	0.0000	0.0000			
Toluene	C7H8	0.0000	0.0000	0.0001			
Ethylbenzene & p,m-Xylene	C8H10	0.0001	0.0001	0.0001			
o-Xylene	C8H10	0.0000	0.0001	0.0001			
1, 2, 4-Trimethylbenzene	C9H12	0.0001	0.0001	0.0002			
Total		1.0000	1.0000	1.0000			
Calculated Properties of C12+ Fraction							
Molecular Weight		N/A	N/A	N/A			
Mole Fraction		0.0004	0.0007	0.0008			
Density (g/cc)		N/A	N/A	N/A			

TABLE 8
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
CONSTANT VOLUME DEPLETION COMPOSITIONAL RECOVERY @ 240.8 F (116.0 C)

Pressure		Cumulative Liquid Recovery					
		C ₃₊		C ₄₊		C ₅₊	
(psia)	(MPa)	(STB/MMscf)	(m ³ /10 ⁶ m ³)	(STB/MMscf)	(m ³ /10 ⁶ m ³)	(STB/MMscf)	(m ³ /10 ⁶ m ³)
6018	41.49	0.00	0.00	0.00	0.00	0.00	0.00
5519	38.05	0.00	0.00	0.00	0.00	0.00	0.00
5008	34.53	0.00	0.00	0.00	0.00	0.00	0.00
4830	33.30	0.00	0.00	0.00	0.00	0.00	0.00
4627	31.90	0.00	0.00	0.00	0.00	0.00	0.00
4447	30.66	0.00	0.00	0.00	0.00	0.00	0.00
4286	29.55	0.00	0.00	0.00	0.00	0.00	0.00
4141 Psat	28.55	0.00	0.00	0.00	0.00	0.00	0.00
3913	26.98	5.36	30.11	4.08	22.92	3.22	18.07
3613	24.91	12.44	69.86	9.19	51.61	7.04	39.55
3213	22.15	21.13	118.62	15.15	85.05	11.25	63.17
2813	19.39	30.09	168.94	20.98	117.78	15.13	84.96
2413	16.64	39.41	221.29	26.62	149.45	18.61	104.50
2013	13.88	48.14	270.32	31.65	177.69	21.49	120.68
1613	11.12	56.81	318.97	36.50	204.94	24.14	135.54
1213	8.36	65.95	370.31	41.68	234.01	26.96	151.38
813	5.60	75.35	423.08	47.08	264.36	29.89	167.82
513	3.54	83.44	468.49	51.88	291.30	32.55	182.76

[1] Barrels (Cubic meters) of oil at indicated pressure and temperature per barrel (cubic meter) of residual oil @ 60 F (288.7 K).
 [2] Total barrels (cubic meters) of oil and liberated gas at the indicated pressure and temperature per barrel (cubic meter) of residual oil @ 60 F (288.7 K).
 Psat - Saturation Pressure
 - Tank conditions: 60 F (288.7 K) @ 13 psia (0.0896 MPa); Standard conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa).

FIGURE 1
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
CONSTANT COMPOSITION EXPANSION @ 240.8 F (116.0 C)

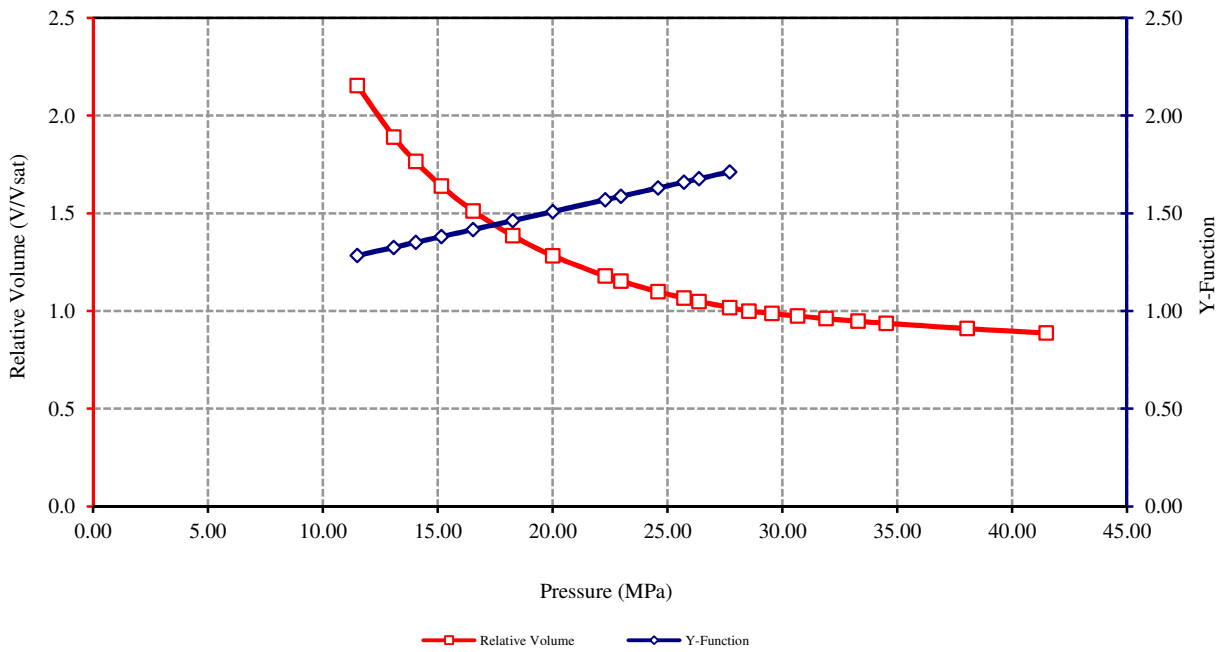
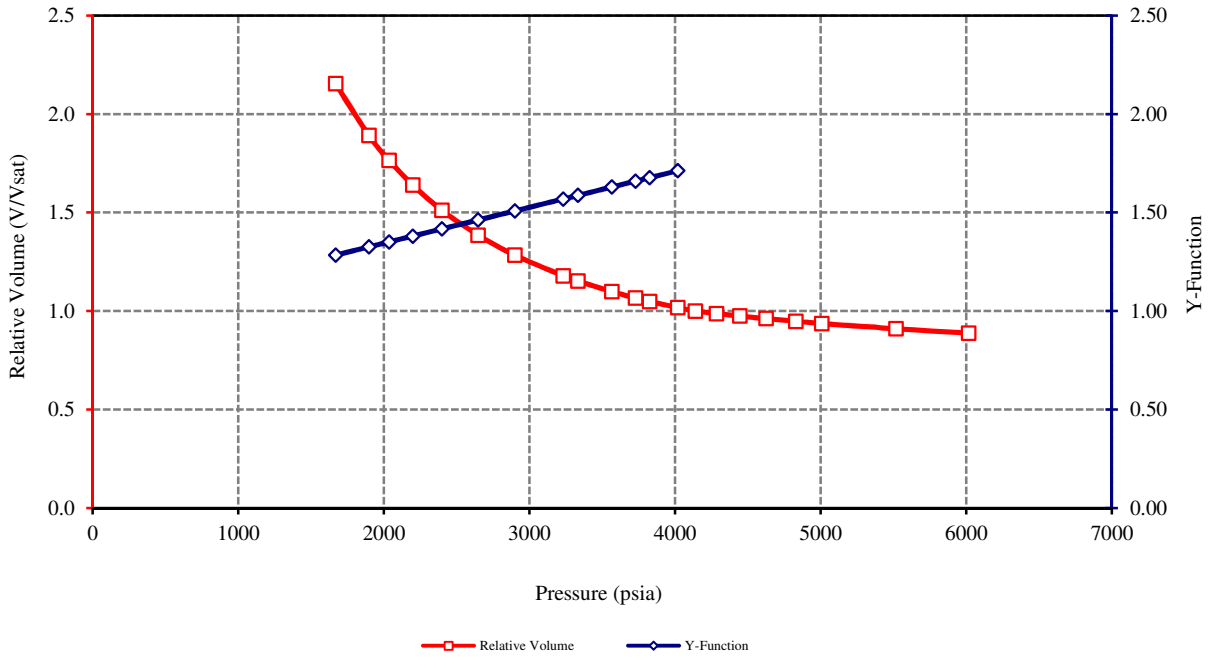


FIGURE 2
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
CONSTANT COMPOSITION EXPANSION - LIQUID DROPOUT @ 240.8 F (116.0 C)

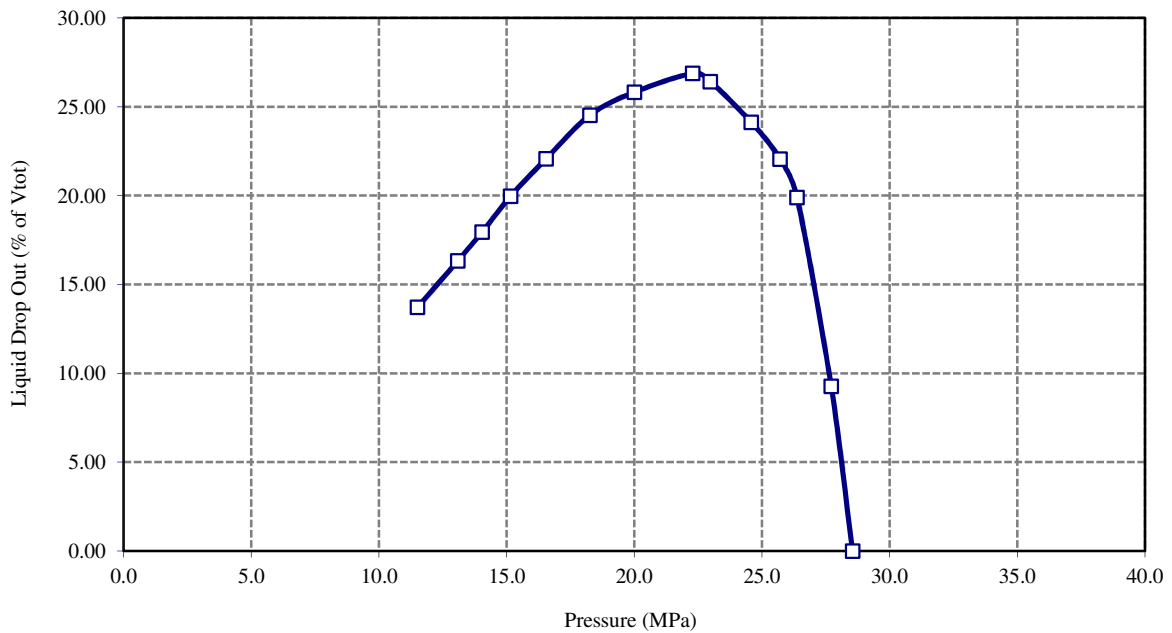
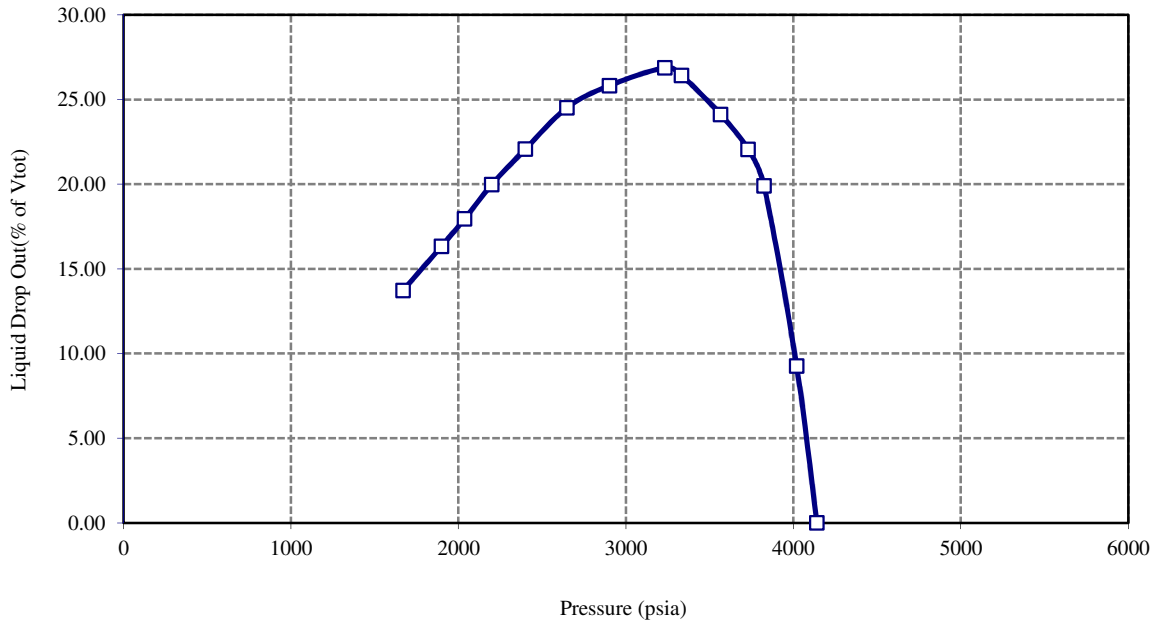


FIGURE 3
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
CONSTANT VOLUME DEPLETION - LIQUID DROPOUT @ 240.8 F (116.0 C)

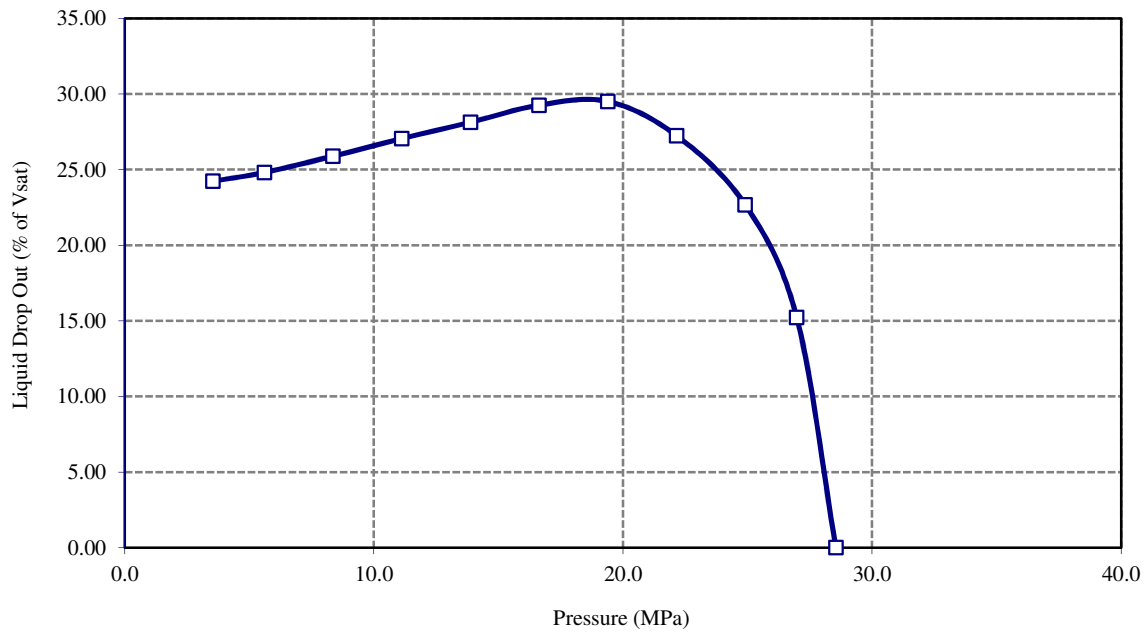
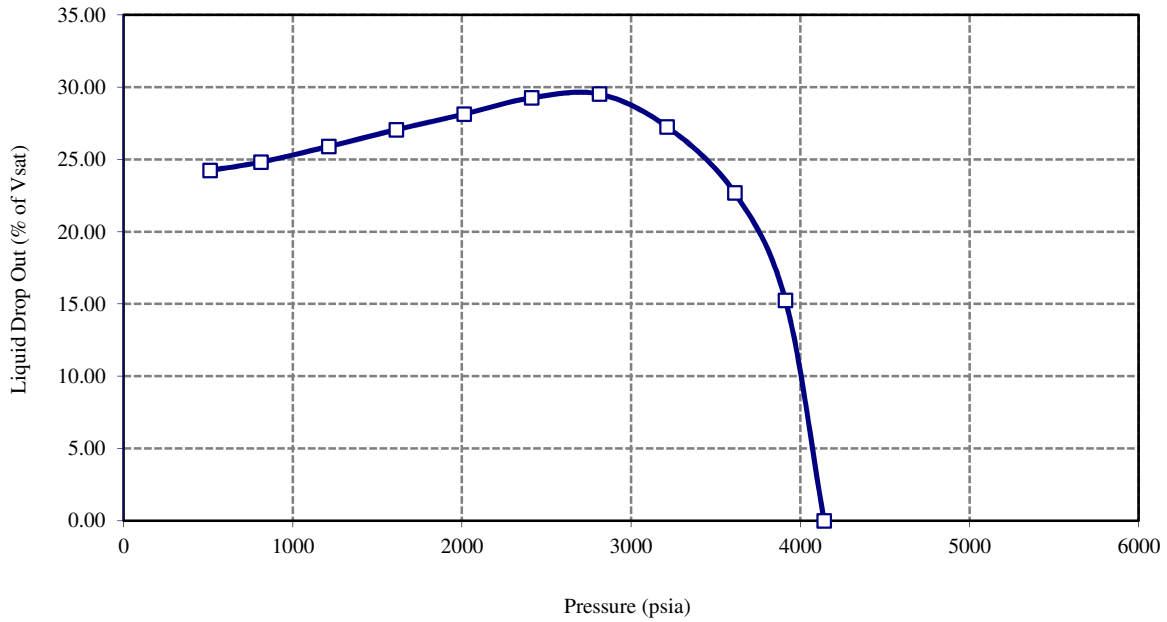


FIGURE 4
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
CONSTANT VOLUME DEPLETION CUMULATIVE PRODUCED FLUID @ 240.8 F (116.0 C)

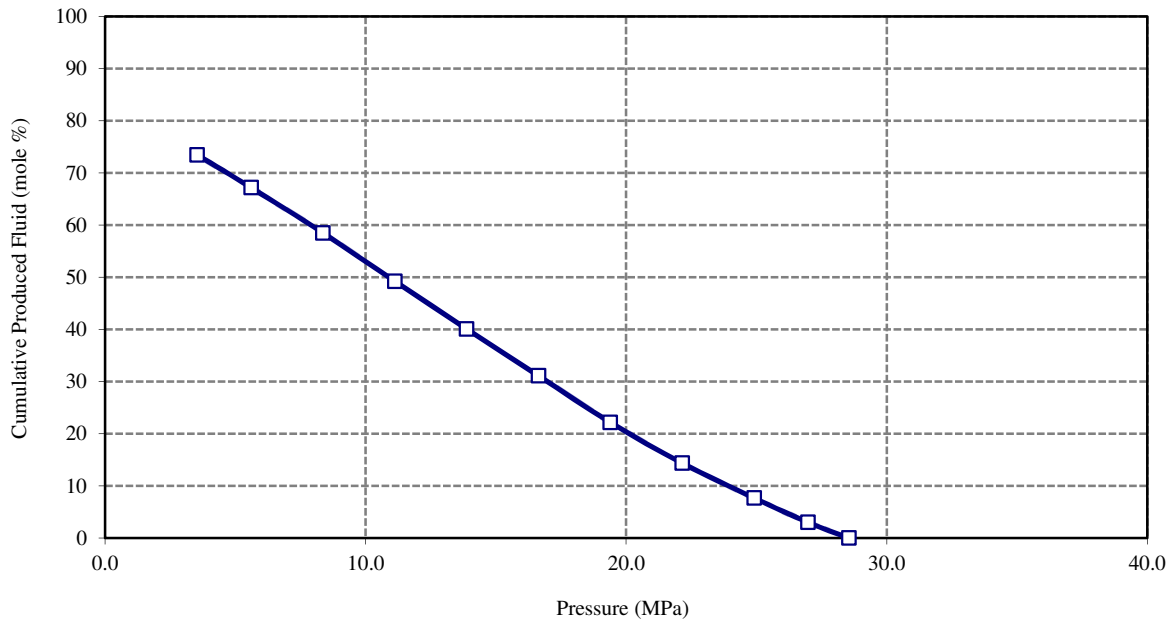
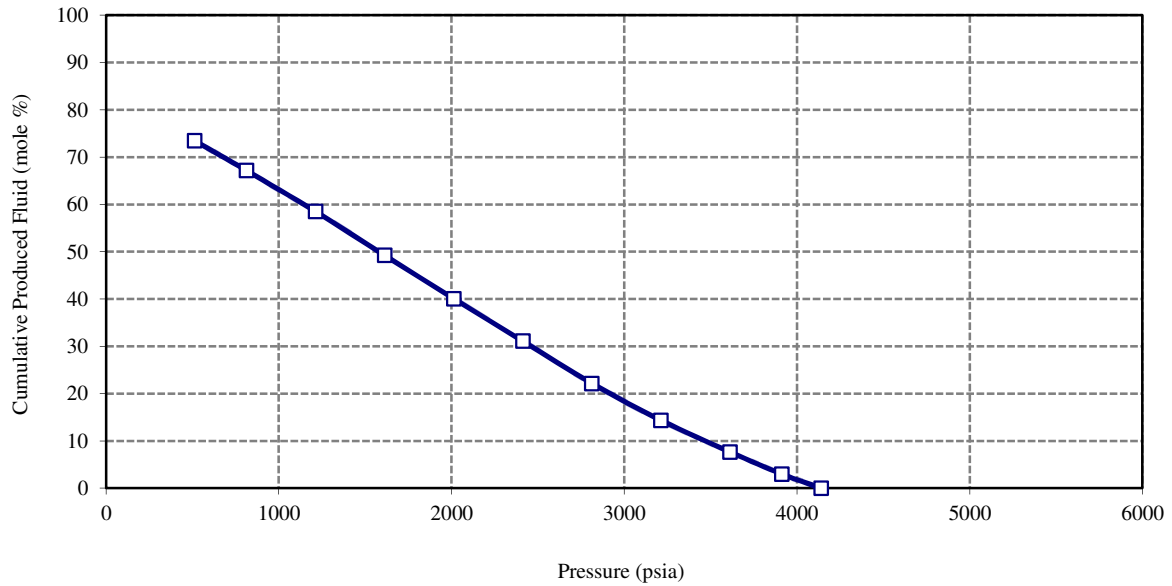


FIGURE 5
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
CONSTANT VOLUME DEPLETION CUMULATIVE PRODUCED LIQUID @ 240.8 F (116.0 C)

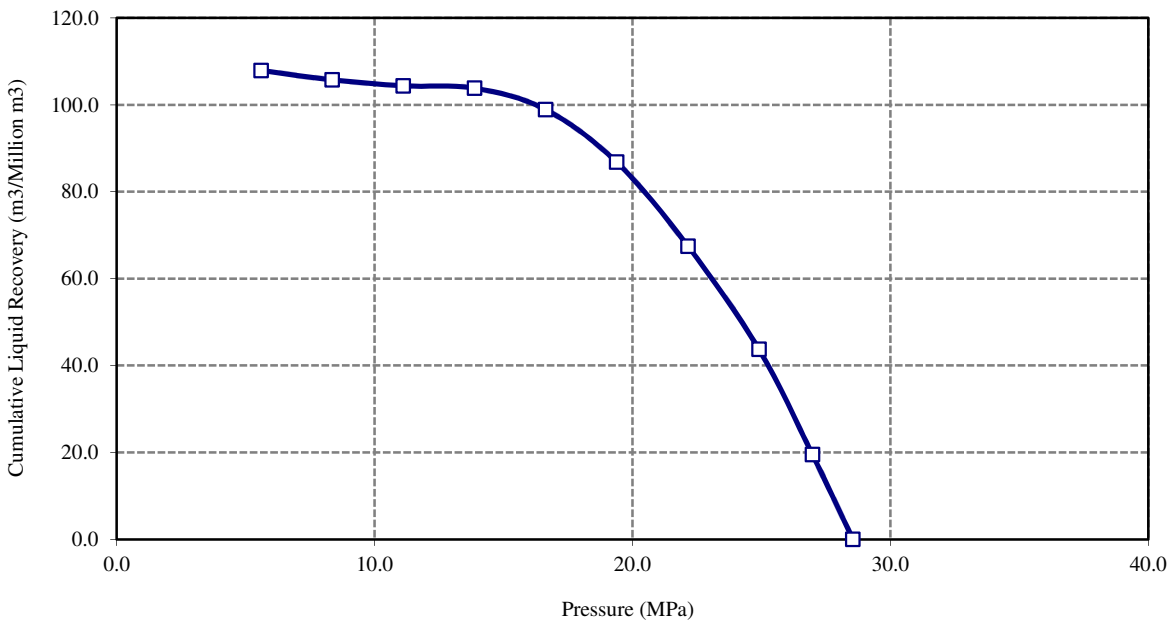
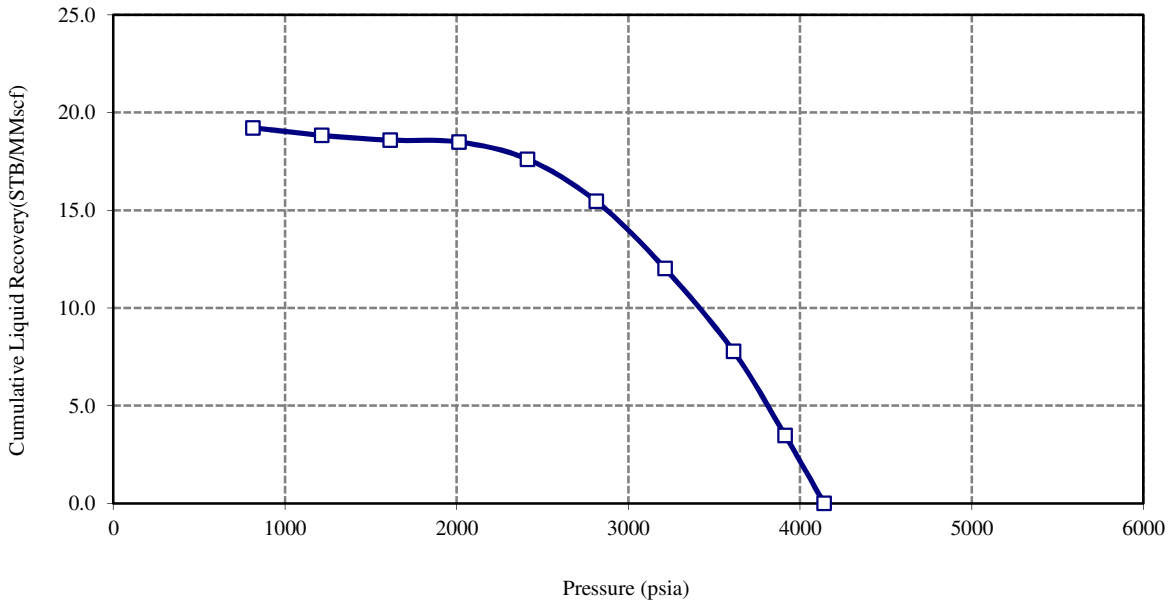


FIGURE 6
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
CONSTANT VOLUME DEPLETION CONDENSATE-GAS RATIO @ 240.8 F (116.0 C)

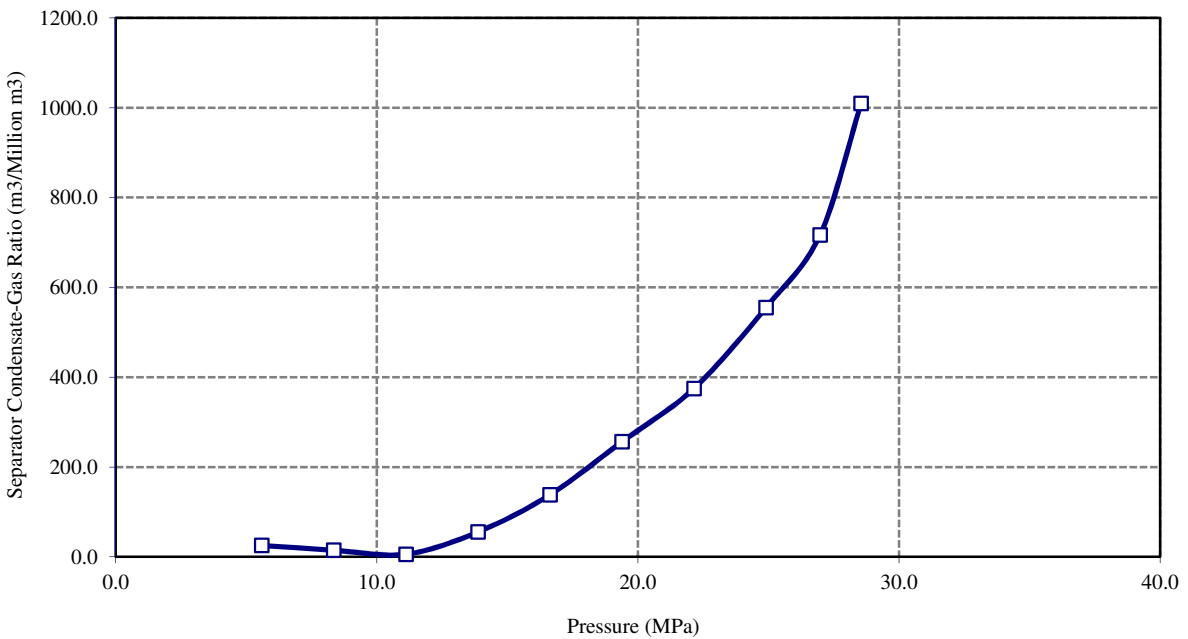
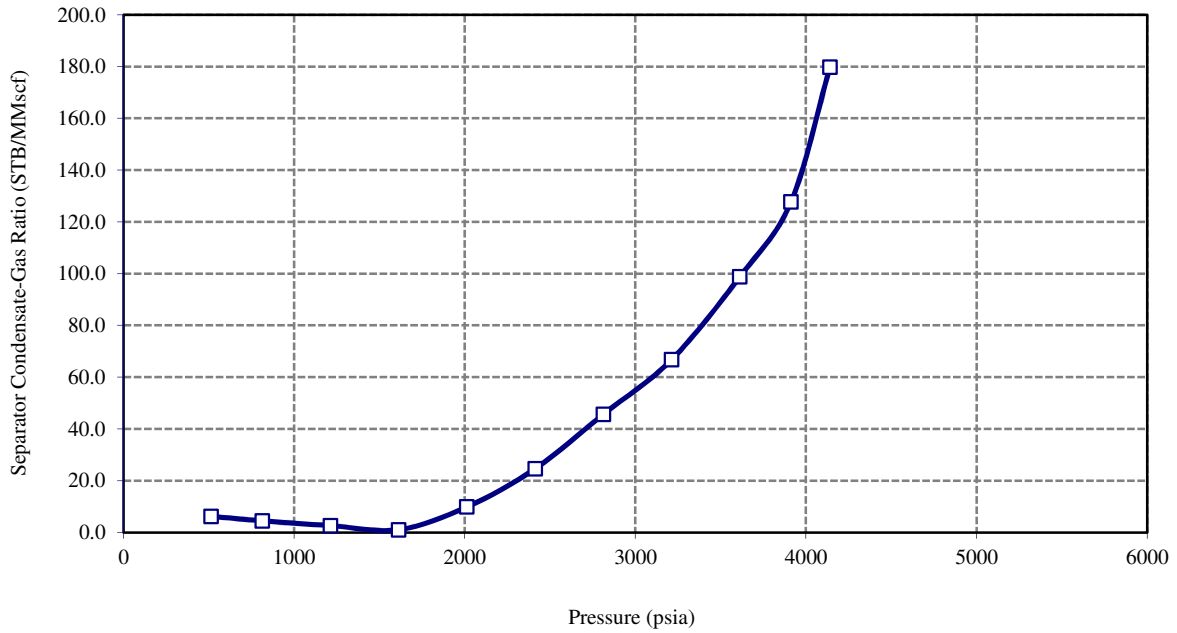


FIGURE 7
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
CONSTANT VOLUME DEPLETION GAS DEVIATION FACTORS @ 240.8 F (116.0 C)

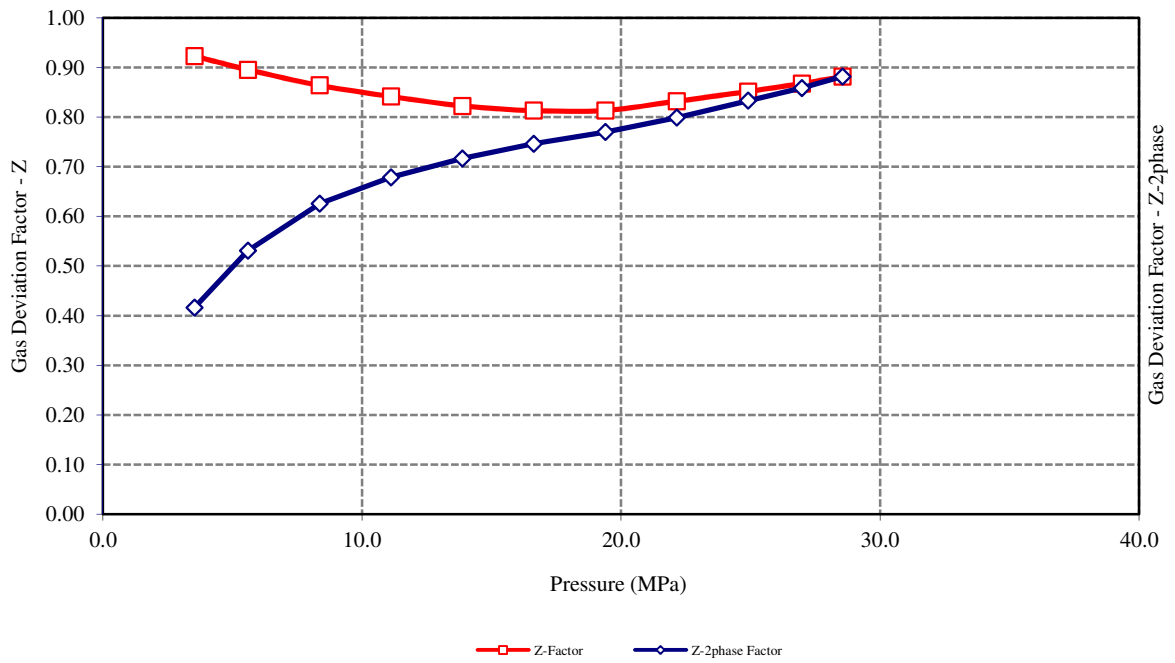
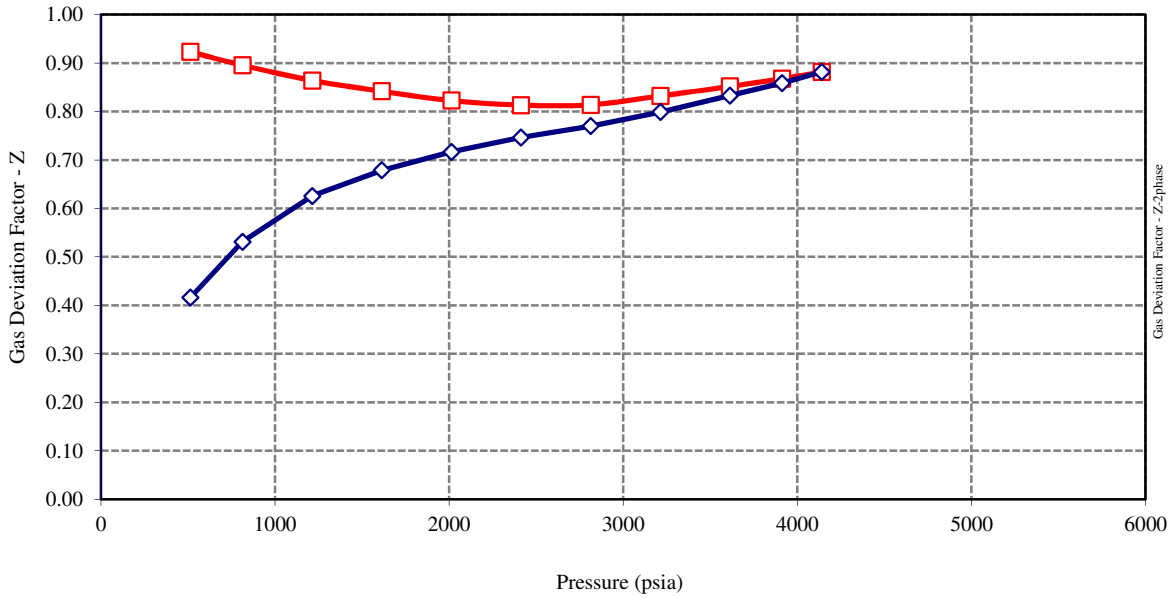


FIGURE 8
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
CONSTANT VOLUME DEPLETION WELLSTREAM DENSITY @ 240.8 F (116.0 C)

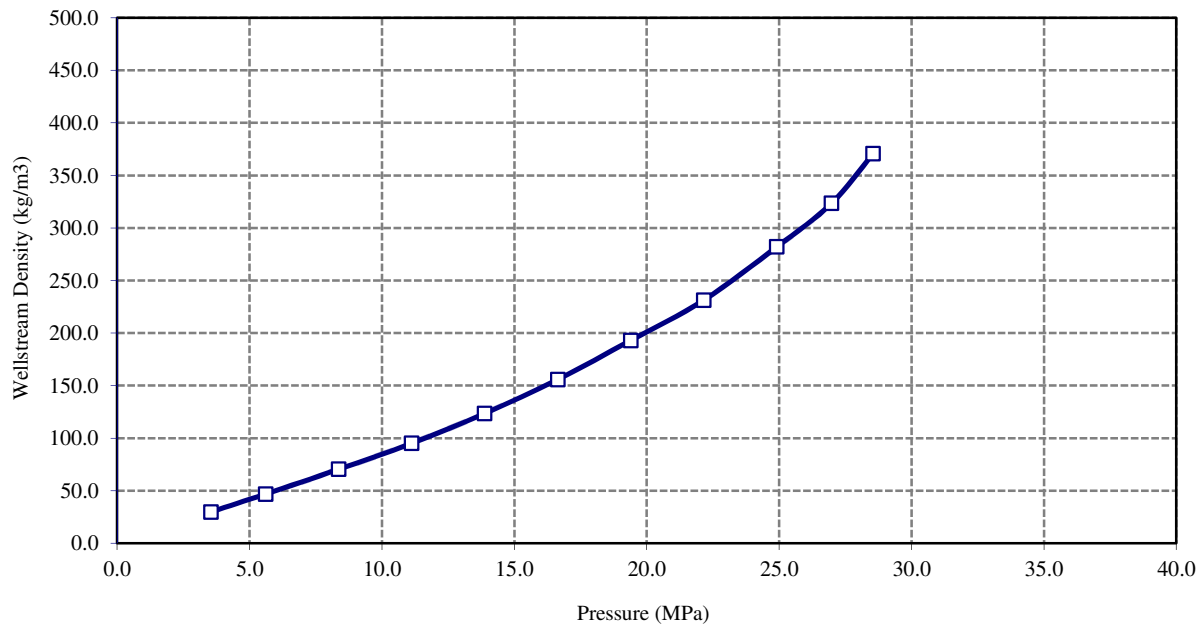
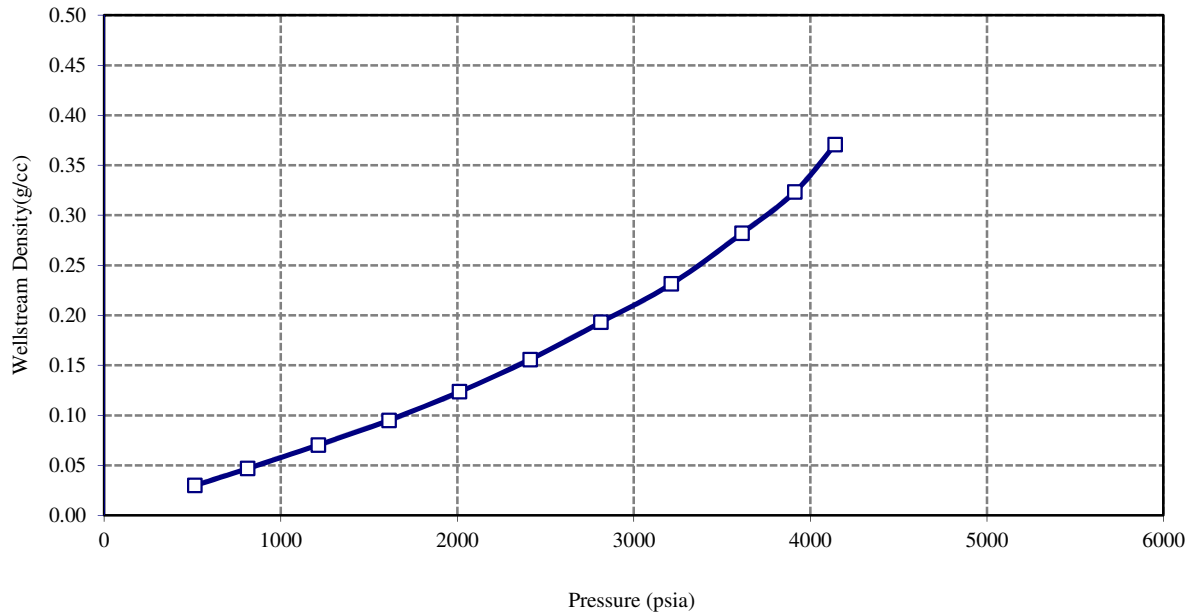


FIGURE 9
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
CONSTANT VOLUME DEPLETION WELLSTREAM VISCOSITY @ 240.8 F (116.0 C)

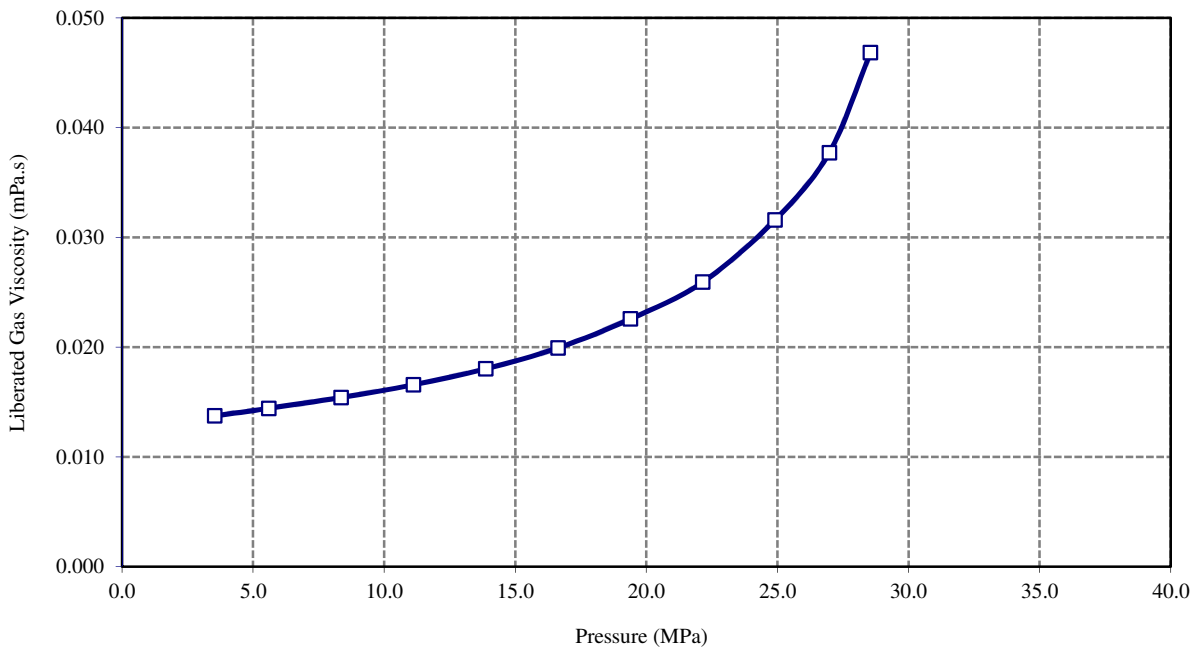
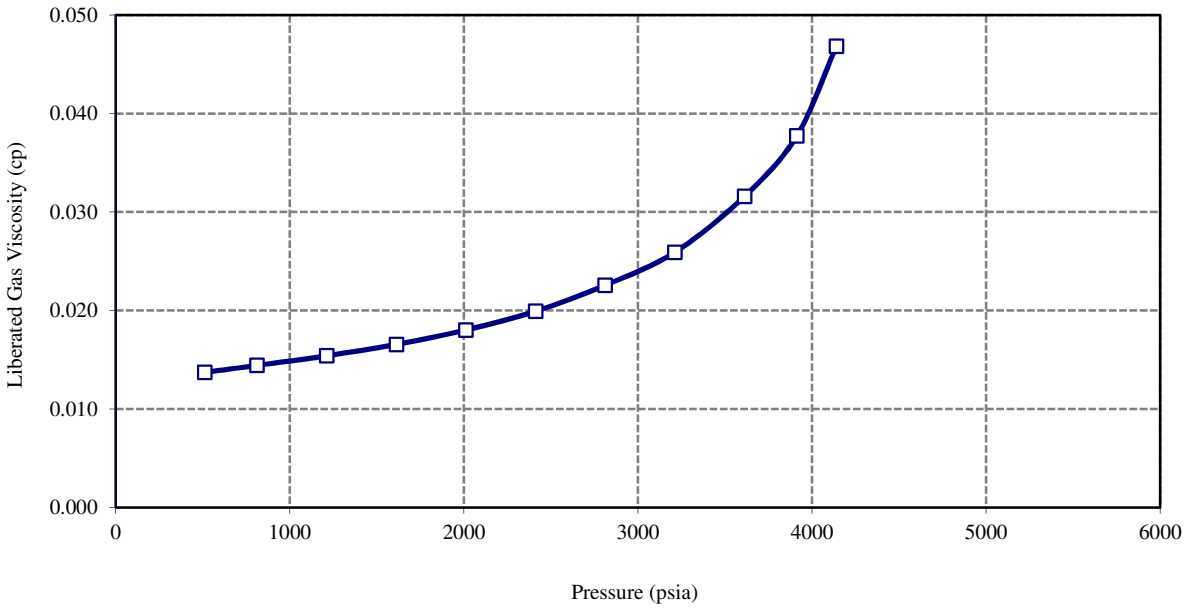


FIGURE 10
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
CONSTANT VOLUME DEPLETION P/Z PARAMETERS @ 240.8 F (116.0 C)

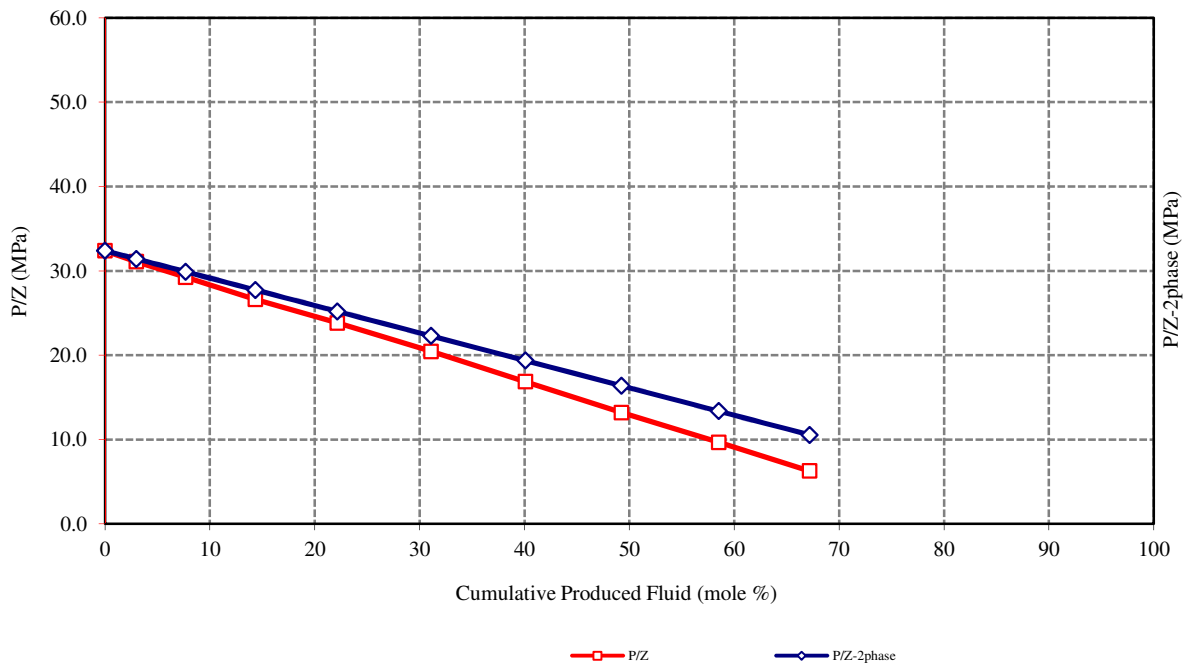
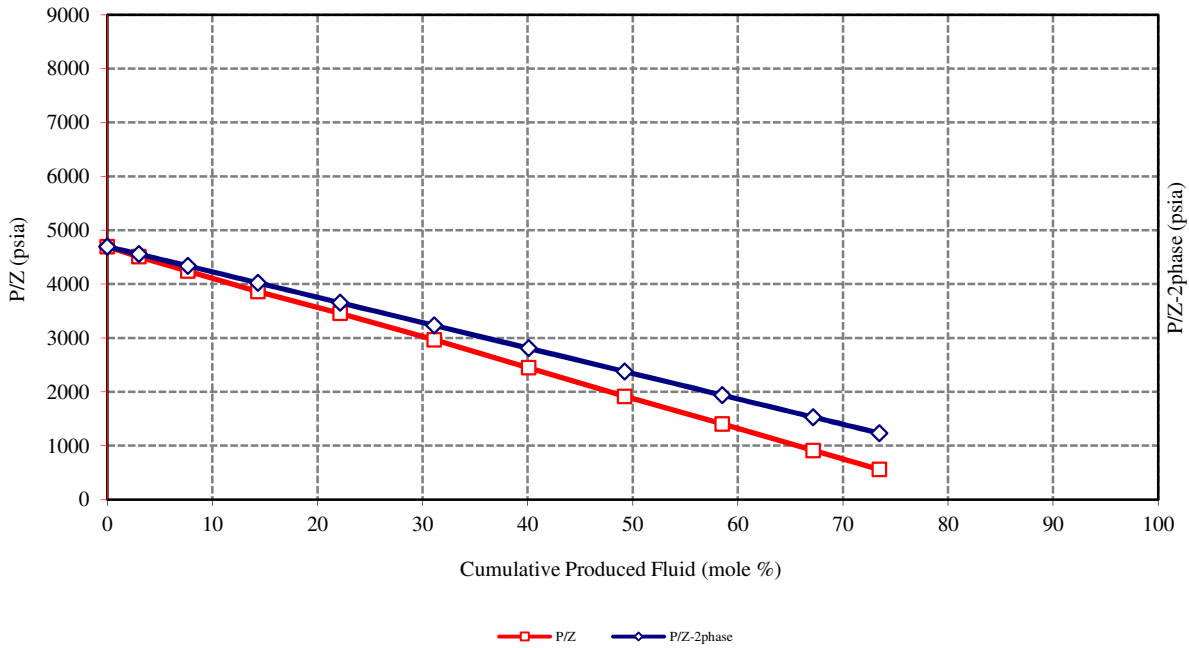
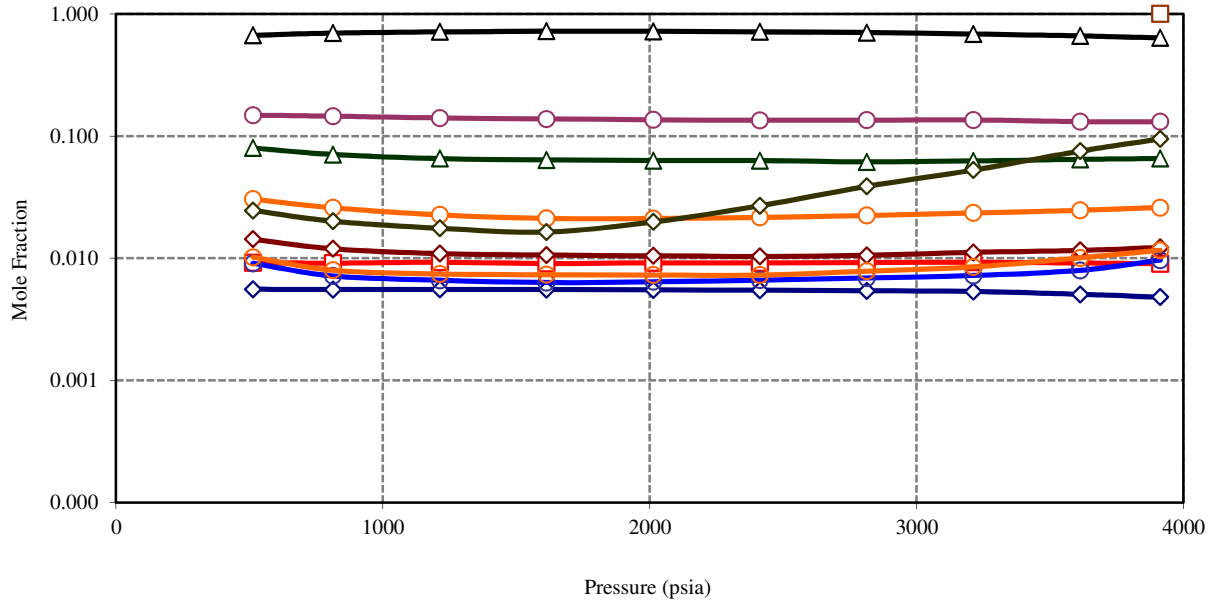
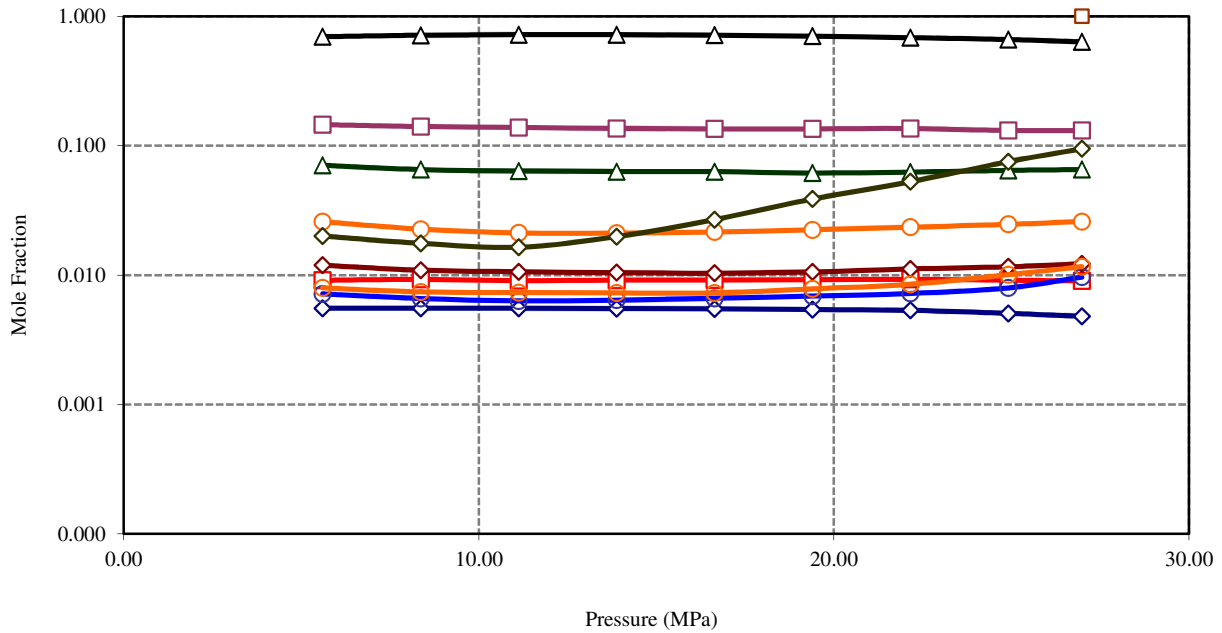


FIGURE 11
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
CONSTANT VOLUME DEPLETION WELLSTREAM COMPOSITION @ 240.8 F (116.0 C)

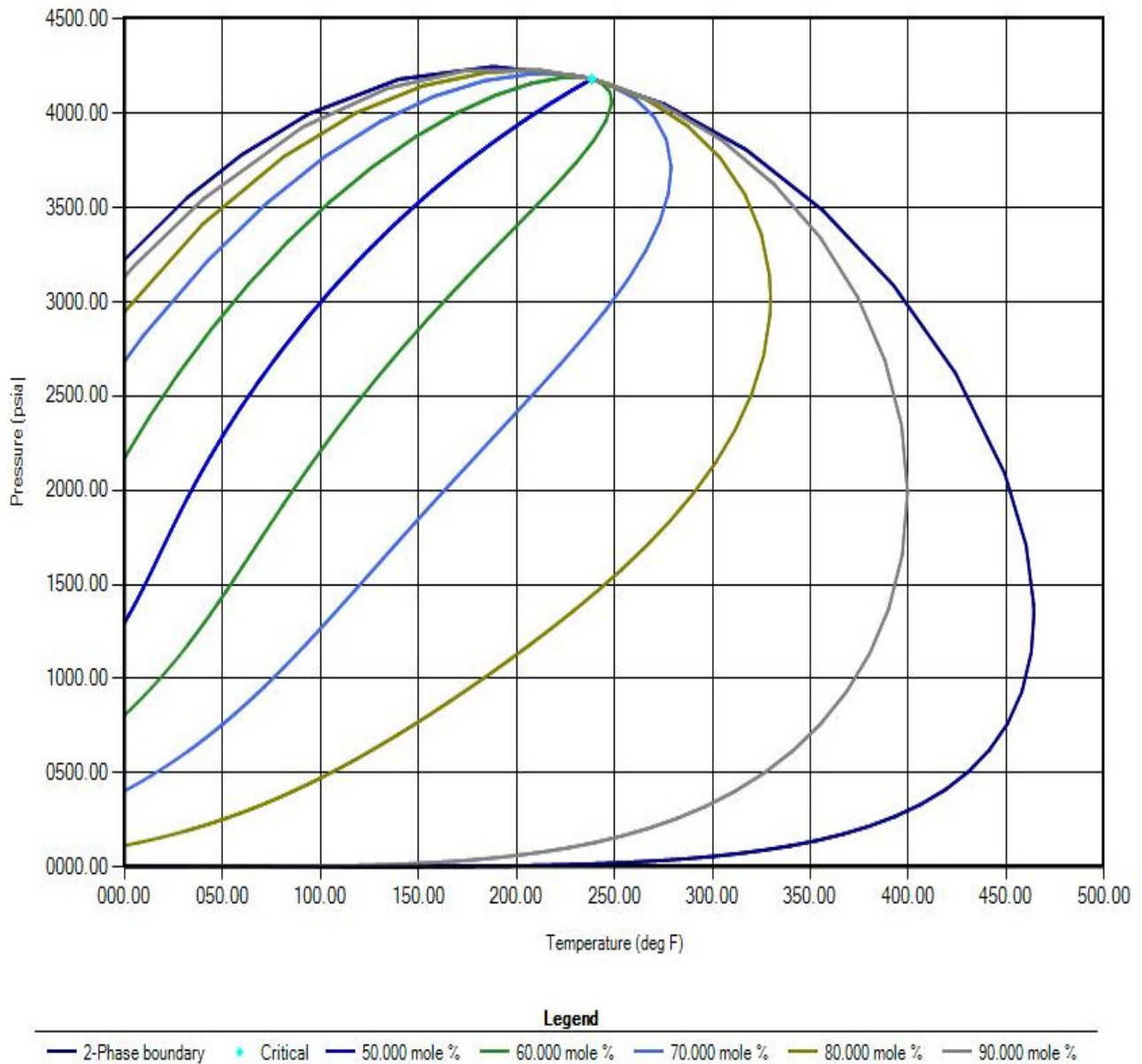


—□— N2
 —◇— CO2
 —△— C1
 —○— C2
 —△— C3
 —◇— i-C4
 —○— n-C4
 —◇— i-C5
 —○— n-C5
 —◇— C6
 —□— C7+



—□— N2
 —◇— CO2
 —△— C1
 —□— C2
 —△— C3
 —◇— i-C4
 —○— n-C4
 —◇— i-C5
 —○— n-C5
 —◇— C6
 —□— C7+

FIGURE 12
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
P-T DIAGRAM



APPENDIX A

RESERVOIR FLUID COMPOSITION

TABLE A1
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
COMPOSITIONAL ANALYSIS OF RESERVOIR FLUID

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0090	0.0068	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0048	0.0058	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 37.05
-259.1	Methane	C ₁	0.6216	0.2693	Density (g/cc) 0.3963
-128.0	Ethane	C ₂	0.1303	0.1058	
-44.0	Propane	C ₃	0.0663	0.0789	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0123	0.0193	
30.9	n-Butane	n-C ₄	0.0266	0.0417	Molecular Weight 148.84
82.0	i-Pentane	i-C ₅	0.0100	0.0195	Mole Fraction 0.1069
97.0	n-Pentane	n-C ₅	0.0122	0.0238	Density (g/cc) 0.7990
97 - 156	Hexanes	C ₆	0.0188	0.0438	
156 - 208.9	Heptanes	C ₇	0.0110	0.0298	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.0124	0.0382	
258.1 - 303.1	Nonanes	C ₉	0.0094	0.0324	Molecular Weight 160.93
303.1 - 345	Decanes	C ₁₀	0.0068	0.0261	Mole Fraction 0.0878
345 - 385	Undecanes	C ₁₁	0.0059	0.0233	Density (g/cc) 0.8145
385 - 419	Dodecanes	C ₁₂	0.0045	0.0194	
419 - 455	Tridecanes	C ₁₃	0.0042	0.0198	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0031	0.0161	
486 - 519.1	Pentadecanes	C ₁₅	0.0023	0.0128	Molecular Weight 256.18
519.1 - 550	Hexadecanes	C ₁₆	0.0017	0.0104	Mole Fraction 0.0289
550 - 557	Heptadecanes	C ₁₇	0.0015	0.0096	Density (g/cc) 0.8645
557 - 603	Octadecanes	C ₁₈	0.0014	0.0093	
603 - 626	Nonadecanes	C ₁₉	0.0012	0.0083	
626 - 651.9	Eicosanes	C ₂₀	0.0009	0.0069	
651.9 - 675	Heneicosanes	C ₂₁	0.0008	0.0062	
675 - 696.9	Docosanes	C ₂₂	0.0007	0.0056	
696.9 - 716	Tricosanes	C ₂₃	0.0006	0.0051	
716 - 736	Tetracosanes	C ₂₄	0.0005	0.0045	
736 - 755.1	Pentacosanes	C ₂₅	0.0005	0.0043	
755.1 - 774	Hexacosanes	C ₂₆	0.0004	0.0038	Recombination Parameters
774.1 - 792	Heptacosanes	C ₂₇	0.0003	0.0034	
792.1 - 809.1	Octacosanes	C ₂₈	0.0003	0.0030	Gas-Oil Ratio (cc/cc) 990.99
809.1 - 826	Nonacosanes	C ₂₉	0.0020	0.0214	Dead Oil Density (g/cc) 0.7661
Above 826	Tricontanes Plus	C ₃₀₊	0.0021	0.0299	Dead Oil MW (g/mol) 141.21
	NAPHTHENES				
120.0	Cyclopentane	C ₅ H ₁₀	0.0003	0.0005	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0016	0.0036	
178.0	Cyclohexane	C ₆ H ₁₂	0.0019	0.0043	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0045	0.0119	
	AROMATICS				
176.0	Benzene	C ₆ H ₆	0.0002	0.0005	
231.1	Toluene	C ₇ H ₈	0.0015	0.0037	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0013	0.0037	
291.9	o-Xylene	C ₈ H ₁₀	0.0009	0.0026	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0016	0.0051	
Total			1.0000	1.0000	

Note: Physical Properties calculated based GPA 2145-00 physical constants

TABLE A2
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
COMPOSITIONAL ANALYSIS OF FLASHED OIL

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0000	0.0000	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0000	0.0000	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 141.21
-259.1	Methane	C ₁	0.0000	0.0000	Density (g/cc) 0.7865
-128.0	Ethane	C ₂	0.0000	0.0000	
-44.0	Propane	C ₃	0.0063	0.0021	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0093	0.0041	
30.9	n-Butane	n-C ₄	0.0371	0.0164	Molecular Weight 154.01
82.0	i-Pentane	i-C ₅	0.0379	0.0208	Mole Fraction 0.8538
97.0	n-Pentane	n-C ₅	0.0556	0.0305	Density (g/cc) 0.8043
97 - 156	Hexanes	C ₆	0.1187	0.0778	
156 - 208.9	Heptanes	C ₇	0.0819	0.0624	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.1028	0.0893	
258.1 - 303.1	Nonanes	C ₉	0.0812	0.0792	Molecular Weight 165.25
303.1 - 345	Decanes	C ₁₀	0.0591	0.0639	Mole Fraction 0.7329
345 - 385	Undecanes	C ₁₁	0.0511	0.0571	Density (g/cc) 0.8164
385 - 419	Dodecanes	C ₁₂	0.0389	0.0477	
419 - 455	Tridecanes	C ₁₃	0.0365	0.0485	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0273	0.0394	
486 - 519.1	Pentadecanes	C ₁₅	0.0200	0.0314	Molecular Weight 256.18
519.1 - 550	Hexadecanes	C ₁₆	0.0152	0.0256	Mole Fraction 0.2518
550 - 557	Heptadecanes	C ₁₇	0.0131	0.0235	Density (g/cc) 0.8645
557 - 603	Octadecanes	C ₁₈	0.0120	0.0228	
603 - 626	Nonadecanes	C ₁₉	0.0101	0.0203	
626 - 651.9	Eicosanes	C ₂₀	0.0081	0.0170	
651.9 - 675	Heneicosanes	C ₂₁	0.0069	0.0152	
675 - 696.9	Docosanes	C ₂₂	0.0060	0.0139	
696.9 - 716	Tricosanes	C ₂₃	0.0052	0.0125	
716 - 736	Tetracosanes	C ₂₄	0.0044	0.0110	
736 - 755.1	Pentacosanes	C ₂₅	0.0040	0.0104	
755.1 - 774	Hexacosanes	C ₂₆	0.0034	0.0093	
774.1 - 792	Heptacosanes	C ₂₇	0.0030	0.0084	
792.1 - 809.1	Octacosanes	C ₂₈	0.0025	0.0075	
809.1 - 826	Nonacosanes	C ₂₉	0.0172	0.0525	
Above 826	Tricontanes Plus	C ₃₀₊	0.0181	0.0684	
	NAPHTHENES				
120.0	Cyclopentane	C ₅ H ₁₀	0.0022	0.0012	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0107	0.0068	
178.0	Cyclohexane	C ₆ H ₁₂	0.0137	0.0087	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0343	0.0256	
	AROMATICS				
176.0	Benzene	C ₆ H ₆	0.0019	0.0012	
231.1	Toluene	C ₇ H ₈	0.0115	0.0080	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0110	0.0089	
291.9	o-Xylene	C ₈ H ₁₀	0.0080	0.0064	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0137	0.0125	
Total			1.0000	1.0684	

Note: Physical Properties calculated based GPA 2145-00 physical constants

TABLE A3
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - RECOMBINED SAMPLE
COMPOSITIONAL ANALYSIS OF FLASHED GAS

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	(STB/MMscf)	(mL/m ³)
Nitrogen	N ₂	0.0102	0.0102		
Carbon Dioxide	CO ₂	0.0055	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.7022	0.7061		
Ethane	C ₂	0.1472	0.1480		
Propane	C ₃	0.0740	0.0744	48.345	271.431
i-Butane	i-C ₄	0.0127	0.0128	9.844	55.270
n-Butane	n-C ₄	0.0252	0.0254	18.885	106.027
i-Pentane	i-C ₅	0.0064	0.0064	5.549	31.154
n-Pentane	n-C ₅	0.0066	0.0066	5.657	31.764
Hexanes	C ₆	0.0059	0.0059	5.739	32.222
Heptanes	C ₇	0.0026	0.0026	2.838	15.936
Octanes	C ₈	0.0014	0.0015	1.753	9.840
Nonanes	C ₉	0.0001	0.0001	0.076	0.426
Decanes	C ₁₀	0.0000	0.0000	0.027	0.152
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	98.713	554.223
Propanes Plus	C ₃₊	0.1349	0.1357	98.713	554.223
Butanes Plus	C ₄₊	0.0609	0.0612	50.368	282.791
Pentanes Plus	C ₅₊	0.0230	0.0231	21.639	121.494

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	23.54 kg/kmol	23.54 lb/lb-mol	Ppc	660.8 psia	4.56 MPa
Specific Gravity	0.8128 (Air = 1)	0.8128 (Air = 1)	Tpc	425.4 R	236.3 K
MW of C7+	0.41 kg/kmol	0.41 lb/lbmol	Ppc*	659.1 psia	4.54 MPa
Density of C7+	0.7309 g/cc	730.9 kg/m ³	Tpc*	424.3 R	235.7 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,383.2 Btu/scf	51.63 MJ/m ³	Dry	1,258.1 Btu/scf	46.96 MJ/m ³
Wet	1,359.1 Btu/scf	50.73 MJ/m ³	Wet	1,236.2 Btu/scf	46.14 MJ/m ³

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC No.: 10058

APPENDIX D

SAMPLE VALIDATION

RATE 0 77 E3 SCMD

TABLE B1
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL3916
SAMPLE VALIDATION
GAS SAMPLE COLLECTION DATA

Project File:	CL-63169		
Company:	ENCANA CORPORATION		
Pool:	DUVERNEY		
Field:	WAHIGAN		
Well Location:	08-05-062-24W5		
Fluid Sample:	CYL3916		
Sample Description:	SEP GAS		
Sampling Company:	WEATHERFORD LABS		
Name of Sampler:	D.M		
Sampling Date:	14-Mar-13		
Sampling Point:	SEP METER RUN		
Sampling Temperature:	98.6 F	310.2 K	
Sampling Pressure:	1020 psia	7.03 MPa	
Reservoir Temperature:	N/A F	N/A K	
Reservoir Pressure:	N/A psia	N/A MPa	
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa	
Depth of Reported Pi	N/A mMD	N/A mss	

**TABLE B2
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL3916
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS**

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0084	0.0084		
Carbon Dioxide	CO ₂	0.0040	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.7784	0.7816		
Ethane	C ₂	0.1316	0.1321		
Propane	C ₃	0.0478	0.0480	31.200	175.173
i-Butane	i-C ₄	0.0066	0.0066	5.095	28.607
n-Butane	n-C ₄	0.0114	0.0114	8.520	47.837
i-Pentane	i-C ₅	0.0027	0.0027	2.370	13.305
n-Pentane	n-C ₅	0.0028	0.0028	2.422	13.597
Hexanes	C ₆	0.0033	0.0033	3.202	17.976
Heptanes	C ₇	0.0014	0.0014	1.575	8.846
Octanes	C ₈	0.0012	0.0012	1.508	8.468
Nonanes	C ₉	0.0001	0.0001	0.194	1.088
Decanes	C ₁₀	0.0002	0.0002	0.242	1.359
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	56.328	316.257
Propanes Plus	C ₃₊	0.0775	0.0779	56.328	316.257
Butanes Plus	C ₄₊	0.0298	0.0299	25.128	141.084
Pentanes Plus	C ₅₊	0.0118	0.0119	11.513	64.640

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	21.00 kg/kmol	21.00 lb/lb-mol	Ppc	665.9 psia	4.59 MPa
Specific Gravity	0.7251 (Air = 1)	0.7251 (Air = 1)	Tpc	399.5 R	221.9 K
MW of C7+	103.89 kg/kmol	103.89 lb/lbmol	Ppc*	664.5 psia	4.58 MPa
Density of C7+	0.7367 g/cc	736.7 kg/m3	Tpc*	398.7 R	221.5 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,253.1 Btu/scf	46.77 MJ/m3	Dry	1,136.6 Btu/scf	42.43 MJ/m3
Wet	1,231.3 Btu/scf	45.96 MJ/m3	Wet	1,116.8 Btu/scf	41.69 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8886

ID: 15969

**TABLE B3
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL3901
SAMPLE VALIDATION
GAS SAMPLE COLLECTION DATA**

Project File:	CL-63169	
Company:	ENCANA CORPORATION	
Pool:	DUVERNEY	
Field:	WAHIGAN	
Well Location:	08-05-062-24W5	
Fluid Sample:	CYL3901	
Sample Description:	SEP GAS	
Sampling Company:	WEATHERFORD LABS	
Name of Sampler:	D.M	
Sampling Date:	14-Mar-13	
Sampling Point:	SEP METER RUN	
Sampling Temperature:	93.2 F	307.2 K
Sampling Pressure:	1025 psia	7.07 MPa
Reservoir Temperature:	N/A F	N/A K
Reservoir Pressure:	N/A psia	N/A MPa
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa
Depth of Reported Pi	N/A mMD	N/A mss

TABLE B4
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL3901
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0088	0.0089		
Carbon Dioxide	CO ₂	0.0041	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.7774	0.7806		
Ethane	C ₂	0.1315	0.1320		
Propane	C ₃	0.0475	0.0477	31.023	174.181
i-Butane	i-C ₄	0.0065	0.0065	5.035	28.267
n-Butane	n-C ₄	0.0112	0.0112	8.380	47.048
i-Pentane	i-C ₅	0.0026	0.0027	2.301	12.919
n-Pentane	n-C ₅	0.0027	0.0027	2.339	13.131
Hexanes	C ₆	0.0050	0.0050	4.842	27.185
Heptanes	C ₇	0.0013	0.0013	1.461	8.205
Octanes	C ₈	0.0011	0.0011	1.344	7.543
Nonanes	C ₉	0.0001	0.0001	0.166	0.931
Decanes	C ₁₀	0.0001	0.0001	0.204	1.144
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	57.094	320.553
Propanes Plus	C ₃₊	0.0782	0.0785	57.094	320.553
Butanes Plus	C ₄₊	0.0307	0.0308	26.070	146.372
Pentanes Plus	C ₅₊	0.0130	0.0131	12.656	71.057

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	21.07 kg/kmol	21.07 lb/lb-mol	P _{pc}	665.6 psia	4.59 MPa
Specific Gravity	0.7275 (Air = 1)	0.7275 (Air = 1)	T _{pc}	399.9 R	222.2 K
MW of C7+	103.61 kg/kmol	103.61 lb/lbmol	P _{pc} *	664.2 psia	4.58 MPa
Density of C7+	0.7362 g/cc	736.2 kg/m3	T _{pc} *	399.1 R	221.7 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,255.9 Btu/scf	46.88 MJ/m3	Dry	1,139.2 Btu/scf	42.52 MJ/m3
Wet	1,234.0 Btu/scf	46.06 MJ/m3	Wet	1,119.4 Btu/scf	41.78 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8887

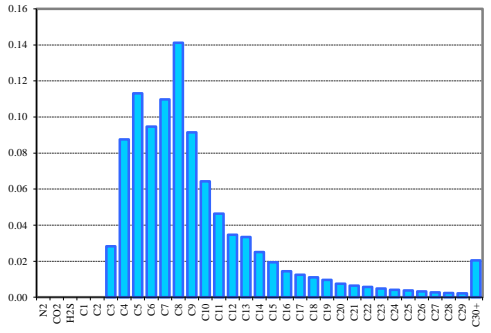
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**TABLE B5
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE Z83034
SAMPLE VALIDATION
OIL SAMPLE COLLECTION DATA**

Project File:	CL-63169	
Company:	ENCANA CORPORATION	
Pool:	DUVERNAY	
Field:	WAHIGAN	
Well Location:	08-05-062-24W5	
Fluid Sample:	Z83034	
Sample Description:	LIVE SEP OIL	
Sampling Company:	WEATHERFORD LABS	
Name of Sampler:	D.M	
Sampling Date:	14-Mar-13	
Sampling Point:	SEP UPSTREAM DUMP VALVE	
Sampling Temperature:	86.0 F	303.2 K
Sampling Pressure:	1036 psia	7.14 MPa
Reservoir Temperature:	N/A F	N/A K
Reservoir Pressure:	N/A psia	N/A MPa
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa
Depth of Reported Pi	N/A mMD	N/A mss

TABLE B6
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE Z83034
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED OIL

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0000	0.0000	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0000	0.0000	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 132.33
-259.1	Methane	C ₁	0.0000	0.0000	Density (g/cc) 0.7742
-128.0	Ethane	C ₂	0.0000	0.0000	
-44.0	Propane	C ₃	0.0283	0.0094	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0216	0.0095	
30.9	n-Butane	n-C ₄	0.0660	0.0290	Molecular Weight 152.83
82.0	i-Pentane	i-C ₅	0.0478	0.0260	Mole Fraction 0.7710
97.0	n-Pentane	n-C ₅	0.0653	0.0356	Density (g/cc) 0.8045
97 - 156	Hexanes	C ₆	0.0919	0.0599	
156 - 208.9	Heptanes	C ₇	0.0822	0.0622	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.0971	0.0838	
258.1 - 303.1	Nonanes	C ₉	0.0744	0.0721	Molecular Weight 162.23
303.1 - 345	Decanes	C ₁₀	0.0538	0.0578	Mole Fraction 0.6763
345 - 385	Undecanes	C ₁₁	0.0464	0.0515	Density (g/cc) 0.8149
385 - 419	Dodecanes	C ₁₂	0.0347	0.0422	
419 - 455	Tridecanes	C ₁₃	0.0334	0.0441	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0251	0.0361	
486 - 519.1	Pentadecanes	C ₁₅	0.0194	0.0302	Molecular Weight 254.09
519.1 - 550	Hexadecanes	C ₁₆	0.0145	0.0243	Mole Fraction 0.2233
550 - 557	Heptadecanes	C ₁₇	0.0124	0.0223	Density (g/cc) 0.8660
557 - 603	Octadecanes	C ₁₈	0.0111	0.0210	
603 - 626	Nonadecanes	C ₁₉	0.0096	0.0191	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0075	0.0155	
651.9 - 675	Heneicosanes	C ₂₁	0.0065	0.0142	Molecular Weight 552.81
675 - 696.9	Docosanes	C ₂₂	0.0057	0.0131	Mole Fraction 0.0204
696.9 - 716	Tricosanes	C ₂₃	0.0048	0.0114	Density (g/cc) 0.9806
716 - 736	Tetracosanes	C ₂₄	0.0041	0.0102	
736 - 755.1	Pentacosanes	C ₂₅	0.0038	0.0100	
755.1 - 774	Hexacosanes	C ₂₆	0.0032	0.0087	
774.1 - 792	Heptacosanes	C ₂₇	0.0027	0.0077	
792.1 - 809.1	Octacosanes	C ₂₈	0.0024	0.0070	
809.1 - 826	Nonacosanes	C ₂₉	0.0021	0.0064	
Above 826	Tricontanes Plus	C ₃₀₊	0.0204	0.0851	
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0028	0.0015	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0113	0.0072	
178.0	Cyclohexane	C ₆ H ₁₂	0.0143	0.0091	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0336	0.0249	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0021	0.0012	
231.1	Toluene	C ₇ H ₈	0.0105	0.0073	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0098	0.0079	
291.9	o-Xylene	C ₈ H ₁₀	0.0072	0.0058	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0105	0.0096	
Total			1.0000	1.0000	



Note: Physical properties are calculated based on GPA 2145-00 physical constants GC ID: 2207 ID: 15942-2425

TABLE B7
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE
Z83034 SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0104	0.0104		
Carbon Dioxide	CO ₂	0.0035	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.7596	0.7622		
Ethane	C ₂	0.1312	0.1316		
Propane	C ₃	0.0536	0.0538	35.006	196.540
i-Butane	i-C ₄	0.0082	0.0082	6.338	35.587
n-Butane	n-C ₄	0.0147	0.0147	10.976	61.624
i-Pentane	i-C ₅	0.0038	0.0039	3.338	18.744
n-Pentane	n-C ₅	0.0041	0.0041	3.498	19.640
Hexanes	C ₆	0.0069	0.0069	6.745	37.871
Heptanes	C ₇	0.0021	0.0021	2.345	13.166
Octanes	C ₈	0.0016	0.0016	1.922	10.790
Nonanes	C ₉	0.0002	0.0002	0.206	1.158
Decanes	C ₁₀	0.0002	0.0002	0.325	1.827
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	70.700	396.947
Propanes Plus	C ₃₊	0.0954	0.0957	70.700	396.947
Butanes Plus	C ₄₊	0.0418	0.0419	35.695	200.407
Pentanes Plus	C ₅₊	0.0189	0.0190	18.380	103.196

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	21.86 kg/kmol	21.86 lb/lb-mol	Ppc	662.8 psia	4.57 MPa
Specific Gravity	0.7546 (Air = 1)	0.7546 (Air = 1)	Tpc	406.9 R	226.1 K
MW of C7+	103.25 kg/kmol	103.25 lb/lbmol	Ppc*	661.6 psia	4.56 MPa
Density of C7+	0.7355 g/cc	735.5 kg/m3	Tpc*	406.2 R	225.7 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,297.2 Btu/scf	48.42 MJ/m3	Dry	1,177.8 Btu/scf	43.96 MJ/m3
Wet	1,274.6 Btu/scf	47.58 MJ/m3	Wet	1,157.3 Btu/scf	43.20 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8854

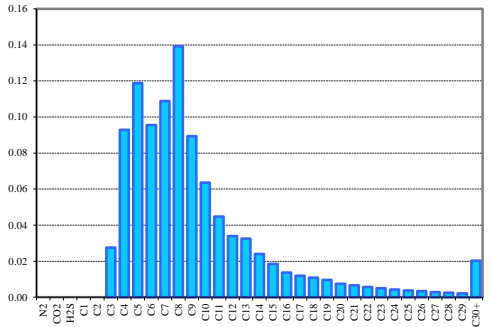
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TABLE B8
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE L37003
SAMPLE VALIDATION
OIL SAMPLE COLLECTION DATA

Project File:	CL-63169	
Company:	ENCANA CORPORATION	
Pool:	DUVERNAY	
Field:	WAHIGAN	
Well Location:	08-05-062-24W5	
Fluid Sample:	L37003	
Sample Description:	LIVE SEP OIL	
Sampling Company:	WEATHERFORD LABS	
Name of Sampler:	D.M	
Sampling Date:	14-Mar-13	
Sampling Point:	SEP UPSTREAM DUMP VALVE	
Sampling Temperature:	93.2 F	307.2 K
Sampling Pressure:	1036 psia	7.14 MPa
Reservoir Temperature:	N/A F	N/A K
Reservoir Pressure:	N/A psia	N/A MPa
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa
Depth of Reported Pi	N/A mMD	N/A mss

TABLE B9
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE L37003
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED OIL

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0000	0.0000	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0000	0.0000	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 131.59
-259.1	Methane	C ₁	0.0000	0.0000	Density (g/cc) 0.7732
-128.0	Ethane	C ₂	0.0000	0.0000	
-44.0	Propane	C ₃	0.0276	0.0092	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0227	0.0100	
30.9	n-Butane	n-C ₄	0.0702	0.0310	Molecular Weight 153.02
82.0	i-Pentane	i-C ₅	0.0504	0.0276	Mole Fraction 0.7607
97.0	n-Pentane	n-C ₅	0.0684	0.0375	Density (g/cc) 0.8051
97 - 156	Hexanes	C ₆	0.0928	0.0608	
156 - 208.9	Heptanes	C ₇	0.0814	0.0620	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.0953	0.0827	
258.1 - 303.1	Nonanes	C ₉	0.0724	0.0706	Molecular Weight 162.69
303.1 - 345	Decanes	C ₁₀	0.0511	0.0553	Mole Fraction 0.6651
345 - 385	Undecanes	C ₁₁	0.0447	0.0500	Density (g/cc) 0.8158
385 - 419	Dodecanes	C ₁₂	0.0339	0.0414	
419 - 455	Tridecanes	C ₁₃	0.0326	0.0433	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0240	0.0347	
486 - 519.1	Pentadecanes	C ₁₅	0.0185	0.0290	Molecular Weight 256.14
519.1 - 550	Hexadecanes	C ₁₆	0.0137	0.0232	Mole Fraction 0.2194
550 - 557	Heptadecanes	C ₁₇	0.0120	0.0216	Density (g/cc) 0.8670
557 - 603	Octadecanes	C ₁₈	0.0109	0.0209	
603 - 626	Nonadecanes	C ₁₉	0.0096	0.0191	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0075	0.0156	
651.9 - 675	Heneicosanes	C ₂₁	0.0066	0.0146	Molecular Weight 558.87
675 - 696.9	Docosanes	C ₂₂	0.0057	0.0132	Mole Fraction 0.0202
696.9 - 716	Tricosanes	C ₂₃	0.0051	0.0122	Density (g/cc) 0.9813
716 - 736	Tetracosanes	C ₂₄	0.0043	0.0108	
736 - 755.1	Pentacosanes	C ₂₅	0.0038	0.0100	
755.1 - 774	Hexacosanes	C ₂₆	0.0033	0.0091	
774.1 - 792	Heptacosanes	C ₂₇	0.0029	0.0083	
792.1 - 809.1	Octacosanes	C ₂₈	0.0025	0.0073	
809.1 - 826	Nonacosanes	C ₂₉	0.0022	0.0067	
Above 826	Tricontanes Plus	C ₃₀₊	0.0202	0.0858	
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0027	0.0014	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0113	0.0072	
178.0	Cyclohexane	C ₆ H ₁₂	0.0142	0.0091	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0335	0.0250	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0020	0.0012	
231.1	Toluene	C ₇ H ₈	0.0106	0.0074	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0097	0.0078	
291.9	o-Xylene	C ₈ H ₁₀	0.0071	0.0058	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0124	0.0113	
Total			1.0000	1.0000	



Note: Physical properties are calculated based on GPA 2145-00 physical constants GC ID: 2264 ID: 16009-2426

TABLE B10
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 -DUVERNAY- SAMPLE
L37003 SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0084	0.0084		
Carbon Dioxide	CO ₂	0.0034	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.7697	0.7723		
Ethane	C ₂	0.1295	0.1300		
Propane	C ₃	0.0518	0.0520	33.852	190.062
i-Butane	i-C ₄	0.0080	0.0080	6.224	34.944
n-Butane	n-C ₄	0.0145	0.0146	10.858	60.964
i-Pentane	i-C ₅	0.0040	0.0040	3.438	19.302
n-Pentane	n-C ₅	0.0043	0.0043	3.667	20.586
Hexanes	C ₆	0.0018	0.0018	1.714	9.621
Heptanes	C ₇	0.0024	0.0024	2.608	14.645
Octanes	C ₈	0.0017	0.0017	2.117	11.886
Nonanes	C ₉	0.0002	0.0002	0.224	1.256
Decanes	C ₁₀	0.0003	0.0003	0.442	2.483
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	65.143	365.748
Propanes Plus	C ₃₊	0.0889	0.0892	65.143	365.748
Butanes Plus	C ₄₊	0.0371	0.0372	31.291	175.686
Pentanes Plus	C ₅₊	0.0146	0.0146	14.209	79.778

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	21.44 kg/kmol	21.44 lb/lb-mol	Ppc	664.2 psia	4.58 MPa
Specific Gravity	0.7403 (Air = 1)	0.7403 (Air = 1)	Tpc	403.7 R	224.3 K
MW of C7+	103.59 kg/kmol	103.59 lb/lbmol	Ppc*	663.0 psia	4.57 MPa
Density of C7+	0.7359 g/cc	735.9 kg/m3	Tpc*	403.0 R	223.9 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,278.9 Btu/scf	47.74 MJ/m3	Dry	1,160.7 Btu/scf	43.32 MJ/m3
Wet	1,256.7 Btu/scf	46.91 MJ/m3	Wet	1,140.5 Btu/scf	42.57 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8851

ID: 15939

RATE 1 124 E3 SCMD

TABLE B11
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL4029
SAMPLE VALIDATION
GAS SAMPLE COLLECTION DATA

Project File:	CL-63169	
Company:	ENCANA CORPORATION	
Pool:	DUVERNAY	
Field:	WAHIGAN	
Well Location:	08-05-062-24W5	
Fluid Sample:	CYL4029	
Sample Description:	SEP GAS	
Sampling Company:	WEATHERFORD LABS	
Name of Sampler:	NICK. C	
Sampling Date:	12-Apr-13	
Sampling Point:	SEP METER RUN	
Sampling Temperature:	104.0 F	313.2 K
Sampling Pressure:	1022 psia	7.05 MPa
Reservoir Temperature:	N/A F	N/A K
Reservoir Pressure:	N/A psia	N/A MPa
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa
Depth of Reported Pi	N/A mMD	N/A mss

**TABLE B12
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL4029
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS**

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0083	0.0083		
Carbon Dioxide	CO ₂	0.0043	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.7754	0.7788		
Ethane	C ₂	0.1333	0.1339		
Propane	C ₃	0.0497	0.0499	32.448	182.178
i-Butane	i-C ₄	0.0068	0.0068	5.272	29.599
n-Butane	n-C ₄	0.0121	0.0121	9.025	50.672
i-Pentane	i-C ₅	0.0028	0.0028	2.459	13.806
n-Pentane	n-C ₅	0.0029	0.0030	2.535	14.235
Hexanes	C ₆	0.0013	0.0013	1.285	7.215
Heptanes	C ₇	0.0014	0.0014	1.559	8.753
Octanes	C ₈	0.0013	0.0013	1.538	8.636
Nonanes	C ₉	0.0002	0.0002	0.212	1.190
Decanes	C ₁₀	0.0002	0.0002	0.254	1.425
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	56.587	317.708
Propanes Plus	C ₃₊	0.0787	0.0790	56.587	317.708
Butanes Plus	C ₄₊	0.0290	0.0291	24.139	135.531
Pentanes Plus	C ₅₊	0.0101	0.0102	9.842	55.261

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	21.00 kg/kmol	21.00 lb/lb-mol	P _{pc}	666.3 psia	4.59 MPa
Specific Gravity	0.7251 (Air = 1)	0.7251 (Air = 1)	T _{pc}	399.9 R	222.2 K
MW of C7+	104.11 kg/kmol	104.11 lb/lbmol	P _{pc} *	664.8 psia	4.58 MPa
Density of C7+	0.7371 g/cc	737.1 kg/m3	T _{pc} *	399.1 R	221.7 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,252.8 Btu/scf	46.76 MJ/m3	Dry	1,136.3 Btu/scf	42.42 MJ/m3
Wet	1,231.0 Btu/scf	45.95 MJ/m3	Wet	1,116.5 Btu/scf	41.68 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8882

ID: 15965

TABLE B13
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL2954
SAMPLE VALIDATION
GAS SAMPLE COLLECTION DATA

Project File:	CL-63169	
Company:	ENCANA CORPORATION	
Pool:	DUVERNEY	
Field:	WAHIGAN	
Well Location:	08-05-062-24W5	
Fluid Sample:	CYL2954	
Sample Description:	SEP GAS	
Sampling Company:	WEATHERFORD LABS	
Name of Sampler:	NICK. C	
Sampling Date:	12-Apr-13	
Sampling Point:	SEP METER RUN	
Sampling Temperature:	104.0 F	313.2 K
Sampling Pressure:	1022 psia	7.05 MPa
Reservoir Temperature:	N/A F	N/A K
Reservoir Pressure:	N/A psia	N/A MPa
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa
Depth of Reported Pi	N/A mMD	N/A mss

TABLE B14
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL2954
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0085	0.0085		
Carbon Dioxide	CO ₂	0.0045	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.7736	0.7771		
Ethane	C ₂	0.1328	0.1334		
Propane	C ₃	0.0496	0.0498	32.389	181.848
i-Butane	i-C ₄	0.0068	0.0069	5.308	29.804
n-Butane	n-C ₄	0.0121	0.0122	9.089	51.031
i-Pentane	i-C ₅	0.0029	0.0029	2.494	14.005
n-Pentane	n-C ₅	0.0030	0.0030	2.570	14.428
Hexanes	C ₆	0.0039	0.0039	3.802	21.348
Heptanes	C ₇	0.0013	0.0013	1.413	7.935
Octanes	C ₈	0.0009	0.0009	1.069	6.000
Nonanes	C ₉	0.0001	0.0001	0.106	0.593
Decanes	C ₁₀	0.0001	0.0001	0.107	0.602
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	58.348	327.593
Propanes Plus	C ₃₊	0.0807	0.0810	58.348	327.593
Butanes Plus	C ₄₊	0.0311	0.0312	25.959	145.746
Pentanes Plus	C ₅₊	0.0121	0.0121	11.561	64.911

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	21.12 kg/kmol	21.12 lb/lb-mol	Ppc	665.9 psia	4.59 MPa
Specific Gravity	0.7293 (Air = 1)	0.7293 (Air = 1)	Tpc	400.9 R	222.7 K
MW of C7+	102.22 kg/kmol	102.22 lb/lbmol	Ppc*	664.4 psia	4.58 MPa
Density of C7+	0.7339 g/cc	733.9 kg/m3	Tpc*	400.0 R	222.2 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,258.4 Btu/scf	46.97 MJ/m3	Dry	1,141.6 Btu/scf	42.61 MJ/m3
Wet	1,236.5 Btu/scf	46.16 MJ/m3	Wet	1,121.7 Btu/scf	41.87 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8844

ID: 15928

TABLE B15
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE T39043
SAMPLE VALIDATION
SAMPLE COLLECTION DATA

Project File:	CL-63169		
Company:	ENCANA CORPORATION		
Pool:	DUVERNAY		
Field:	WAHIGAN		
Well Location:	08-05-062-24W5		
Fluid Sample:	T39043		
Sample Description:	LIVE SEP OIL		
Sampling Company:	WEATHERFORD LABS		
Name of Sampler:	NICK. C		
Sampling Date:	12-Apr-13		
Sampling Point:	SEPARATOR		
Sampling Temperature:	107.6 F		315.2 K
Sampling Pressure:	1022 psia		7.05 MPa
Reservoir Temperature:	N/A F		N/A K
Reservoir Pressure:	N/A psia		N/A MPa
Initial Reservoir Pressure (Pi)	N/A psia		N/A MPa
Depth of Reported Pi	N/A mMD		N/A mss

TABLE B16
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE T39043
SAMPLE VALIDATION
MAIN PVT RESULTS

INITIAL RESERVOIR CONDITIONS

Reservoir Pressure	N/A psia	N/A MPa
Reservoir Temperature:	N/A F	N/A K

SINGLE-STAGE SEPARATOR TEST @ 1,513 psia (10.43 MPa) AND 140.0 F (333.2 K)

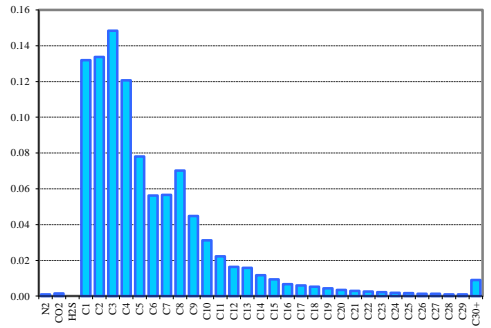
At Separator Test Conditions		
Oil Formation Volume Factor	1.4401 res.bbl/STB	1.4401 res.m ³ /m ³
Solution Gas-Oil Ratio	792.50 scf/STB	141.15 m ³ /m ³
Oil Density	0.6766 g/cm ³	676.6 kg/m ³
At Tank Conditions		
Residual Oil Density	0.7607 g/cm ³	760.7 kg/m ³
API Gravity	54.50	54.50

SINGLE-STAGE SEPARATOR TEST - MATERIAL BALANCE CHECK

Oil FVF @ 1513 psia (10.43 MPa) (Measured)	1.4401	res.bbl/STB (res.m ³ /m ³)
Oil FVF @ 1513 psia (10.43 MPa) (Calculated)	1.4500	res.bbl/STB (res.m ³ /m ³)
Absolute Relative Error	0.6773	(%)

TABLE B17
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE T39043
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF SEPARATOR FLUID

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0009	0.0003	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0014	0.0008	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 82.78
-259.1	Methane	C ₁	0.1318	0.0256	
-128.0	Ethane	C ₂	0.1337	0.0486	
-44.0	Propane	C ₃	0.1484	0.0791	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0375	0.0263	
30.9	n-Butane	n-C ₄	0.0832	0.0584	Molecular Weight 149.01
82.0	i-Pentane	i-C ₅	0.0348	0.0303	Mole Fraction 0.3835
97.0	n-Pentane	n-C ₅	0.0433	0.0378	Density (g/cc) 0.8004
97 - 156	Hexanes	C ₆	0.0548	0.0571	
156 - 208.9	Heptanes	C ₇	0.0420	0.0508	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.0479	0.0661	
258.1 - 303.1	Nonanes	C ₉	0.0364	0.0565	Molecular Weight 159.53
303.1 - 345	Decanes	C ₁₀	0.0268	0.0461	Mole Fraction 0.3142
345 - 385	Undecanes	C ₁₁	0.0222	0.0394	Density (g/cc) 0.8129
385 - 419	Dodecanes	C ₁₂	0.0164	0.0319	
419 - 455	Tridecanes	C ₁₃	0.0158	0.0335	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0117	0.0269	
486 - 519.1	Pentadecanes	C ₁₅	0.0094	0.0233	Molecular Weight 253.68
519.1 - 550	Hexadecanes	C ₁₆	0.0067	0.0181	Mole Fraction 0.1037
550 - 557	Heptadecanes	C ₁₇	0.0059	0.0168	Density (g/cc) 0.8658
557 - 603	Octadecanes	C ₁₈	0.0052	0.0158	
603 - 626	Nonadecanes	C ₁₉	0.0044	0.0141	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0035	0.0115	
651.9 - 675	Heneicosanes	C ₂₁	0.0030	0.0105	Molecular Weight 579.33
675 - 696.9	Docosanes	C ₂₂	0.0025	0.0093	Mole Fraction 0.0090
696.9 - 716	Tricosanes	C ₂₃	0.0021	0.0082	Density (g/cc) 0.9837
716 - 736	Tetracosanes	C ₂₄	0.0019	0.0075	
736 - 755.1	Pentacosanes	C ₂₅	0.0016	0.0069	
755.1 - 774	Hexacosanes	C ₂₆	0.0014	0.0059	Recombination Parameters
774.1 - 792	Heptacosanes	C ₂₇	0.0012	0.0056	
792.1 - 809.1	Octacosanes	C ₂₈	0.0010	0.0045	Gas-Oil Ratio (cc/cc) 141.15
809.1 - 826	Nonacosanes	C ₂₉	0.0009	0.0043	Dead Oil Density (g/cc) 0.7607
Above 826	Tricontanes Plus	C ₃₀₊	0.0090	0.0633	Dead Oil MW (g/mol) 129.12
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0014	0.0012	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0060	0.0061	
178.0	Cyclohexane	C ₆ H ₁₂	0.0074	0.0075	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0170	0.0201	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0011	0.0011	
231.1	Toluene	C ₇ H ₈	0.0054	0.0060	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0048	0.0062	
291.9	o-Xylene	C ₈ H ₁₀	0.0035	0.0045	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0044	0.0064	
Total			1.0000	1.0000	

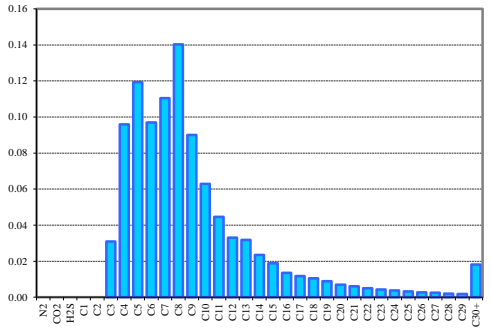


Note: Physical properties are calculated based on GPA 2145-00 physical constants

ID: 6747-2439

TABLE B18
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE T39043
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED OIL

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0000	0.0000	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0000	0.0000	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 129.12
-259.1	Methane	C ₁	0.0000	0.0000	Density (g/cc) 0.7694
-128.0	Ethane	C ₂	0.0000	0.0000	
-44.0	Propane	C ₃	0.0310	0.0106	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0235	0.0106	
30.9	n-Butane	n-C ₄	0.0724	0.0326	Molecular Weight 150.66
82.0	i-Pentane	i-C ₅	0.0504	0.0282	Mole Fraction 0.7538
97.0	n-Pentane	n-C ₅	0.0690	0.0385	Density (g/cc) 0.8023
97 - 156	Hexanes	C ₆	0.0941	0.0628	
156 - 208.9	Heptanes	C ₇	0.0825	0.0640	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.0959	0.0849	
258.1 - 303.1	Nonanes	C ₉	0.0733	0.0728	Molecular Weight 160.24
303.1 - 345	Decanes	C ₁₀	0.0540	0.0595	Mole Fraction 0.6569
345 - 385	Undecanes	C ₁₁	0.0447	0.0509	Density (g/cc) 0.8131
385 - 419	Dodecanes	C ₁₂	0.0330	0.0412	
419 - 455	Tridecanes	C ₁₃	0.0319	0.0432	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0235	0.0346	
486 - 519.1	Pentadecanes	C ₁₅	0.0189	0.0301	Molecular Weight 253.68
519.1 - 550	Hexadecanes	C ₁₆	0.0136	0.0233	Mole Fraction 0.2086
550 - 557	Heptadecanes	C ₁₇	0.0118	0.0217	Density (g/cc) 0.8658
557 - 603	Octadecanes	C ₁₈	0.0105	0.0204	
603 - 626	Nonadecanes	C ₁₉	0.0089	0.0181	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0070	0.0149	
651.9 - 675	Heneicosanes	C ₂₁	0.0060	0.0135	Molecular Weight 579.33
675 - 696.9	Docosanes	C ₂₂	0.0051	0.0119	Mole Fraction 0.0182
696.9 - 716	Tricosanes	C ₂₃	0.0043	0.0106	Density (g/cc) 0.9837
716 - 736	Tetracosanes	C ₂₄	0.0038	0.0096	
736 - 755.1	Pentacosanes	C ₂₅	0.0033	0.0088	
755.1 - 774	Hexacosanes	C ₂₆	0.0027	0.0076	
774.1 - 792	Heptacosanes	C ₂₇	0.0025	0.0073	
792.1 - 809.1	Octacosanes	C ₂₈	0.0020	0.0059	
809.1 - 826	Nonacosanes	C ₂₉	0.0018	0.0055	
Above 826	Tricontanes Plus	C ₃₀₊	0.0182	0.0816	
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0028	0.0015	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0115	0.0075	
178.0	Cyclohexane	C ₆ H ₁₂	0.0144	0.0094	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0336	0.0255	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0022	0.0013	
231.1	Toluene	C ₇ H ₈	0.0108	0.0077	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0097	0.0080	
291.9	o-Xylene	C ₈ H ₁₀	0.0070	0.0058	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0088	0.0082	
Total			1.0000	1.0000	



Note: Physical properties are calculated based on GPA 2145-00 physical constants

TABLE B19
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE T39043
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0018	0.0018		
Carbon Dioxide	CO ₂	0.0029	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.2622	0.2630		
Ethane	C ₂	0.2660	0.2667		
Propane	C ₃	0.2645	0.2653	172.726	969.774
i-Butane	i-C ₄	0.0513	0.0514	39.795	223.431
n-Butane	n-C ₄	0.0939	0.0942	70.238	394.354
i-Pentane	i-C ₅	0.0193	0.0193	16.746	94.023
n-Pentane	n-C ₅	0.0180	0.0180	15.463	86.817
Hexanes	C ₆	0.0160	0.0161	15.644	87.834
Heptanes	C ₇	0.0032	0.0032	3.460	19.426
Octanes	C ₈	0.0010	0.0011	1.272	7.144
Nonanes	C ₉	0.0000	0.0000	0.029	0.161
Decanes	C ₁₀	0.0000	0.0000	0.007	0.041
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	335.382	1883.005
Propanes Plus	C ₃₊	0.4672	0.4685	335.382	1883.005
Butanes Plus	C ₄₊	0.2027	0.2033	162.656	913.232
Pentanes Plus	C ₅₊	0.0575	0.0577	52.622	295.446

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	36.97 kg/kmol	36.97 lb/lb-mol	P _{pc}	636.0 psia	4.39 MPa
Specific Gravity	1.2764 (Air = 1)	1.2764 (Air = 1)	T _{pc}	573.7 R	318.7 K
MW of C7+	98.89 kg/kmol	98.89 lb/lb-mol	P _{pc} *	635.3 psia	4.38 MPa
Density of C7+	0.7280 g/cc	728.0 kg/m ³	T _{pc} *	573.1 R	318.4 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	2,123.7 Btu/scf	79.27 MJ/m ³	Dry	1,948.7 Btu/scf	72.74 MJ/m ³
Wet	2,086.8 Btu/scf	77.89 MJ/m ³	Wet	1,914.8 Btu/scf	71.48 MJ/m ³

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8808

TABLE B20
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE W3B7126
SAMPLE VALIDATION
SAMPLE COLLECTION DATA

Project File:	CL-63169		
Company:	ENCANA CORPORATION		
Pool:	DUVERNAY		
Field:	WAHIGAN		
Well Location:	08-05-062-24W5		
Fluid Sample:	W3B7126		
Sample Description:	LIVE SEP OIL		
Sampling Company:	WEATHERFORD LABS		
Name of Sampler:	NICK. C		
Sampling Date:	12-Apr-13		
Sampling Point:	SEPARATOR		
Sampling Temperature:	107.6 F		315.2 K
Sampling Pressure:	1032 psia		7.12 MPa
Reservoir Temperature:	N/A F		N/A K
Reservoir Pressure:	N/A psia		N/A MPa
Initial Reservoir Pressure (Pi)	N/A psia		N/A MPa
Depth of Reported Pi	N/A mMD		N/A mss

TABLE B21
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE W3B7126
SAMPLE VALIDATION
MAIN PVT RESULTS

INITIAL RESERVOIR CONDITIONS

Reservoir Pressure	N/A psia	N/A MPa
Reservoir Temperature:	N/A F	N/A K

SINGLE-STAGE SEPARATOR TEST @ 1,513 psia (10.43 MPa) AND 140.0 F (333.2 K)

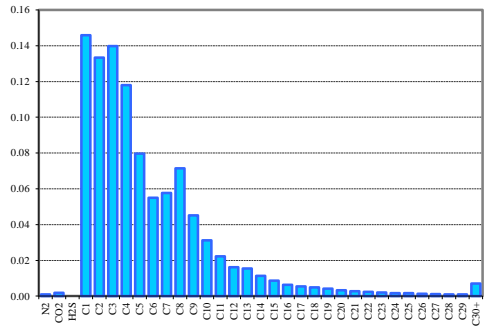
At Separator Test Conditions		
Oil Formation Volume Factor	1.4423 res.bbl/STB	1.4423 res.m ³ /m ³
Solution Gas-Oil Ratio	793.11 scf/STB	141.25 m ³ /m ³
Oil Density	0.6701 g/cm ³	670.1 kg/m ³
At Tank Conditions		
Residual Oil Density	0.7617 g/cm ³	761.7 kg/m ³
API Gravity	54.27	54.27

SINGLE-STAGE SEPARATOR TEST - MATERIAL BALANCE CHECK

Oil FVF @ 1513 psia (10.43 MPa) (Measured)	1.4423	res.bbl/STB (res.m ³ /m ³)
Oil FVF @ 1513 psia (10.43 MPa) (Calculated)	1.4519	res.bbl/STB (res.m ³ /m ³)
Absolute Relative Error	0.6553	(%)

TABLE B22
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE W3B7126
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF SEPARATOR FLUID

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0009	0.0003	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0019	0.0010	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 80.44
-259.1	Methane	C ₁	0.1459	0.0291	
-128.0	Ethane	C ₂	0.1334	0.0499	
-44.0	Propane	C ₃	0.1398	0.0766	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0361	0.0261	
30.9	n-Butane	n-C ₄	0.0820	0.0592	Molecular Weight 145.13
82.0	i-Pentane	i-C ₅	0.0354	0.0317	Mole Fraction 0.3789
97.0	n-Pentane	n-C ₅	0.0444	0.0398	Density (g/cc) 0.7960
97 - 156	Hexanes	C ₆	0.0535	0.0573	
156 - 208.9	Heptanes	C ₇	0.0429	0.0534	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.0485	0.0689	
258.1 - 303.1	Nonanes	C ₉	0.0369	0.0588	Molecular Weight 154.86
303.1 - 345	Decanes	C ₁₀	0.0263	0.0465	Mole Fraction 0.3106
345 - 385	Undecanes	C ₁₁	0.0222	0.0406	Density (g/cc) 0.8080
385 - 419	Dodecanes	C ₁₂	0.0162	0.0324	
419 - 455	Tridecanes	C ₁₃	0.0155	0.0337	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0113	0.0268	
486 - 519.1	Pentadecanes	C ₁₅	0.0086	0.0221	Molecular Weight 245.60
519.1 - 550	Hexadecanes	C ₁₆	0.0064	0.0175	Mole Fraction 0.0977
550 - 557	Heptadecanes	C ₁₇	0.0055	0.0161	Density (g/cc) 0.8602
557 - 603	Octadecanes	C ₁₈	0.0049	0.0153	
603 - 626	Nonadecanes	C ₁₉	0.0042	0.0136	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0033	0.0113	
651.9 - 675	Heneicosanes	C ₂₁	0.0028	0.0101	Molecular Weight 553.26
675 - 696.9	Docosanes	C ₂₂	0.0024	0.0090	Mole Fraction 0.0070
696.9 - 716	Tricosanes	C ₂₃	0.0021	0.0082	Density (g/cc) 0.9806
716 - 736	Tetracosanes	C ₂₄	0.0018	0.0072	
736 - 755.1	Pentacosanes	C ₂₅	0.0016	0.0068	
755.1 - 774	Hexacosanes	C ₂₆	0.0013	0.0059	Recombination Parameters
774.1 - 792	Heptacosanes	C ₂₇	0.0011	0.0053	
792.1 - 809.1	Octacosanes	C ₂₈	0.0010	0.0046	Gas-Oil Ratio (cc/cc) 141.25
809.1 - 826	Nonacosanes	C ₂₉	0.0009	0.0043	Dead Oil Density (g/cc) 0.7617
Above 826	Tricontanes Plus	C ₃₀₊	0.0070	0.0479	Dead Oil MW (g/mol) 124.28
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0015	0.0013	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0062	0.0064	
178.0	Cyclohexane	C ₆ H ₁₂	0.0076	0.0079	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0173	0.0211	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0011	0.0011	
231.1	Toluene	C ₇ H ₈	0.0055	0.0064	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0048	0.0064	
291.9	o-Xylene	C ₈ H ₁₀	0.0035	0.0046	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0049	0.0074	
Total			1.0000	1.0000	

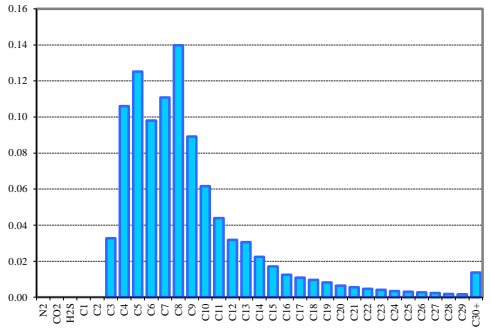


Note: Physical properties are calculated based on GPA 2145-00 physical constants

ID: 6748-2436

TABLE B23
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE W3B7126
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED OIL

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0000	0.0000	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0000	0.0000	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 124.28
-259.1	Methane	C ₁	0.0000	0.0000	Density (g/cc) 0.7618
-128.0	Ethane	C ₂	0.0000	0.0000	
-44.0	Propane	C ₃	0.0327	0.0116	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0260	0.0121	
30.9	n-Butane	n-C ₄	0.0801	0.0375	Molecular Weight 146.23
82.0	i-Pentane	i-C ₅	0.0532	0.0309	Mole Fraction 0.7361
97.0	n-Pentane	n-C ₅	0.0720	0.0418	Density (g/cc) 0.7972
97 - 156	Hexanes	C ₆	0.0953	0.0661	
156 - 208.9	Heptanes	C ₇	0.0827	0.0666	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.0954	0.0877	
258.1 - 303.1	Nonanes	C ₉	0.0727	0.0751	Molecular Weight 155.54
303.1 - 345	Decanes	C ₁₀	0.0519	0.0594	Mole Fraction 0.6380
345 - 385	Undecanes	C ₁₁	0.0438	0.0518	Density (g/cc) 0.8083
385 - 419	Dodecanes	C ₁₂	0.0319	0.0413	
419 - 455	Tridecanes	C ₁₃	0.0306	0.0431	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0224	0.0342	
486 - 519.1	Pentadecanes	C ₁₅	0.0171	0.0283	Molecular Weight 245.60
519.1 - 550	Hexadecanes	C ₁₆	0.0125	0.0224	Mole Fraction 0.1927
550 - 557	Heptadecanes	C ₁₇	0.0108	0.0206	Density (g/cc) 0.8602
557 - 603	Octadecanes	C ₁₈	0.0097	0.0195	
603 - 626	Nonadecanes	C ₁₉	0.0082	0.0174	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0065	0.0144	
651.9 - 675	Heneicosanes	C ₂₁	0.0055	0.0128	Molecular Weight 553.26
675 - 696.9	Docosanes	C ₂₂	0.0047	0.0115	Mole Fraction 0.0137
696.9 - 716	Tricosanes	C ₂₃	0.0041	0.0104	Density (g/cc) 0.9806
716 - 736	Tetracosanes	C ₂₄	0.0035	0.0092	
736 - 755.1	Pentacosanes	C ₂₅	0.0031	0.0086	
755.1 - 774	Hexacosanes	C ₂₆	0.0026	0.0076	
774.1 - 792	Heptacosanes	C ₂₇	0.0023	0.0068	
792.1 - 809.1	Octacosanes	C ₂₈	0.0019	0.0059	
809.1 - 826	Nonacosanes	C ₂₉	0.0017	0.0055	
Above 826	Tricontanes Plus	C ₃₀₊	0.0137	0.0612	
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0029	0.0016	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0115	0.0078	
178.0	Cyclohexane	C ₆ H ₁₂	0.0144	0.0098	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0336	0.0265	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0022	0.0014	
231.1	Toluene	C ₇ H ₈	0.0108	0.0080	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0095	0.0082	
291.9	o-Xylene	C ₈ H ₁₀	0.0069	0.0059	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0097	0.0094	
Total			1.0000	1.0000	



Note: Physical properties are calculated based on GPA 2145-00 physical constants

GC ID: 2194

TABLE B24
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE W3B7126
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0019	0.0019		
Carbon Dioxide	CO ₂	0.0039	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.2959	0.2970		
Ethane	C ₂	0.2704	0.2715		
Propane	C ₃	0.2498	0.2507	163.110	915.780
i-Butane	i-C ₄	0.0464	0.0466	36.035	202.321
n-Butane	n-C ₄	0.0839	0.0842	62.752	352.324
i-Pentane	i-C ₅	0.0170	0.0171	14.801	83.099
n-Pentane	n-C ₅	0.0160	0.0160	13.734	77.111
Hexanes	C ₆	0.0106	0.0107	10.363	58.182
Heptanes	C ₇	0.0032	0.0032	3.479	19.533
Octanes	C ₈	0.0010	0.0010	1.236	6.940
Nonanes	C ₉	0.0000	0.0000	0.027	0.152
Decanes	C ₁₀	0.0000	0.0000	0.006	0.031
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	305.543	1715.473
Propanes Plus	C ₃₊	0.4279	0.4296	305.543	1715.473
Butanes Plus	C ₄₊	0.1781	0.1788	142.433	799.694
Pentanes Plus	C ₅₊	0.0478	0.0480	43.646	245.048

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	35.40 kg/kmol	35.40 lb/lb-mol	Ppc	641.2 psia	4.42 MPa
Specific Gravity	1.2223 (Air = 1)	1.2223 (Air = 1)	Tpc	558.8 R	310.4 K
MW of C7+	98.81 kg/kmol	98.81 lb/lbmol	Ppc*	640.3 psia	4.41 MPa
Density of C7+	0.7278 g/cc	727.8 kg/m3	Tpc*	558.0 R	310.0 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	2,037.4 Btu/scf	76.05 MJ/m3	Dry	1,868.2 Btu/scf	69.73 MJ/m3
Wet	2,001.9 Btu/scf	74.73 MJ/m3	Wet	1,835.7 Btu/scf	68.52 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8807

RATE 2 95 E3 SCMD

TABLE B25
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL4044
SAMPLE VALIDATION
GAS SAMPLE COLLECTION DATA

Project File:	CL-63169	
Company:	ENCANA CORPORATION	
Pool:	DUVERNAY	
Field:	WAHIGAN	
Well Location:	08-05-062-24W5	
Fluid Sample:	CYL4044	
Sample Description:	SEP GAS	
Sampling Company:	WEATHERFORD LABS	
Name of Sampler:	NICK. C	
Sampling Date:	12-Apr-13	
Sampling Point:	SEP METER RUN	
Sampling Temperature:	102.2 F	312.2 K
Sampling Pressure:	1024 psia	7.06 MPa
Reservoir Temperature:	N/A F	N/A K
Reservoir Pressure:	N/A psia	N/A MPa
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa
Depth of Reported Pi	N/A mMD	N/A mss

**TABLE B26
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL4044
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS**

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0075	0.0075		
Carbon Dioxide	CO ₂	0.0044	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.7803	0.7837		
Ethane	C ₂	0.1319	0.1325		
Propane	C ₃	0.0480	0.0482	31.349	176.007
i-Butane	i-C ₄	0.0064	0.0065	5.005	28.099
n-Butane	n-C ₄	0.0113	0.0114	8.489	47.663
i-Pentane	i-C ₅	0.0026	0.0026	2.275	12.774
n-Pentane	n-C ₅	0.0027	0.0027	2.331	13.085
Hexanes	C ₆	0.0023	0.0023	2.218	12.451
Heptanes	C ₇	0.0012	0.0013	1.367	7.678
Octanes	C ₈	0.0010	0.0010	1.227	6.886
Nonanes	C ₉	0.0001	0.0001	0.156	0.875
Decanes	C ₁₀	0.0001	0.0001	0.183	1.029
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	54.599	306.548
Propanes Plus	C ₃₊	0.0759	0.0762	54.599	306.548
Butanes Plus	C ₄₊	0.0279	0.0280	23.251	130.542
Pentanes Plus	C ₅₊	0.0101	0.0101	9.757	54.779

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	20.88 kg/kmol	20.88 lb/lb-mol	P _{pc}	666.6 psia	4.60 MPa
Specific Gravity	0.7208 (Air = 1)	0.7208 (Air = 1)	T _{pc}	398.7 R	221.5 K
MW of C7+	103.52 kg/kmol	103.52 lb/lbmol	P _{pc} *	665.1 psia	4.59 MPa
Density of C7+	0.7361 g/cc	736.1 kg/m3	T _{pc} *	397.9 R	221.0 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,247.1 Btu/scf	46.55 MJ/m3	Dry	1,131.0 Btu/scf	42.22 MJ/m3
Wet	1,225.4 Btu/scf	45.74 MJ/m3	Wet	1,111.3 Btu/scf	41.48 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8885

ID: 15968

TABLE B27
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL3610
SAMPLE VALIDATION
GAS SAMPLE COLLECTION DATA

Project File:	CL-63169	
Company:	ENCANA CORPORATION	
Pool:	DUVERNAY	
Field:	WAHIGAN	
Well Location:	08-05-062-24W5	
Fluid Sample:	CYL3610	
Sample Description:	SEP GAS	
Sampling Company:	WEATHERFORD LABS	
Name of Sampler:	NICK. C	
Sampling Date:	12-Apr-13	
Sampling Point:	SEP METER RUN	
Sampling Temperature:	104.0 F	313.2 K
Sampling Pressure:	1022 psia	7.05 MPa
Reservoir Temperature:	N/A F	N/A K
Reservoir Pressure:	N/A psia	N/A MPa
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa
Depth of Reported Pi	N/A mMD	N/A mss

TABLE B28
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL3610
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0121	0.0121		
Carbon Dioxide	CO ₂	0.0043	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.7699	0.7733		
Ethane	C ₂	0.1303	0.1309		
Propane	C ₃	0.0478	0.0480	31.227	175.324
i-Butane	i-C ₄	0.0065	0.0065	5.057	28.391
n-Butane	n-C ₄	0.0116	0.0116	8.660	48.623
i-Pentane	i-C ₅	0.0027	0.0027	2.379	13.357
n-Pentane	n-C ₅	0.0029	0.0029	2.469	13.861
Hexanes	C ₆	0.0084	0.0084	8.173	45.887
Heptanes	C ₇	0.0015	0.0015	1.636	9.188
Octanes	C ₈	0.0014	0.0014	1.662	9.329
Nonanes	C ₉	0.0002	0.0002	0.262	1.470
Decanes	C ₁₀	0.0004	0.0004	0.547	3.069
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	62.071	348.500
Propanes Plus	C ₃₊	0.0833	0.0837	62.071	348.500
Butanes Plus	C ₄₊	0.0355	0.0357	30.844	173.176
Pentanes Plus	C ₅₊	0.0174	0.0175	17.127	96.161

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	21.45 kg/kmol	21.45 lb/lb-mol	Ppc	664.0 psia	4.58 MPa
Specific Gravity	0.7406 (Air = 1)	0.7406 (Air = 1)	Tpc	402.2 R	223.4 K
MW of C7+	105.96 kg/kmol	105.96 lb/lbmol	Ppc*	662.5 psia	4.57 MPa
Density of C7+	0.7397 g/cc	739.7 kg/m3	Tpc*	401.3 R	223.0 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,270.3 Btu/scf	47.42 MJ/m3	Dry	1,152.8 Btu/scf	43.03 MJ/m3
Wet	1,248.2 Btu/scf	46.59 MJ/m3	Wet	1,132.8 Btu/scf	42.28 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8842

ID: 15927

TABLE B29
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE Z39022
SAMPLE VALIDATION
SAMPLE COLLECTION DATA

Project File:	CL-63169		
Company:	ENCANA CORPORATION		
Pool:	DUVERNAY		
Field:	WAHIGAN		
Well Location:	08-05-062-24W5		
Fluid Sample:	Z39022		
Sample Description:	LIVE SEP OIL		
Sampling Company:	WEATHERFORD LABS		
Name of Sampler:	NICK. C		
Sampling Date:	12-Apr-13		
Sampling Point:	SEPARATOR		
Sampling Temperature:	102.2 F		312.2 K
Sampling Pressure:	1028 psia		7.09 MPa
Reservoir Temperature:	N/A F		N/A K
Reservoir Pressure:	N/A psia		N/A MPa
Initial Reservoir Pressure (Pi)	N/A psia		N/A MPa
Depth of Reported Pi	N/A mMD		N/A mss

TABLE B30
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE Z39022
SAMPLE VALIDATION
MAIN PVT RESULTS

INITIAL RESERVOIR CONDITIONS

Reservoir Pressure	N/A psia	N/A MPa
Reservoir Temperature:	N/A F	N/A K

SINGLE-STAGE SEPARATOR TEST @ 1,588 psia (10.95 MPa) AND 140.0 F (333.2 K)

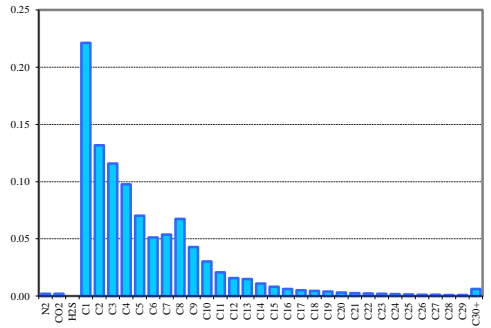
At Separator Test Conditions		
Oil Formation Volume Factor	1.6382 res.bbl/STB	1.6382 res.m ³ /m ³
Solution Gas-Oil Ratio	1009.65 scf/STB	179.82 m ³ /m ³
Oil Density	0.6169 g/cm ³	616.9 kg/m ³
At Tank Conditions		
Residual Oil Density	0.7663 g/cm ³	766.3 kg/m ³
API Gravity	53.15	53.15

SINGLE-STAGE SEPARATOR TEST - MATERIAL BALANCE CHECK

Oil FVF @ 1588 psia (10.95 MPa) (Measured)	1.6382	res.bbl/STB (res.m ³ /m ³)
Oil FVF @ 1588 psia (10.95 MPa) (Calculated)	1.6520	res.bbl/STB (res.m ³ /m ³)
Absolute Relative Error	0.8364	(%)

**TABLE B31
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE Z39022
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF SEPARATOR FLUID**

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0021	0.0008	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0021	0.0012	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 75.62
-259.1	Methane	C ₁	0.2212	0.0469	
-128.0	Ethane	C ₂	0.1316	0.0523	
-44.0	Propane	C ₃	0.1157	0.0675	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0294	0.0226	
30.9	n-Butane	n-C ₄	0.0682	0.0524	Molecular Weight 145.04
82.0	i-Pentane	i-C ₅	0.0310	0.0295	Mole Fraction 0.3581
97.0	n-Pentane	n-C ₅	0.0393	0.0375	Density (g/cc) 0.7961
97 - 156	Hexanes	C ₆	0.0500	0.0570	
156 - 208.9	Heptanes	C ₇	0.0399	0.0529	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.0458	0.0692	
258.1 - 303.1	Nonanes	C ₉	0.0347	0.0589	Molecular Weight 154.54
303.1 - 345	Decanes	C ₁₀	0.0244	0.0458	Mole Fraction 0.2943
345 - 385	Undecanes	C ₁₁	0.0209	0.0405	Density (g/cc) 0.8080
385 - 419	Dodecanes	C ₁₂	0.0157	0.0334	
419 - 455	Tridecanes	C ₁₃	0.0148	0.0343	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0111	0.0279	
486 - 519.1	Pentadecanes	C ₁₅	0.0081	0.0220	Molecular Weight 243.88
519.1 - 550	Hexadecanes	C ₁₆	0.0061	0.0180	Mole Fraction 0.0930
550 - 557	Heptadecanes	C ₁₇	0.0052	0.0163	Density (g/cc) 0.8591
557 - 603	Octadecanes	C ₁₈	0.0046	0.0154	
603 - 626	Nonadecanes	C ₁₉	0.0039	0.0137	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0032	0.0115	
651.9 - 675	Heneicosanes	C ₂₁	0.0026	0.0099	Molecular Weight 553.26
675 - 696.9	Docosanes	C ₂₂	0.0023	0.0091	Mole Fraction 0.0063
696.9 - 716	Tricosanes	C ₂₃	0.0019	0.0081	Density (g/cc) 0.9806
716 - 736	Tetracosanes	C ₂₄	0.0017	0.0073	
736 - 755.1	Pentacosanes	C ₂₅	0.0015	0.0068	
755.1 - 774	Hexacosanes	C ₂₆	0.0012	0.0059	Recombination Parameters
774.1 - 792	Heptacosanes	C ₂₇	0.0011	0.0053	
792.1 - 809.1	Octacosanes	C ₂₈	0.0009	0.0047	Gas-Oil Ratio (cc/cc) 179.82
809.1 - 826	Nonacosanes	C ₂₉	0.0008	0.0043	Dead Oil Density (g/cc) 0.7663
Above 826	Tricontanes Plus	C ₃₀₊	0.0063	0.0460	Dead Oil MW (g/mol) 130.24
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0012	0.0012	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0057	0.0063	
178.0	Cyclohexane	C ₆ H ₁₂	0.0070	0.0078	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0162	0.0210	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0011	0.0011	
231.1	Toluene	C ₇ H ₈	0.0054	0.0065	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0046	0.0065	
291.9	o-Xylene	C ₈ H ₁₀	0.0034	0.0048	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0060	0.0096	
Total			1.0000	1.0000	

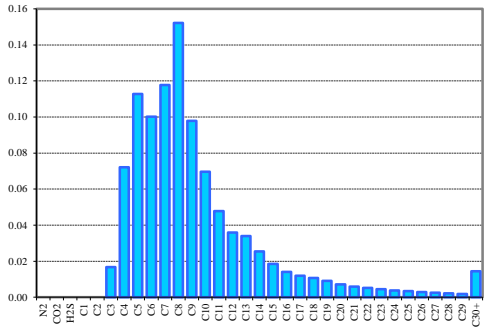


Note: Physical properties are calculated based on GPA 2145-00 physical constants

ID: 6780-2436

TABLE B32
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE Z39022
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED OIL

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0000	0.0000	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0000	0.0000	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 130.24
-259.1	Methane	C ₁	0.0000	0.0000	Density (g/cc) 0.7722
-128.0	Ethane	C ₂	0.0000	0.0000	
-44.0	Propane	C ₃	0.0168	0.0057	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0163	0.0073	
30.9	n-Butane	n-C ₄	0.0558	0.0249	Molecular Weight 146.76
82.0	i-Pentane	i-C ₅	0.0466	0.0258	Mole Fraction 0.7984
97.0	n-Pentane	n-C ₅	0.0661	0.0366	Density (g/cc) 0.7980
97 - 156	Hexanes	C ₆	0.0972	0.0643	
156 - 208.9	Heptanes	C ₇	0.0883	0.0680	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.1043	0.0914	
258.1 - 303.1	Nonanes	C ₉	0.0795	0.0783	Molecular Weight 155.51
303.1 - 345	Decanes	C ₁₀	0.0558	0.0609	Mole Fraction 0.6983
345 - 385	Undecanes	C ₁₁	0.0478	0.0539	Density (g/cc) 0.8084
385 - 419	Dodecanes	C ₁₂	0.0359	0.0444	
419 - 455	Tridecanes	C ₁₃	0.0339	0.0456	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0254	0.0371	
486 - 519.1	Pentadecanes	C ₁₅	0.0185	0.0293	Molecular Weight 243.88
519.1 - 550	Hexadecanes	C ₁₆	0.0140	0.0239	Mole Fraction 0.2131
550 - 557	Heptadecanes	C ₁₇	0.0119	0.0216	Density (g/cc) 0.8591
557 - 603	Octadecanes	C ₁₈	0.0106	0.0205	
603 - 626	Nonadecanes	C ₁₉	0.0090	0.0183	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0072	0.0152	
651.9 - 675	Heneicosanes	C ₂₁	0.0059	0.0131	Molecular Weight 553.26
675 - 696.9	Docosanes	C ₂₂	0.0052	0.0122	Mole Fraction 0.0144
696.9 - 716	Tricosanes	C ₂₃	0.0044	0.0108	Density (g/cc) 0.9806
716 - 736	Tetracosanes	C ₂₄	0.0038	0.0097	
736 - 755.1	Pentacosanes	C ₂₅	0.0034	0.0090	
755.1 - 774	Hexacosanes	C ₂₆	0.0029	0.0079	
774.1 - 792	Heptacosanes	C ₂₇	0.0024	0.0070	
792.1 - 809.1	Octacosanes	C ₂₈	0.0021	0.0063	
809.1 - 826	Nonacosanes	C ₂₉	0.0019	0.0058	
Above 826	Tricontanes Plus	C ₃₀₊	0.0144	0.0612	
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0029	0.0015	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0120	0.0078	
178.0	Cyclohexane	C ₆ H ₁₂	0.0152	0.0098	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0362	0.0273	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0023	0.0014	
231.1	Toluene	C ₇ H ₈	0.0117	0.0082	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0106	0.0087	
291.9	o-Xylene	C ₈ H ₁₀	0.0077	0.0063	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0138	0.0128	
Total			1.0000	1.0000	



Note: Physical properties are calculated based on GPA 2145-00 physical constants

GC ID: 2265

**TABLE B33
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE Z39022
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS**

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0038	0.0038		
Carbon Dioxide	CO ₂	0.0038	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.3926	0.3941		
Ethane	C ₂	0.2336	0.2345		
Propane	C ₃	0.1924	0.1931	125.652	705.475
i-Butane	i-C ₄	0.0396	0.0397	30.699	172.359
n-Butane	n-C ₄	0.0779	0.0782	58.260	327.102
i-Pentane	i-C ₅	0.0189	0.0189	16.391	92.028
n-Pentane	n-C ₅	0.0185	0.0186	15.894	89.237
Hexanes	C ₆	0.0134	0.0135	13.080	73.438
Heptanes	C ₇	0.0039	0.0039	4.295	24.117
Octanes	C ₈	0.0016	0.0016	1.961	11.009
Nonanes	C ₉	0.0000	0.0000	0.037	0.210
Decanes	C ₁₀	0.0000	0.0000	0.034	0.190
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	266.304	1495.164
Propanes Plus	C ₃₊	0.3662	0.3676	266.304	1495.164
Butanes Plus	C ₄₊	0.1738	0.1744	140.652	789.689
Pentanes Plus	C ₅₊	0.0563	0.0565	51.693	290.229

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	33.31 kg/kmol	33.31 lb/lb-mol	P _{pc}	642.2 psia	4.43 MPa
Specific Gravity	1.1501 (Air = 1)	1.1501 (Air = 1)	T _{pc}	531.8 R	295.5 K
MW of C7+	99.46 kg/kmol	99.46 lb/lbmol	P _{pc} *	641.2 psia	4.42 MPa
Density of C7+	0.7291 g/cc	729.1 kg/m3	T _{pc} *	531.1 R	295.0 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,922.2 Btu/scf	71.75 MJ/m3	Dry	1,760.7 Btu/scf	65.72 MJ/m3
Wet	1,888.7 Btu/scf	70.50 MJ/m3	Wet	1,730.1 Btu/scf	64.58 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8890

TABLE B34
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE W3A8662
SAMPLE VALIDATION
SAMPLE COLLECTION DATA

Project File:	CL-63169		
Company:	ENCANA CORPORATION		
Pool:	DUVERNAY		
Field:	WAHIGAN		
Well Location:	08-05-062-24W5		
Fluid Sample:	W3A8662		
Sample Description:	LIVE SEP OIL		
Sampling Company:	WEATHERFORD LABS		
Name of Sampler:	NICK. C		
Sampling Date:	12-Apr-13		
Sampling Point:	SEPARATOR		
Sampling Temperature:	102.2 F	312.2 K	
Sampling Pressure:	1028 psia	7.09 MPa	
Reservoir Temperature:	N/A F	N/A K	
Reservoir Pressure:	N/A psia	N/A MPa	
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa	
Depth of Reported Pi	N/A mMD	N/A mss	

TABLE B35
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE W3A8662
SAMPLE VALIDATION
MAIN PVT RESULTS

INITIAL RESERVOIR CONDITIONS

Reservoir Pressure	N/A psia	N/A MPa
Reservoir Temperature:	N/A F	N/A K

SINGLE-STAGE SEPARATOR TEST @ 1,568 psia (10.81 MPa) AND 140.0 F (333.2 K)

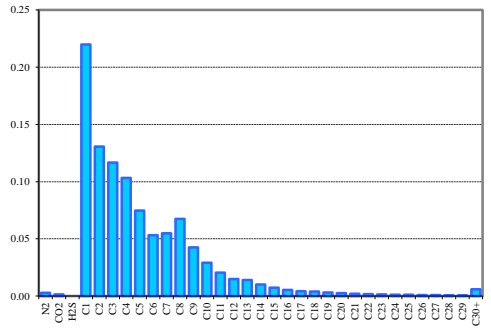
At Separator Test Conditions		
Oil Formation Volume Factor	1.6379 res.bbl/STB	1.6379 res.m ³ /m ³
Solution Gas-Oil Ratio	1006.84 scf/STB	179.32 m ³ /m ³
Oil Density	0.6197 g/cm ³	619.7 kg/m ³
At Tank Conditions		
Residual Oil Density	0.7644 g/cm ³	764.4 kg/m ³
API Gravity	53.60	53.60

SINGLE-STAGE SEPARATOR TEST - MATERIAL BALANCE CHECK

Oil FVF @ 1568 psia (10.81 MPa) (Measured)	1.6379	res.bbl/STB (res.m ³ /m ³)
Oil FVF @ 1568 psia (10.81 MPa) (Calculated)	1.6356	res.bbl/STB (res.m ³ /m ³)
Absolute Relative Error	0.1398	(%)

**TABLE B36
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE W3A8662
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF SEPARATOR FLUID**

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0028	0.0011	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0014	0.0008	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 73.68
-259.1	Methane	C ₁	0.2197	0.0479	
-128.0	Ethane	C ₂	0.1305	0.0533	
-44.0	Propane	C ₃	0.1167	0.0698	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0310	0.0245	
30.9	n-Butane	n-C ₄	0.0722	0.0570	Molecular Weight 141.19
82.0	i-Pentane	i-C ₅	0.0330	0.0323	Mole Fraction 0.3496
97.0	n-Pentane	n-C ₅	0.0418	0.0409	Density (g/cc) 0.7919
97 - 156	Hexanes	C ₆	0.0517	0.0605	
156 - 208.9	Heptanes	C ₇	0.0407	0.0554	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.0459	0.0711	
258.1 - 303.1	Nonanes	C ₉	0.0347	0.0604	Molecular Weight 150.67
303.1 - 345	Decanes	C ₁₀	0.0245	0.0473	Mole Fraction 0.2837
345 - 385	Undecanes	C ₁₁	0.0206	0.0410	Density (g/cc) 0.8045
385 - 419	Dodecanes	C ₁₂	0.0148	0.0323	
419 - 455	Tridecanes	C ₁₃	0.0140	0.0333	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0102	0.0263	
486 - 519.1	Pentadecanes	C ₁₅	0.0074	0.0207	Molecular Weight 241.12
519.1 - 550	Hexadecanes	C ₁₆	0.0054	0.0164	Mole Fraction 0.0831
550 - 557	Heptadecanes	C ₁₇	0.0044	0.0141	Density (g/cc) 0.8584
557 - 603	Octadecanes	C ₁₈	0.0039	0.0133	
603 - 626	Nonadecanes	C ₁₉	0.0032	0.0114	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0025	0.0094	
651.9 - 675	Heneicosanes	C ₂₁	0.0021	0.0084	Molecular Weight 537.56
675 - 696.9	Docosanes	C ₂₂	0.0018	0.0074	Mole Fraction 0.0061
696.9 - 716	Tricosanes	C ₂₃	0.0016	0.0067	Density (g/cc) 0.9787
716 - 736	Tetracosanes	C ₂₄	0.0013	0.0060	
736 - 755.1	Pentacosanes	C ₂₅	0.0011	0.0054	
755.1 - 774	Hexacosanes	C ₂₆	0.0010	0.0049	Recombination Parameters
774.1 - 792	Heptacosanes	C ₂₇	0.0008	0.0043	
792.1 - 809.1	Octacosanes	C ₂₈	0.0007	0.0039	Gas-Oil Ratio (cc/cc) 179.32
809.1 - 826	Nonacosanes	C ₂₉	0.0006	0.0033	Dead Oil Density (g/cc) 0.7644
Above 826	Tricontanes Plus	C ₃₀₊	0.0061	0.0444	Dead Oil MW (g/mol) 123.61
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0013	0.0013	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0059	0.0067	
178.0	Cyclohexane	C ₆ H ₁₂	0.0072	0.0082	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0164	0.0218	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0011	0.0012	
231.1	Toluene	C ₇ H ₈	0.0052	0.0066	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0046	0.0066	
291.9	o-Xylene	C ₈ H ₁₀	0.0033	0.0048	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0048	0.0078	
Total			1.0000	1.0000	

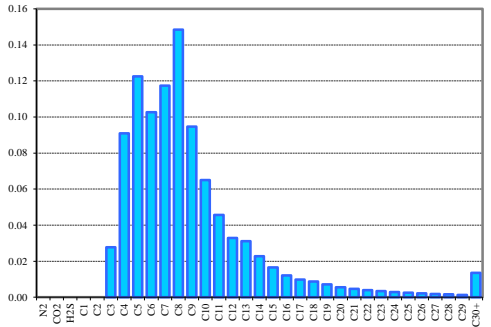


Note: Physical properties are calculated based on GPA 2145-00 physical constants

ID: 6783-2428

TABLE B37
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE W3A8662
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED OIL

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0000	0.0000	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0000	0.0000	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 123.61
-259.1	Methane	C ₁	0.0000	0.0000	Density (g/cc) 0.7619
-128.0	Ethane	C ₂	0.0000	0.0000	
-44.0	Propane	C ₃	0.0277	0.0099	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0219	0.0103	
30.9	n-Butane	n-C ₄	0.0690	0.0324	Molecular Weight 142.67
82.0	i-Pentane	i-C ₅	0.0513	0.0300	Mole Fraction 0.7588
97.0	n-Pentane	n-C ₅	0.0712	0.0416	Density (g/cc) 0.7937
97 - 156	Hexanes	C ₆	0.0996	0.0695	
156 - 208.9	Heptanes	C ₇	0.0877	0.0711	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.1014	0.0937	
258.1 - 303.1	Nonanes	C ₉	0.0771	0.0800	Molecular Weight 151.58
303.1 - 345	Decanes	C ₁₀	0.0545	0.0627	Mole Fraction 0.6562
345 - 385	Undecanes	C ₁₁	0.0457	0.0544	Density (g/cc) 0.8048
385 - 419	Dodecanes	C ₁₂	0.0328	0.0428	
419 - 455	Tridecanes	C ₁₃	0.0311	0.0441	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0227	0.0349	
486 - 519.1	Pentadecanes	C ₁₅	0.0165	0.0275	Molecular Weight 241.12
519.1 - 550	Hexadecanes	C ₁₆	0.0121	0.0217	Mole Fraction 0.1847
550 - 557	Heptadecanes	C ₁₇	0.0098	0.0187	Density (g/cc) 0.8584
557 - 603	Octadecanes	C ₁₈	0.0087	0.0177	
603 - 626	Nonadecanes	C ₁₉	0.0071	0.0151	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0056	0.0124	
651.9 - 675	Heneicosanes	C ₂₁	0.0047	0.0111	Molecular Weight 537.56
675 - 696.9	Docosanes	C ₂₂	0.0040	0.0098	Mole Fraction 0.0135
696.9 - 716	Tricosanes	C ₂₃	0.0035	0.0089	Density (g/cc) 0.9787
716 - 736	Tetracosanes	C ₂₄	0.0029	0.0079	
736 - 755.1	Pentacosanes	C ₂₅	0.0025	0.0071	
755.1 - 774	Hexacosanes	C ₂₆	0.0022	0.0065	
774.1 - 792	Heptacosanes	C ₂₇	0.0019	0.0057	
792.1 - 809.1	Octacosanes	C ₂₈	0.0016	0.0051	
809.1 - 826	Nonacosanes	C ₂₉	0.0014	0.0044	
Above 826	Tricontanes Plus	C ₃₀₊	0.0135	0.0589	
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0030	0.0017	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0122	0.0083	
178.0	Cyclohexane	C ₆ H ₁₂	0.0153	0.0104	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0356	0.0283	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0023	0.0014	
231.1	Toluene	C ₇ H ₈	0.0115	0.0085	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0102	0.0087	
291.9	o-Xylene	C ₈ H ₁₀	0.0074	0.0064	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0106	0.0104	
Total			1.0000	1.0000	



Note: Physical properties are calculated based on GPA 2145-00 physical constants

GC ID: 2218

TABLE B38
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE W3A8662
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0051	0.0051		
Carbon Dioxide	CO ₂	0.0025	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.3991	0.4001		
Ethane	C ₂	0.2372	0.2377		
Propane	C ₃	0.1894	0.1899	123.684	694.426
i-Butane	i-C ₄	0.0384	0.0385	29.821	167.431
n-Butane	n-C ₄	0.0748	0.0750	55.986	314.331
i-Pentane	i-C ₅	0.0181	0.0181	15.708	88.195
n-Pentane	n-C ₅	0.0177	0.0178	15.227	85.491
Hexanes	C ₆	0.0126	0.0126	12.306	69.090
Heptanes	C ₇	0.0037	0.0037	4.073	22.869
Octanes	C ₈	0.0014	0.0014	1.646	9.242
Nonanes	C ₉	0.0000	0.0000	0.055	0.308
Decanes	C ₁₀	0.0000	0.0000	0.035	0.199
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	258.541	1451.582
Propanes Plus	C ₃₊	0.3562	0.3571	258.541	1451.582
Butanes Plus	C ₄₊	0.1668	0.1672	134.857	757.156
Pentanes Plus	C ₅₊	0.0535	0.0537	49.050	275.393

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	32.90 kg/kmol	32.90 lb/lb-mol	P _{pc}	642.8 psia	4.43 MPa
Specific Gravity	1.1358 (Air = 1)	1.1358 (Air = 1)	T _{pc}	527.9 R	293.3 K
MW of C7+	99.28 kg/kmol	99.28 lb/lbmol	P _{pc} *	642.2 psia	4.43 MPa
Density of C7+	0.7287 g/cc	728.7 kg/m3	T _{pc} *	527.4 R	293.0 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,901.1 Btu/scf	70.96 MJ/m3	Dry	1,741.1 Btu/scf	64.99 MJ/m3
Wet	1,868.0 Btu/scf	69.73 MJ/m3	Wet	1,710.8 Btu/scf	63.86 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8893

RATE 3 47 E3 SCMD

TABLE B39
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL4037
SAMPLE VALIDATION
GAS SAMPLE COLLECTION DATA

Project File:	CL-63169	
Company:	ENCANA CORPORATION	
Pool:	DUVERNAY	
Field:	WAHIGAN	
Well Location:	08-05-062-24W5	
Fluid Sample:	CYL4037	
Sample Description:	SEP GAS	
Sampling Company:	WEATHERFORD LABS	
Name of Sampler:	NICK. C	
Sampling Date:	13-Apr-13	
Sampling Point:	SEP METER RUN	
Sampling Temperature:	86.0 F	303.2 K
Sampling Pressure:	1024 psia	7.06 MPa
Reservoir Temperature:	N/A F	N/A K
Reservoir Pressure:	N/A psia	N/A MPa
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa
Depth of Reported Pi	N/A mMD	N/A mss

TABLE B40
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL4037
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0090	0.0091		
Carbon Dioxide	CO ₂	0.0043	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.7717	0.7750		
Ethane	C ₂	0.1325	0.1331		
Propane	C ₃	0.0494	0.0496	32.276	181.214
i-Butane	i-C ₄	0.0070	0.0070	5.441	30.548
n-Butane	n-C ₄	0.0121	0.0121	9.034	50.723
i-Pentane	i-C ₅	0.0029	0.0029	2.498	14.024
n-Pentane	n-C ₅	0.0030	0.0030	2.569	14.426
Hexanes	C ₆	0.0059	0.0059	5.755	32.313
Heptanes	C ₇	0.0013	0.0013	1.428	8.019
Octanes	C ₈	0.0008	0.0008	0.922	5.176
Nonanes	C ₉	0.0001	0.0001	0.112	0.626
Decanes	C ₁₀	0.0001	0.0001	0.120	0.673
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	60.155	337.740
Propanes Plus	C ₃₊	0.0825	0.0829	60.155	337.740
Butanes Plus	C ₄₊	0.0331	0.0332	27.879	156.526
Pentanes Plus	C ₅₊	0.0140	0.0140	13.404	75.255

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	21.25 kg/kmol	21.25 lb/lb-mol	Ppc	665.3 psia	4.59 MPa
Specific Gravity	0.7338 (Air = 1)	0.7338 (Air = 1)	Tpc	401.8 R	223.2 K
MW of C7+	102.08 kg/kmol	102.08 lb/lbmol	Ppc*	663.8 psia	4.58 MPa
Density of C7+	0.7335 g/cc	733.5 kg/m3	Tpc*	400.9 R	222.7 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,264.9 Btu/scf	47.21 MJ/m3	Dry	1,147.6 Btu/scf	42.84 MJ/m3
Wet	1,242.9 Btu/scf	46.39 MJ/m3	Wet	1,127.6 Btu/scf	42.09 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8883

ID: 15966

TABLE B41
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL4046
SAMPLE VALIDATION
GAS SAMPLE COLLECTION DATA

Project File:	CL-63169	
Company:	ENCANA CORPORATION	
Pool:	DUVERNAY	
Field:	WAHIGAN	
Well Location:	08-05-062-24W5	
Fluid Sample:	CYL4046	
Sample Description:	SEP GAS	
Sampling Company:	WEATHERFORD LABS	
Name of Sampler:	NICK. C	
Sampling Date:	13-Apr-13	
Sampling Point:	SEP METER RUN	
Sampling Temperature:	86.0 F	303.2 K
Sampling Pressure:	1031 psia	7.11 MPa
Reservoir Temperature:	N/A F	N/A K
Reservoir Pressure:	N/A psia	N/A MPa
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa
Depth of Reported Pi	N/A mMD	N/A mss

TABLE B42
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL4046
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0113	0.0114		
Carbon Dioxide	CO ₂	0.0042	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.7690	0.7722		
Ethane	C ₂	0.1324	0.1329		
Propane	C ₃	0.0506	0.0508	33.017	185.376
i-Butane	i-C ₄	0.0072	0.0072	5.598	31.427
n-Butane	n-C ₄	0.0124	0.0124	9.269	52.040
i-Pentane	i-C ₅	0.0031	0.0031	2.687	15.084
n-Pentane	n-C ₅	0.0033	0.0033	2.827	15.872
Hexanes	C ₆	0.0024	0.0024	2.341	13.145
Heptanes	C ₇	0.0019	0.0019	2.051	11.517
Octanes	C ₈	0.0017	0.0017	2.054	11.531
Nonanes	C ₉	0.0002	0.0002	0.310	1.742
Decanes	C ₁₀	0.0003	0.0004	0.508	2.854
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	60.662	340.589
Propanes Plus	C ₃₊	0.0831	0.0834	60.662	340.589
Butanes Plus	C ₄₊	0.0325	0.0327	27.645	155.213
Pentanes Plus	C ₅₊	0.0129	0.0130	12.779	71.745

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	21.29 kg/kmol	21.29 lb/lb-mol	Ppc	664.8 psia	4.58 MPa
Specific Gravity	0.7351 (Air = 1)	0.7351 (Air = 1)	Tpc	401.6 R	223.1 K
MW of C7+	105.08 kg/kmol	105.08 lb/lbmol	Ppc*	663.4 psia	4.57 MPa
Density of C7+	0.7384 g/cc	738.4 kg/m3	Tpc*	400.8 R	222.7 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,263.6 Btu/scf	47.17 MJ/m3	Dry	1,146.6 Btu/scf	42.80 MJ/m3
Wet	1,241.6 Btu/scf	46.35 MJ/m3	Wet	1,126.6 Btu/scf	42.05 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8847

ID: 15931

TABLE DB3
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE 605630C
SAMPLE VALIDATION
SAMPLE COLLECTION DATA

Project File:	CL-63169		
Company:	ENCANA CORPORATION		
Pool:	DUVERNAY		
Field:	WAHIGAN		
Well Location:	08-05-062-24W5		
Fluid Sample:	605630C		
Sample Description:	LIVE SEP OIL		
Sampling Company:	WEATHERFORD LABS		
Name of Sampler:	NICK. C		
Sampling Date:	13-Apr-13		
Sampling Point:	SEPARATOR		
Sampling Temperature:	86.0 F	303.2 K	
Sampling Pressure:	1024 psia	7.06 MPa	
Reservoir Temperature:	N/A F	N/A K	
Reservoir Pressure:	N/A psia	N/A MPa	
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa	
Depth of Reported Pi	N/A mMD	N/A mss	

TABLE B44
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE 605630C
SAMPLE VALIDATION
MAIN PVT RESULTS

INITIAL RESERVOIR CONDITIONS

Reservoir Pressure	N/A psia	N/A MPa
Reservoir Temperature:	N/A F	N/A K

SINGLE-STAGE SEPARATOR TEST @ 1,503 psia (10.36 MPa) AND 140.0 F (333.2 K)

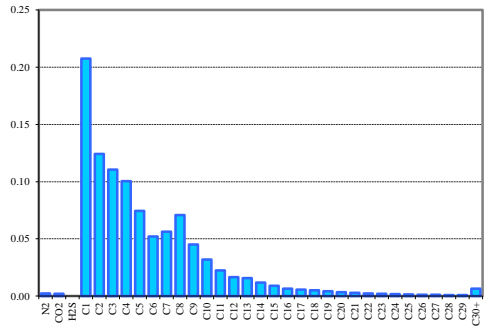
At Separator Test Conditions		
Oil Formation Volume Factor	1.4852 res.bbl/STB	1.4852 res.m ³ /m ³
Solution Gas-Oil Ratio	843.54 scf/STB	150.24 m ³ /m ³
Oil Density	0.6529 g/cm ³	652.9 kg/m ³
At Tank Conditions		
Residual Oil Density	0.7665 g/cm ³	766.5 kg/m ³
API Gravity	53.11	53.11

SINGLE-STAGE SEPARATOR TEST - MATERIAL BALANCE CHECK

Oil FVF @ 1503 psia (10.36 MPa) (Measured)	1.4852	res.bbl/STB (res.m ³ /m ³)
Oil FVF @ 1503 psia (10.36 MPa) (Calculated)	1.4877	res.bbl/STB (res.m ³ /m ³)
Absolute Relative Error	0.1687	(%)

**TABLE B45
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE 605630C
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF SEPARATOR FLUID**

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0022	0.0008	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0020	0.0011	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 78.28
-259.1	Methane	C ₁	0.2075	0.0425	
-128.0	Ethane	C ₂	0.1242	0.0477	
-44.0	Propane	C ₃	0.1106	0.0623	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0299	0.0222	
30.9	n-Butane	n-C ₄	0.0705	0.0523	Molecular Weight 145.17
82.0	i-Pentane	i-C ₅	0.0328	0.0303	Mole Fraction 0.3774
97.0	n-Pentane	n-C ₅	0.0416	0.0384	Density (g/cc) 0.7959
97 - 156	Hexanes	C ₆	0.0506	0.0557	
156 - 208.9	Heptanes	C ₇	0.0419	0.0537	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.0482	0.0704	
258.1 - 303.1	Nonanes	C ₉	0.0369	0.0604	Molecular Weight 154.31
303.1 - 345	Decanes	C ₁₀	0.0256	0.0465	Mole Fraction 0.3123
345 - 385	Undecanes	C ₁₁	0.0224	0.0421	Density (g/cc) 0.8073
385 - 419	Dodecanes	C ₁₂	0.0167	0.0343	
419 - 455	Tridecanes	C ₁₃	0.0158	0.0353	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0119	0.0290	
486 - 519.1	Pentadecanes	C ₁₅	0.0091	0.0239	Molecular Weight 240.97
519.1 - 550	Hexadecanes	C ₁₆	0.0065	0.0185	Mole Fraction 0.1001
550 - 557	Heptadecanes	C ₁₇	0.0057	0.0172	Density (g/cc) 0.8570
557 - 603	Octadecanes	C ₁₈	0.0051	0.0162	
603 - 626	Nonadecanes	C ₁₉	0.0043	0.0144	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0034	0.0118	
651.9 - 675	Heneicosanes	C ₂₁	0.0029	0.0107	Molecular Weight 516.30
675 - 696.9	Docosanes	C ₂₂	0.0024	0.0094	Mole Fraction 0.0065
696.9 - 716	Tricosanes	C ₂₃	0.0021	0.0084	Density (g/cc) 0.9760
716 - 736	Tetracosanes	C ₂₄	0.0018	0.0077	
736 - 755.1	Pentacosanes	C ₂₅	0.0016	0.0071	
755.1 - 774	Hexacosanes	C ₂₆	0.0013	0.0060	Recombination Parameters
774.1 - 792	Heptacosanes	C ₂₇	0.0012	0.0056	
792.1 - 809.1	Octacosanes	C ₂₈	0.0010	0.0050	Gas-Oil Ratio (cc/cc) 150.24
809.1 - 826	Nonacosanes	C ₂₉	0.0009	0.0045	Dead Oil Density (g/cc) 0.7665
Above 826	Tricontanes Plus	C ₃₀₊	0.0065	0.0431	Dead Oil MW (g/mol) 126.37
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0014	0.0012	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0060	0.0064	
178.0	Cyclohexane	C ₆ H ₁₂	0.0074	0.0079	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0171	0.0215	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0011	0.0011	
231.1	Toluene	C ₇ H ₈	0.0055	0.0064	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0048	0.0066	
291.9	o-Xylene	C ₈ H ₁₀	0.0035	0.0048	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0063	0.0096	
Total			1.0000	1.0000	

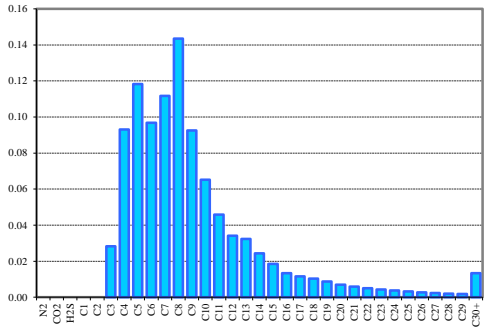


Note: Physical properties are calculated based on GPA 2145-00 physical constants

ID: 6794-2435

TABLE B46
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE 605630C
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED OIL

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0000	0.0000	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0000	0.0000	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 126.37
-259.1	Methane	C ₁	0.0000	0.0000	Density (g/cc) 0.7654
-128.0	Ethane	C ₂	0.0000	0.0000	
-44.0	Propane	C ₃	0.0283	0.0099	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0225	0.0104	
30.9	n-Butane	n-C ₄	0.0705	0.0324	Molecular Weight 146.22
82.0	i-Pentane	i-C ₅	0.0499	0.0285	Mole Fraction 0.7604
97.0	n-Pentane	n-C ₅	0.0683	0.0390	Density (g/cc) 0.7971
97 - 156	Hexanes	C ₆	0.0941	0.0641	
156 - 208.9	Heptanes	C ₇	0.0835	0.0662	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.0982	0.0887	
258.1 - 303.1	Nonanes	C ₉	0.0754	0.0765	Molecular Weight 155.06
303.1 - 345	Decanes	C ₁₀	0.0524	0.0590	Mole Fraction 0.6635
345 - 385	Undecanes	C ₁₁	0.0459	0.0534	Density (g/cc) 0.8076
385 - 419	Dodecanes	C ₁₂	0.0341	0.0435	
419 - 455	Tridecanes	C ₁₃	0.0323	0.0447	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0244	0.0367	
486 - 519.1	Pentadecanes	C ₁₅	0.0186	0.0302	Molecular Weight 240.97
519.1 - 550	Hexadecanes	C ₁₆	0.0134	0.0235	Mole Fraction 0.2047
550 - 557	Heptadecanes	C ₁₇	0.0116	0.0218	Density (g/cc) 0.8570
557 - 603	Octadecanes	C ₁₈	0.0103	0.0205	
603 - 626	Nonadecanes	C ₁₉	0.0087	0.0182	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0069	0.0150	
651.9 - 675	Heneicosanes	C ₂₁	0.0059	0.0135	Molecular Weight 516.30
675 - 696.9	Docosanes	C ₂₂	0.0049	0.0119	Mole Fraction 0.0134
696.9 - 716	Tricosanes	C ₂₃	0.0042	0.0106	Density (g/cc) 0.9760
716 - 736	Tetracosanes	C ₂₄	0.0037	0.0098	
736 - 755.1	Pentacosanes	C ₂₅	0.0033	0.0090	
755.1 - 774	Hexacosanes	C ₂₆	0.0027	0.0076	
774.1 - 792	Heptacosanes	C ₂₇	0.0024	0.0071	
792.1 - 809.1	Octacosanes	C ₂₈	0.0020	0.0063	
809.1 - 826	Nonacosanes	C ₂₉	0.0018	0.0057	
Above 826	Tricontanes Plus	C ₃₀₊	0.0134	0.0546	
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0028	0.0016	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0115	0.0077	
178.0	Cyclohexane	C ₆ H ₁₂	0.0145	0.0097	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0343	0.0267	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0022	0.0013	
231.1	Toluene	C ₇ H ₈	0.0110	0.0080	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0099	0.0083	
291.9	o-Xylene	C ₈ H ₁₀	0.0072	0.0061	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0128	0.0122	
Total			1.0000	1.0000	



Note: Physical properties are calculated based on GPA 2145-00 physical constants

GC ID: 2229

TABLE B47
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE 605630C
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0043	0.0044		
Carbon Dioxide	CO ₂	0.0039	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.4059	0.4075		
Ethane	C ₂	0.2429	0.2438		
Propane	C ₃	0.1892	0.1899	123.532	693.572
i-Butane	i-C ₄	0.0369	0.0371	28.652	160.866
n-Butane	n-C ₄	0.0704	0.0707	52.693	295.844
i-Pentane	i-C ₅	0.0165	0.0166	14.342	80.525
n-Pentane	n-C ₅	0.0161	0.0162	13.838	77.695
Hexanes	C ₆	0.0090	0.0091	8.807	49.445
Heptanes	C ₇	0.0035	0.0035	3.842	21.570
Octanes	C ₈	0.0013	0.0013	1.519	8.530
Nonanes	C ₉	0.0000	0.0000	0.036	0.203
Decanes	C ₁₀	0.0000	0.0000	0.016	0.090
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	247.277	1388.339
Propanes Plus	C ₃₊	0.3429	0.3443	247.277	1388.339
Butanes Plus	C ₄₊	0.1538	0.1544	123.745	694.767
Pentanes Plus	C ₅₊	0.0464	0.0466	42.400	238.057

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	32.29 kg/kmol	32.29 lb/lb-mol	P _{pc}	646.0 psia	4.45 MPa
Specific Gravity	1.1150 (Air = 1)	1.1150 (Air = 1)	T _{pc}	523.1 R	290.6 K
MW of C7+	99.09 kg/kmol	99.09 lb/lbmol	P _{pc} *	645.0 psia	4.45 MPa
Density of C7+	0.7284 g/cc	728.4 kg/m3	T _{pc} *	522.3 R	290.2 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,866.5 Btu/scf	69.67 MJ/m3	Dry	1,708.8 Btu/scf	63.79 MJ/m3
Wet	1,834.0 Btu/scf	68.46 MJ/m3	Wet	1,679.1 Btu/scf	62.68 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8911

TABLE B48
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE Z83113
SAMPLE VALIDATION
SAMPLE COLLECTION DATA

Project File:	CL-63169		
Company:	ENCANA CORPORATION		
Pool:	DUVERNAY		
Field:	WAHIGAN		
Well Location:	08-05-062-24W5		
Fluid Sample:	Z83113		
Sample Description:	LIVE SEP OIL		
Sampling Company:	WEATHERFORD LABS		
Name of Sampler:	NICK. C		
Sampling Date:	13-Apr-13		
Sampling Point:	SEPARATOR		
Sampling Temperature:	86.0 F	303.2 K	
Sampling Pressure:	1031 psia	7.11 MPa	
Reservoir Temperature:	N/A F	N/A K	
Reservoir Pressure:	N/A psia	N/A MPa	
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa	
Depth of Reported Pi	N/A mMD	N/A mss	

TABLE B49
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE Z83113
SAMPLE VALIDATION
MAIN PVT RESULTS

INITIAL RESERVOIR CONDITIONS

Reservoir Pressure	N/A psia	N/A MPa
Reservoir Temperature:	N/A F	N/A K

SINGLE-STAGE SEPARATOR TEST @ 1,513 psia (10.43 MPa) AND 140.0 F (333.2 K)

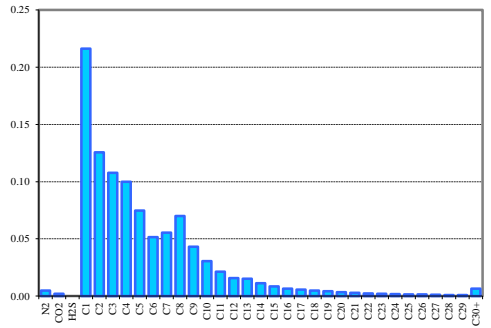
At Separator Test Conditions		
Oil Formation Volume Factor	1.4885 res.bbl/STB	1.4885 res.m ³ /m ³
Solution Gas-Oil Ratio	845.46 scf/STB	150.58 m ³ /m ³
Oil Density	0.6525 g/cm ³	652.5 kg/m ³
At Tank Conditions		
Residual Oil Density	0.7642 g/cm ³	764.2 kg/m ³
API Gravity	53.65	53.65

SINGLE-STAGE SEPARATOR TEST - MATERIAL BALANCE CHECK

Oil FVF @ 1513 psia (10.43 MPa) (Measured)	1.4885	res.bbl/STB (res.m ³ /m ³)
Oil FVF @ 1513 psia (10.43 MPa) (Calculated)	1.4752	res.bbl/STB (res.m ³ /m ³)
Absolute Relative Error	0.9000	(%)

**TABLE B50
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE Z83113
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF SEPARATOR FLUID**

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0047	0.0017	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0021	0.0012	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 77.19
-259.1	Methane	C ₁	0.2163	0.0450	
-128.0	Ethane	C ₂	0.1255	0.0489	
-44.0	Propane	C ₃	0.1078	0.0616	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0303	0.0228	
30.9	n-Butane	n-C ₄	0.0695	0.0523	Molecular Weight 145.72
82.0	i-Pentane	i-C ₅	0.0329	0.0308	Mole Fraction 0.3676
97.0	n-Pentane	n-C ₅	0.0418	0.0391	Density (g/cc) 0.7970
97 - 156	Hexanes	C ₆	0.0502	0.0560	
156 - 208.9	Heptanes	C ₇	0.0411	0.0533	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.0467	0.0691	
258.1 - 303.1	Nonanes	C ₉	0.0352	0.0586	Molecular Weight 155.14
303.1 - 345	Decanes	C ₁₀	0.0246	0.0454	Mole Fraction 0.3032
345 - 385	Undecanes	C ₁₁	0.0212	0.0404	Density (g/cc) 0.8086
385 - 419	Dodecanes	C ₁₂	0.0158	0.0329	
419 - 455	Tridecanes	C ₁₃	0.0151	0.0342	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0113	0.0279	
486 - 519.1	Pentadecanes	C ₁₅	0.0085	0.0227	Molecular Weight 244.43
519.1 - 550	Hexadecanes	C ₁₆	0.0064	0.0184	Mole Fraction 0.0973
550 - 557	Heptadecanes	C ₁₇	0.0056	0.0171	Density (g/cc) 0.8590
557 - 603	Octadecanes	C ₁₈	0.0050	0.0161	
603 - 626	Nonadecanes	C ₁₉	0.0043	0.0146	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0034	0.0121	
651.9 - 675	Heneicosanes	C ₂₁	0.0028	0.0107	Molecular Weight 537.49
675 - 696.9	Docosanes	C ₂₂	0.0024	0.0097	Mole Fraction 0.0066
696.9 - 716	Tricosanes	C ₂₃	0.0021	0.0088	Density (g/cc) 0.9787
716 - 736	Tetracosanes	C ₂₄	0.0019	0.0080	
736 - 755.1	Pentacosanes	C ₂₅	0.0016	0.0073	
755.1 - 774	Hexacosanes	C ₂₆	0.0014	0.0064	Recombination Parameters
774.1 - 792	Heptacosanes	C ₂₇	0.0012	0.0058	
792.1 - 809.1	Octacosanes	C ₂₈	0.0010	0.0052	Gas-Oil Ratio (cc/cc) 150.58
809.1 - 826	Nonacosanes	C ₂₉	0.0009	0.0045	Dead Oil Density (g/cc) 0.7642
Above 826	Tricontanes Plus	C ₃₀₊	0.0066	0.0457	Dead Oil MW (g/mol) 125.01
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0014	0.0013	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0059	0.0064	
178.0	Cyclohexane	C ₆ H ₁₂	0.0073	0.0079	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0166	0.0211	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0011	0.0011	
231.1	Toluene	C ₇ H ₈	0.0067	0.0080	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0046	0.0064	
291.9	o-Xylene	C ₈ H ₁₀	0.0033	0.0046	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0058	0.0091	
Total			1.0000	1.0000	

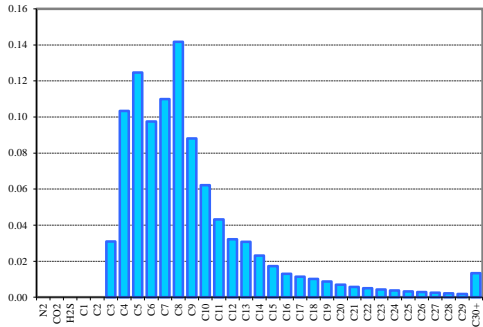


Note: Physical properties are calculated based on GPA 2145-00 physical constants

ID.: 6798-2432

TABLE B51
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE Z83113
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED OIL

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0000	0.0000	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0000	0.0000	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 125.01
-259.1	Methane	C ₁	0.0000	0.0000	Density (g/cc) 0.7633
-128.0	Ethane	C ₂	0.0000	0.0000	
-44.0	Propane	C ₃	0.0308	0.0109	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0253	0.0118	
30.9	n-Butane	n-C ₄	0.0780	0.0363	Molecular Weight 146.59
82.0	i-Pentane	i-C ₅	0.0530	0.0306	Mole Fraction 0.7411
97.0	n-Pentane	n-C ₅	0.0717	0.0414	Density (g/cc) 0.7979
97 - 156	Hexanes	C ₆	0.0948	0.0653	
156 - 208.9	Heptanes	C ₇	0.0819	0.0657	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.0949	0.0867	
258.1 - 303.1	Nonanes	C ₉	0.0719	0.0737	Molecular Weight 155.82
303.1 - 345	Decanes	C ₁₀	0.0502	0.0571	Mole Fraction 0.6435
345 - 385	Undecanes	C ₁₁	0.0432	0.0508	Density (g/cc) 0.8089
385 - 419	Dodecanes	C ₁₂	0.0322	0.0415	
419 - 455	Tridecanes	C ₁₃	0.0308	0.0431	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0231	0.0351	
486 - 519.1	Pentadecanes	C ₁₅	0.0173	0.0286	Molecular Weight 244.43
519.1 - 550	Hexadecanes	C ₁₆	0.0131	0.0232	Mole Fraction 0.1984
550 - 557	Heptadecanes	C ₁₇	0.0113	0.0215	Density (g/cc) 0.8590
557 - 603	Octadecanes	C ₁₈	0.0101	0.0203	
603 - 626	Nonadecanes	C ₁₉	0.0087	0.0184	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0069	0.0152	
651.9 - 675	Heneicosanes	C ₂₁	0.0058	0.0135	Molecular Weight 537.49
675 - 696.9	Docosanes	C ₂₂	0.0050	0.0122	Mole Fraction 0.0134
696.9 - 716	Tricosanes	C ₂₃	0.0043	0.0110	Density (g/cc) 0.9787
716 - 736	Tetracosanes	C ₂₄	0.0038	0.0100	
736 - 755.1	Pentacosanes	C ₂₅	0.0033	0.0091	
755.1 - 774	Hexacosanes	C ₂₆	0.0028	0.0081	
774.1 - 792	Heptacosanes	C ₂₇	0.0024	0.0073	
792.1 - 809.1	Octacosanes	C ₂₈	0.0021	0.0065	
809.1 - 826	Nonacosanes	C ₂₉	0.0018	0.0057	
Above 826	Tricontanes Plus	C ₃₀₊	0.0134	0.0575	
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0028	0.0016	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0115	0.0077	
178.0	Cyclohexane	C ₆ H ₁₂	0.0144	0.0097	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0334	0.0262	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0021	0.0013	
231.1	Toluene	C ₇ H ₈	0.0135	0.0100	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0095	0.0080	
291.9	o-Xylene	C ₈ H ₁₀	0.0068	0.0058	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0119	0.0115	
Total			1.0000	1.0000	



Note: Physical properties are calculated based on GPA 2145-00 physical constants

GC ID: 2231

TABLE B52
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE Z83113
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0092	0.0093		
Carbon Dioxide	CO ₂	0.0042	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.4242	0.4260		
Ethane	C ₂	0.2462	0.2473		
Propane	C ₃	0.1819	0.1827	118.778	666.881
i-Butane	i-C ₄	0.0352	0.0353	27.304	153.297
n-Butane	n-C ₄	0.0613	0.0616	45.856	257.462
i-Pentane	i-C ₅	0.0136	0.0137	11.819	66.360
n-Pentane	n-C ₅	0.0130	0.0131	11.216	62.972
Hexanes	C ₆	0.0072	0.0073	7.071	39.701
Heptanes	C ₇	0.0029	0.0029	3.121	17.521
Octanes	C ₈	0.0010	0.0010	1.162	6.526
Nonanes	C ₉	0.0000	0.0000	0.036	0.202
Decanes	C ₁₀	0.0000	0.0000	0.017	0.095
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	226.381	1271.018
Propanes Plus	C ₃₊	0.3161	0.3174	226.381	1271.018
Butanes Plus	C ₄₊	0.1342	0.1348	107.603	604.137
Pentanes Plus	C ₅₊	0.0377	0.0379	34.443	193.378

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	31.21 kg/kmol	31.21 lb/lb-mol	P _{pc}	648.8 psia	4.47 MPa
Specific Gravity	1.0775 (Air = 1)	1.0775 (Air = 1)	T _{pc}	511.9 R	284.4 K
MW of C7+	99.03 kg/kmol	99.03 lb/lbmol	P _{pc} *	647.7 psia	4.47 MPa
Density of C7+	0.7282 g/cc	728.2 kg/m3	T _{pc} *	511.0 R	283.9 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,799.4 Btu/scf	67.17 MJ/m3	Dry	1,646.4 Btu/scf	61.45 MJ/m3
Wet	1,768.0 Btu/scf	66.00 MJ/m3	Wet	1,617.7 Btu/scf	60.39 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8917

RATE 4 81 E3 SCMD

TABLE B53
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL4025
SAMPLE VALIDATION
GAS SAMPLE COLLECTION DATA

Project File:	CL-63169	
Company:	ENCANA CORPORATION	
Pool:	DUVERNAY	
Field:	WAHIGAN	
Well Location:	08-05-062-24W5	
Fluid Sample:	CYL4025	
Sample Description:	SEP GAS	
Sampling Company:	WEATHERFORD LABS	
Name of Sampler:	NICK. C	
Sampling Date:	14-Apr-13	
Sampling Point:	SEP METER RUN	
Sampling Temperature:	96.8 F	309.2 K
Sampling Pressure:	1030 psia	7.10 MPa
Reservoir Temperature:	N/A F	N/A K
Reservoir Pressure:	N/A psia	N/A MPa
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa
Depth of Reported Pi	N/A mMD	N/A mss

TABLE B54
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL4025
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0084	0.0084		
Carbon Dioxide	CO ₂	0.0043	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.7867	0.7901		
Ethane	C ₂	0.1307	0.1313		
Propane	C ₃	0.0458	0.0460	29.909	167.924
i-Butane	i-C ₄	0.0059	0.0059	4.561	25.608
n-Butane	n-C ₄	0.0100	0.0101	7.513	42.185
i-Pentane	i-C ₅	0.0021	0.0022	1.864	10.465
n-Pentane	n-C ₅	0.0021	0.0022	1.842	10.342
Hexanes	C ₆	0.0028	0.0028	2.720	15.271
Heptanes	C ₇	0.0007	0.0007	0.728	4.085
Octanes	C ₈	0.0003	0.0003	0.407	2.284
Nonanes	C ₉	0.0000	0.0000	0.045	0.251
Decanes	C ₁₀	0.0000	0.0000	0.040	0.222
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	49.628	278.636
Propanes Plus	C ₃₊	0.0699	0.0702	49.628	278.636
Butanes Plus	C ₄₊	0.0241	0.0242	19.719	110.712
Pentanes Plus	C ₅₊	0.0081	0.0082	7.644	42.920

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	20.58 kg/kmol	20.58 lb/lb-mol	P _{pc}	667.2 psia	4.60 MPa
Specific Gravity	0.7105 (Air = 1)	0.7105 (Air = 1)	T _{pc}	395.7 R	219.8 K
MW of C7+	101.24 kg/kmol	101.24 lb/lbmol	P _{pc} *	665.8 psia	4.59 MPa
Density of C7+	0.7320 g/cc	732.0 kg/m3	T _{pc} *	394.8 R	219.3 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,229.5 Btu/scf	45.89 MJ/m3	Dry	1,114.6 Btu/scf	41.60 MJ/m3
Wet	1,208.1 Btu/scf	45.09 MJ/m3	Wet	1,095.2 Btu/scf	40.88 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8858

ID: 15944

TABLE B55
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL3609
SAMPLE VALIDATION
GAS SAMPLE COLLECTION DATA

Project File:	CL-63169	
Company:	ENCANA CORPORATION	
Pool:	DUVERNAY	
Field:	WAHIGAN	
Well Location:	08-05-062-24W5	
Fluid Sample:	CYL3609	
Sample Description:	SEP GAS	
Sampling Company:	WEATHERFORD LABS	
Name of Sampler:	NICK. C	
Sampling Date:	14-Apr-13	
Sampling Point:	SEP METER RUN	
Sampling Temperature:	96.8 F	309.2 K
Sampling Pressure:	1030 psia	7.10 MPa
Reservoir Temperature:	N/A F	N/A K
Reservoir Pressure:	N/A psia	N/A MPa
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa
Depth of Reported Pi	N/A mMD	N/A mss

**TABLE B56
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE CYL3609
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS**

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0082	0.0082		
Carbon Dioxide	CO ₂	0.0043	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.7810	0.7844		
Ethane	C ₂	0.1309	0.1315		
Propane	C ₃	0.0468	0.0470	30.545	171.493
i-Butane	i-C ₄	0.0062	0.0062	4.781	26.846
n-Butane	n-C ₄	0.0107	0.0107	7.983	44.822
i-Pentane	i-C ₅	0.0024	0.0024	2.066	11.601
n-Pentane	n-C ₅	0.0024	0.0024	2.077	11.659
Hexanes	C ₆	0.0054	0.0055	5.307	29.799
Heptanes	C ₇	0.0009	0.0009	1.023	5.745
Octanes	C ₈	0.0007	0.0007	0.798	4.479
Nonanes	C ₉	0.0001	0.0001	0.091	0.509
Decanes	C ₁₀	0.0001	0.0001	0.098	0.548
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	54.769	307.499
Propanes Plus	C ₃₊	0.0756	0.0759	54.769	307.499
Butanes Plus	C ₄₊	0.0288	0.0289	24.224	136.006
Pentanes Plus	C ₅₊	0.0120	0.0120	11.459	64.339

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	20.92 kg/kmol	20.92 lb/lb-mol	P _{pc}	666.2 psia	4.59 MPa
Specific Gravity	0.7222 (Air = 1)	0.7222 (Air = 1)	T _{pc}	398.7 R	221.5 K
MW of C7+	102.64 kg/kmol	102.64 lb/lbmol	P _{pc} *	664.8 psia	4.58 MPa
Density of C7+	0.7346 g/cc	734.6 kg/m3	T _{pc} *	397.8 R	221.0 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,248.1 Btu/scf	46.59 MJ/m3	Dry	1,131.9 Btu/scf	42.25 MJ/m3
Wet	1,226.4 Btu/scf	45.78 MJ/m3	Wet	1,112.2 Btu/scf	41.52 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8884

ID: 15967

TABLE B57
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE AM5179
SAMPLE VALIDATION
SAMPLE COLLECTION DATA

Project File:	CL-63169		
Company:	ENCANA CORPORATION		
Pool:	DUVERNAY		
Field:	WAHIGAN		
Well Location:	08-05-062-24W5		
Fluid Sample:	AM5179		
Sample Description:	LIVE SEP OIL		
Sampling Company:	WEATHERFORD LABS		
Name of Sampler:	NICK. C		
Sampling Date:	14-Apr-13		
Sampling Point:	SEPARATOR		
Sampling Temperature:	96.8 F	309.2 K	
Sampling Pressure:	1030 psia	7.10 MPa	
Reservoir Temperature:	N/A F	N/A K	
Reservoir Pressure:	N/A psia	N/A MPa	
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa	
Depth of Reported Pi	N/A mMD	N/A mss	

TABLE B58
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE AM5179
SAMPLE VALIDATION
MAIN PVT RESULTS

INITIAL RESERVOIR CONDITIONS

Reservoir Pressure	N/A psia	N/A MPa
Reservoir Temperature:	N/A F	N/A K

SINGLE-STAGE SEPARATOR TEST @ 1,472 psia (10.15 MPa) AND 140.0 F (333.2 K)

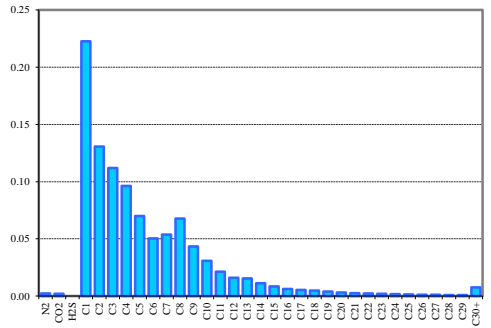
At Separator Test Conditions		
Oil Formation Volume Factor	1.6163 res.bbl/STB	1.6163 res.m ³ /m ³
Solution Gas-Oil Ratio	955.77 scf/STB	170.22 m ³ /m ³
Oil Density	0.6246 g/cm ³	624.6 kg/m ³
At Tank Conditions		
Residual Oil Density	0.7655 g/cm ³	765.5 kg/m ³
API Gravity	53.35	53.35

SINGLE-STAGE SEPARATOR TEST - MATERIAL BALANCE CHECK

Oil FVF @ 1472 psia (10.15 MPa) (Measured)	1.6163	res.bbl/STB (res.m ³ /m ³)
Oil FVF @ 1472 psia (10.15 MPa) (Calculated)	1.6013	res.bbl/STB (res.m ³ /m ³)
Absolute Relative Error	0.9348	(%)

TABLE B59
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE AM5179
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF SEPARATOR FLUID

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0024	0.0009	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0020	0.0012	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 76.60
-259.1	Methane	C ₁	0.2226	0.0466	
-128.0	Ethane	C ₂	0.1306	0.0513	
-44.0	Propane	C ₃	0.1119	0.0644	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0290	0.0220	
30.9	n-Butane	n-C ₄	0.0672	0.0510	Molecular Weight 146.48
82.0	i-Pentane	i-C ₅	0.0309	0.0291	Mole Fraction 0.3630
97.0	n-Pentane	n-C ₅	0.0392	0.0369	Density (g/cc) 0.7978
97 - 156	Hexanes	C ₆	0.0492	0.0554	
156 - 208.9	Heptanes	C ₇	0.0401	0.0524	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.0462	0.0688	
258.1 - 303.1	Nonanes	C ₉	0.0353	0.0592	Molecular Weight 155.90
303.1 - 345	Decanes	C ₁₀	0.0248	0.0462	Mole Fraction 0.3001
345 - 385	Undecanes	C ₁₁	0.0214	0.0411	Density (g/cc) 0.8094
385 - 419	Dodecanes	C ₁₂	0.0161	0.0339	
419 - 455	Tridecanes	C ₁₃	0.0153	0.0350	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0113	0.0280	
486 - 519.1	Pentadecanes	C ₁₅	0.0086	0.0230	Molecular Weight 245.45
519.1 - 550	Hexadecanes	C ₁₆	0.0063	0.0181	Mole Fraction 0.0966
550 - 557	Heptadecanes	C ₁₇	0.0054	0.0166	Density (g/cc) 0.8606
557 - 603	Octadecanes	C ₁₈	0.0047	0.0155	
603 - 626	Nonadecanes	C ₁₉	0.0040	0.0138	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0032	0.0113	
651.9 - 675	Heneicosanes	C ₂₁	0.0026	0.0100	Molecular Weight 533.05
675 - 696.9	Docosanes	C ₂₂	0.0023	0.0093	Mole Fraction 0.0075
696.9 - 716	Tricosanes	C ₂₃	0.0019	0.0081	Density (g/cc) 0.9782
716 - 736	Tetracosanes	C ₂₄	0.0017	0.0073	
736 - 755.1	Pentacosanes	C ₂₅	0.0015	0.0068	
755.1 - 774	Hexacosanes	C ₂₆	0.0013	0.0059	Recombination Parameters
774.1 - 792	Heptacosanes	C ₂₇	0.0011	0.0053	
792.1 - 809.1	Octacosanes	C ₂₈	0.0010	0.0049	Gas-Oil Ratio (cc/cc) 170.22
809.1 - 826	Nonacosanes	C ₂₉	0.0008	0.0043	Dead Oil Density (g/cc) 0.7655
Above 826	Tricontanes Plus	C ₃₀₊	0.0075	0.0523	Dead Oil MW (g/mol) 130.38
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0013	0.0011	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0057	0.0063	
178.0	Cyclohexane	C ₆ H ₁₂	0.0070	0.0077	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0164	0.0211	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0010	0.0011	
231.1	Toluene	C ₇ H ₈	0.0052	0.0062	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0047	0.0065	
291.9	o-Xylene	C ₈ H ₁₀	0.0034	0.0047	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0060	0.0094	
Total			1.0000	1.0000	

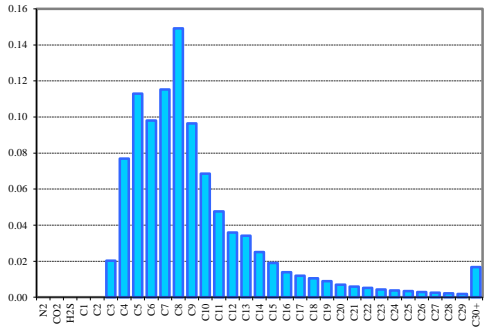


Note: Physical properties are calculated based on GPA 2145-00 physical constants

ID.: 6800-2433

TABLE B60
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE AM5179
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED OIL

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0000	0.0000	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0000	0.0000	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 130.38
-259.1	Methane	C ₁	0.0000	0.0000	Density (g/cc) 0.7723
-128.0	Ethane	C ₂	0.0000	0.0000	
-44.0	Propane	C ₃	0.0202	0.0068	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0179	0.0080	
30.9	n-Butane	n-C ₄	0.0590	0.0263	Molecular Weight 147.95
82.0	i-Pentane	i-C ₅	0.0470	0.0260	Mole Fraction 0.7900
97.0	n-Pentane	n-C ₅	0.0659	0.0365	Density (g/cc) 0.7994
97 - 156	Hexanes	C ₆	0.0953	0.0630	
156 - 208.9	Heptanes	C ₇	0.0863	0.0663	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.1022	0.0895	
258.1 - 303.1	Nonanes	C ₉	0.0786	0.0773	Molecular Weight 156.76
303.1 - 345	Decanes	C ₁₀	0.0553	0.0603	Mole Fraction 0.6920
345 - 385	Undecanes	C ₁₁	0.0476	0.0536	Density (g/cc) 0.8098
385 - 419	Dodecanes	C ₁₂	0.0359	0.0443	
419 - 455	Tridecanes	C ₁₃	0.0341	0.0457	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0251	0.0366	
486 - 519.1	Pentadecanes	C ₁₅	0.0191	0.0301	Molecular Weight 245.45
519.1 - 550	Hexadecanes	C ₁₆	0.0139	0.0237	Mole Fraction 0.2149
550 - 557	Heptadecanes	C ₁₇	0.0119	0.0217	Density (g/cc) 0.8606
557 - 603	Octadecanes	C ₁₈	0.0105	0.0202	
603 - 626	Nonadecanes	C ₁₉	0.0089	0.0180	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0070	0.0148	
651.9 - 675	Heneicosanes	C ₂₁	0.0059	0.0131	Molecular Weight 533.05
675 - 696.9	Docosanes	C ₂₂	0.0052	0.0121	Mole Fraction 0.0167
696.9 - 716	Tricosanes	C ₂₃	0.0043	0.0105	Density (g/cc) 0.9782
716 - 736	Tetracosanes	C ₂₄	0.0038	0.0096	
736 - 755.1	Pentacosanes	C ₂₅	0.0034	0.0089	
755.1 - 774	Hexacosanes	C ₂₆	0.0028	0.0078	
774.1 - 792	Heptacosanes	C ₂₇	0.0024	0.0070	
792.1 - 809.1	Octacosanes	C ₂₈	0.0021	0.0064	
809.1 - 826	Nonacosanes	C ₂₉	0.0018	0.0056	
Above 826	Tricontanes Plus	C ₃₀₊	0.0167	0.0684	
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0028	0.0015	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0118	0.0076	
178.0	Cyclohexane	C ₆ H ₁₂	0.0149	0.0096	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0357	0.0269	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0022	0.0013	
231.1	Toluene	C ₇ H ₈	0.0113	0.0080	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0104	0.0085	
291.9	o-Xylene	C ₈ H ₁₀	0.0075	0.0061	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0134	0.0123	
Total			1.0000	1.0000	



Note: Physical properties are calculated based on GPA 2145-00 physical constants

GC ID: 2232

TABLE B61
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE AM5179
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0043	0.0043		
Carbon Dioxide	CO ₂	0.0037	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.4044	0.4059		
Ethane	C ₂	0.2373	0.2381		
Propane	C ₃	0.1868	0.1875	122.011	685.034
i-Butane	i-C ₄	0.0380	0.0381	29.486	165.550
n-Butane	n-C ₄	0.0739	0.0742	55.304	310.506
i-Pentane	i-C ₅	0.0178	0.0179	15.461	86.807
n-Pentane	n-C ₅	0.0173	0.0174	14.909	83.707
Hexanes	C ₆	0.0116	0.0116	11.295	63.414
Heptanes	C ₇	0.0037	0.0037	4.044	22.704
Octanes	C ₈	0.0012	0.0012	1.489	8.360
Nonanes	C ₉	0.0000	0.0000	0.025	0.141
Decanes	C ₁₀	0.0000	0.0000	0.009	0.049
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	254.033	1426.273
Propanes Plus	C ₃₊	0.3504	0.3517	254.033	1426.273
Butanes Plus	C ₄₊	0.1636	0.1642	132.022	741.238
Pentanes Plus	C ₅₊	0.0516	0.0518	47.232	265.182

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	32.67 kg/kmol	32.67 lb/lb-mol	P _{pc}	644.2 psia	4.44 MPa
Specific Gravity	1.1279 (Air = 1)	1.1279 (Air = 1)	T _{pc}	525.9 R	292.1 K
MW of C7+	98.87 kg/kmol	98.87 lb/lbmol	P _{pc} *	643.2 psia	4.43 MPa
Density of C7+	0.7279 g/cc	727.9 kg/m3	T _{pc} *	525.1 R	291.7 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,887.1 Btu/scf	70.44 MJ/m3	Dry	1,728.0 Btu/scf	64.50 MJ/m3
Wet	1,854.2 Btu/scf	69.21 MJ/m3	Wet	1,697.9 Btu/scf	63.38 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8920

TABLE B62
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE V10184
SAMPLE VALIDATION
SAMPLE COLLECTION DATA

Project File:	CL-63169		
Company:	ENCANA CORPORATION		
Pool:	DUVERNAY		
Field:	WAHIGAN		
Well Location:	08-05-062-24W5		
Fluid Sample:	V10184		
Sample Description:	LIVE SEP OIL		
Sampling Company:	WEATHERFORD LABS		
Name of Sampler:	NICK. C		
Sampling Date:	14-Apr-13		
Sampling Point:	SEPARATOR		
Sampling Temperature:	96.8 F	309.2 K	
Sampling Pressure:	1030 psia	7.10 MPa	
Reservoir Temperature:	N/A F	N/A K	
Reservoir Pressure:	N/A psia	N/A MPa	
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa	
Depth of Reported Pi	N/A mMD	N/A mss	

TABLE B63
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE V10184
SAMPLE VALIDATION
MAIN PVT RESULTS

INITIAL RESERVOIR CONDITIONS

Reservoir Pressure	N/A psia	N/A MPa
Reservoir Temperature:	N/A F	N/A K

SINGLE-STAGE SEPARATOR TEST @ 1,443 psia (9.95 MPa) AND 140.0 F (333.2 K)

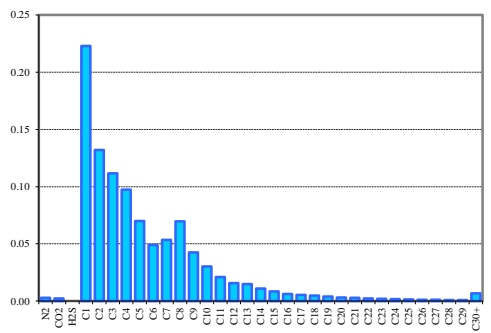
At Separator Test Conditions		
Oil Formation Volume Factor	1.6185 res.bbl/STB	1.6185 res.m ³ /m ³
Solution Gas-Oil Ratio	958.79 scf/STB	170.76 m ³ /m ³
Oil Density	0.6240 g/cm ³	624.0 kg/m ³
At Tank Conditions		
Residual Oil Density	0.7669 g/cm ³	766.9 kg/m ³
API Gravity	53.02	53.02

SINGLE-STAGE SEPARATOR TEST - MATERIAL BALANCE CHECK

Oil FVF @ 1443 psia (9.95 MPa) (Measured)	1.6185	res.bbl/STB (res.m ³ /m ³)
Oil FVF @ 1443 psia (9.95 MPa) (Calculated)	1.6033	res.bbl/STB (res.m ³ /m ³)
Absolute Relative Error	0.9526	(%)

TABLE B64
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE V10184
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF SEPARATOR FLUID

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0027	0.0010	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0023	0.0013	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 76.14
-259.1	Methane	C ₁	0.2229	0.0470	
-128.0	Ethane	C ₂	0.1320	0.0521	
-44.0	Propane	C ₃	0.1115	0.0646	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0304	0.0232	
30.9	n-Butane	n-C ₄	0.0669	0.0511	Molecular Weight 146.14
82.0	i-Pentane	i-C ₅	0.0309	0.0293	Mole Fraction 0.3599
97.0	n-Pentane	n-C ₅	0.0392	0.0371	Density (g/cc) 0.7980
97 - 156	Hexanes	C ₆	0.0477	0.0540	
156 - 208.9	Heptanes	C ₇	0.0397	0.0522	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.0455	0.0683	
258.1 - 303.1	Nonanes	C ₉	0.0348	0.0587	Molecular Weight 155.26
303.1 - 345	Decanes	C ₁₀	0.0242	0.0453	Mole Fraction 0.2986
345 - 385	Undecanes	C ₁₁	0.0210	0.0406	Density (g/cc) 0.8094
385 - 419	Dodecanes	C ₁₂	0.0157	0.0331	
419 - 455	Tridecanes	C ₁₃	0.0150	0.0344	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0111	0.0277	
486 - 519.1	Pentadecanes	C ₁₅	0.0084	0.0228	Molecular Weight 245.36
519.1 - 550	Hexadecanes	C ₁₆	0.0063	0.0183	Mole Fraction 0.0953
550 - 557	Heptadecanes	C ₁₇	0.0054	0.0167	Density (g/cc) 0.8600
557 - 603	Octadecanes	C ₁₈	0.0048	0.0157	
603 - 626	Nonadecanes	C ₁₉	0.0041	0.0143	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0032	0.0117	
651.9 - 675	Heneicosanes	C ₂₁	0.0027	0.0105	Molecular Weight 544.70
675 - 696.9	Docosanes	C ₂₂	0.0024	0.0094	Mole Fraction 0.0068
696.9 - 716	Tricosanes	C ₂₃	0.0020	0.0083	Density (g/cc) 0.9796
716 - 736	Tetracosanes	C ₂₄	0.0018	0.0077	
736 - 755.1	Pentacosanes	C ₂₅	0.0016	0.0070	
755.1 - 774	Hexacosanes	C ₂₆	0.0013	0.0062	Recombination Parameters
774.1 - 792	Heptacosanes	C ₂₇	0.0011	0.0056	
792.1 - 809.1	Octacosanes	C ₂₈	0.0010	0.0050	Gas-Oil Ratio (cc/cc) 170.76
809.1 - 826	Nonacosanes	C ₂₉	0.0008	0.0044	Dead Oil Density (g/cc) 0.7669
Above 826	Tricontanes Plus	C ₃₀₊	0.0068	0.0486	Dead Oil MW (g/mol) 129.36
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0013	0.0012	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0057	0.0062	
178.0	Cyclohexane	C ₆ H ₁₂	0.0070	0.0077	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0162	0.0209	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0010	0.0011	
231.1	Toluene	C ₇ H ₈	0.0080	0.0096	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0045	0.0062	
291.9	o-Xylene	C ₈ H ₁₀	0.0034	0.0047	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0059	0.0094	
Total			1.0000	1.0000	

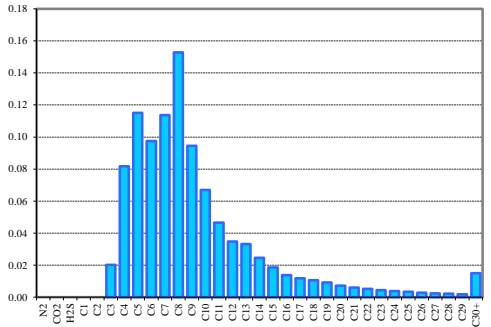


Note: Physical properties are calculated based on GPA 2145-00 physical constants

ID: 6796-2431

TABLE B65
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE V10184
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED OIL

Boiling Point (F)	Component Name	Chemical Symbol	Mole Fraction	Mass Fraction	Calculated Properties
-320.4	Nitrogen	N ₂	0.0000	0.0000	Total Sample
-109.3	Carbon Dioxide	CO ₂	0.0000	0.0000	
-76.6	Hydrogen Sulphide	H ₂ S	0.0000	0.0000	Molecular Weight 129.36
-259.1	Methane	C ₁	0.0000	0.0000	Density (g/cc) 0.7711
-128.0	Ethane	C ₂	0.0000	0.0000	
-44.0	Propane	C ₃	0.0202	0.0069	C₆₊ Fraction
10.9	i-Butane	i-C ₄	0.0191	0.0086	
30.9	n-Butane	n-C ₄	0.0626	0.0281	Molecular Weight 147.39
82.0	i-Pentane	i-C ₅	0.0481	0.0268	Mole Fraction 0.7831
97.0	n-Pentane	n-C ₅	0.0669	0.0373	Density (g/cc) 0.7994
97 - 156	Hexanes	C ₆	0.0947	0.0631	
156 - 208.9	Heptanes	C ₇	0.0851	0.0659	C₇₊ Fraction
208.9 - 258.1	Octanes	C ₈	0.1004	0.0887	
258.1 - 303.1	Nonanes	C ₉	0.0772	0.0765	Molecular Weight 156.16
303.1 - 345	Decanes	C ₁₀	0.0537	0.0591	Mole Fraction 0.6856
345 - 385	Undecanes	C ₁₁	0.0466	0.0530	Density (g/cc) 0.8098
385 - 419	Dodecanes	C ₁₂	0.0347	0.0432	
419 - 455	Tridecanes	C ₁₃	0.0331	0.0448	C₁₂₊ Fraction
455 - 486	Tetradecanes	C ₁₄	0.0246	0.0361	
486 - 519.1	Pentadecanes	C ₁₅	0.0187	0.0297	Molecular Weight 245.36
519.1 - 550	Hexadecanes	C ₁₆	0.0139	0.0239	Mole Fraction 0.2112
550 - 557	Heptadecanes	C ₁₇	0.0119	0.0217	Density (g/cc) 0.8600
557 - 603	Octadecanes	C ₁₈	0.0105	0.0204	
603 - 626	Nonadecanes	C ₁₉	0.0092	0.0186	C₃₀₊ Fraction
626 - 651.9	Eicosanes	C ₂₀	0.0072	0.0152	
651.9 - 675	Heneicosanes	C ₂₁	0.0061	0.0137	Molecular Weight 544.70
675 - 696.9	Docosanes	C ₂₂	0.0052	0.0123	Mole Fraction 0.0151
696.9 - 716	Tricosanes	C ₂₃	0.0044	0.0108	Density (g/cc) 0.9796
716 - 736	Tetracosanes	C ₂₄	0.0039	0.0100	
736 - 755.1	Pentacosanes	C ₂₅	0.0034	0.0092	
755.1 - 774	Hexacosanes	C ₂₆	0.0029	0.0080	
774.1 - 792	Heptacosanes	C ₂₇	0.0025	0.0073	
792.1 - 809.1	Octacosanes	C ₂₈	0.0022	0.0065	
809.1 - 826	Nonacosanes	C ₂₉	0.0019	0.0058	
Above 826	Tricontanes Plus	C ₃₀₊	0.0151	0.0634	
NAPHTHENES					
120.0	Cyclopentane	C ₅ H ₁₀	0.0028	0.0015	
162.0	Methylcyclopentane	C ₆ H ₁₂	0.0116	0.0076	
178.0	Cyclohexane	C ₆ H ₁₂	0.0147	0.0096	
214.0	Methylcyclohexane	C ₇ H ₁₄	0.0351	0.0266	
AROMATICS					
176.0	Benzene	C ₆ H ₆	0.0022	0.0013	
231.1	Toluene	C ₇ H ₈	0.0173	0.0123	
277 - 282	Ethylbenzene & p,m-Xylene	C ₈ H ₁₀	0.0099	0.0081	
291.9	o-Xylene	C ₈ H ₁₀	0.0074	0.0061	
336.0	1, 2, 4-Trimethylbenzene	C ₉ H ₁₂	0.0131	0.0122	
Total			1.0000	1.0000	



Note: Physical properties are calculated based on GPA 2145-00 physical constants

GC ID: 2230

TABLE B66
ENCANA CORPORATION - WAHIGAN
WELL 08-05-062-24W5 - DUVERNAY - SAMPLE V10184
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N ₂	0.0050	0.0050		
Carbon Dioxide	CO ₂	0.0041	0.0000		
Hydrogen Sulphide	H ₂ S	0.0000	0.0000		
Methane	C ₁	0.4062	0.4079		
Ethane	C ₂	0.2405	0.2415		
Propane	C ₃	0.1866	0.1873	121.837	684.056
i-Butane	i-C ₄	0.0398	0.0400	30.882	173.388
n-Butane	n-C ₄	0.0704	0.0707	52.671	295.721
i-Pentane	i-C ₅	0.0167	0.0168	14.527	81.563
n-Pentane	n-C ₅	0.0164	0.0165	14.081	79.056
Hexanes	C ₆	0.0090	0.0090	8.785	49.321
Heptanes	C ₇	0.0038	0.0038	4.124	23.155
Octanes	C ₈	0.0015	0.0015	1.769	9.930
Nonanes	C ₉	0.0000	0.0000	0.034	0.190
Decanes	C ₁₀	0.0000	0.0000	0.014	0.081
Undecane	C ₁₁	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C ₁₂₊	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	248.724	1396.461
Propanes Plus	C ₃₊	0.3441	0.3455	248.724	1396.461
Butanes Plus	C ₄₊	0.1575	0.1582	126.886	712.405
Pentanes Plus	C ₅₊	0.0474	0.0475	43.334	243.296

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	32.39 kg/kmol	32.39 lb/lb-mol	P _{pc}	645.4 psia	4.45 MPa
Specific Gravity	1.1182 (Air = 1)	1.1182 (Air = 1)	T _{pc}	523.4 R	290.8 K
MW of C7+	99.24 kg/kmol	99.24 lb/lbmol	P _{pc} *	644.4 psia	4.44 MPa
Density of C7+	0.7287 g/cc	728.7 kg/m3	T _{pc} *	522.6 R	290.3 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,869.9 Btu/scf	69.80 MJ/m3	Dry	1,712.0 Btu/scf	63.90 MJ/m3
Wet	1,837.3 Btu/scf	68.58 MJ/m3	Wet	1,682.2 Btu/scf	62.79 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 8914