



September 8, 2009

CQI Report to Stakeholders

## Subject: July 2009 Condensate Results

As of January 1, 2008, the Crude Quality Monitoring Project has modified its condensate testing program. We acknowledge that industry requirements and specifications are different for condensates than for other types of crude. As such, we have updated our condensate testing program in an effort to provide the industry with reliable, accurate, and usable information specifically relevant to condensates. We believe that this information will be valuable for numerous industry purposes, such as better blending data and formulating condensate specifications and guidelines. Should you have any questions regarding this report, or the modified condensate testing program, please contact Crude Quality Inc. at (780) 991-9900 or at [lywood@crudequality.com](mailto:lywood@crudequality.com).

### Observations:

Attached are detailed C30+ compositional and trace sulphur analyses, as well as historical data from [crudemonitor.ca](http://crudemonitor.ca) pertaining to typical light ends and bulk properties for Condensate Blend (CRW).

In addition to the attached, we note the following testing results:

	Sample Date	Batch #	Sulphur (wt%)	API Gravity (degree)	Absolute Density (kg/m <sup>3</sup> )	MCR (wt%)	Viscosity @ 7.5° C (cSt)	RVP (kPa)	Organo-Phosphates (ppmw)	Total Mercaptans (ppm)	Olefins (wt%)
<b>Current Data</b>	07/12/09	CRW-842	0.17	68.3	707.6	0.2	0.73	77.7	-	104	ND
<b>Average To Date</b>			0.19	65.3	718.7	0.23	0.79	75.7	0.9	101	8xND
<b>Std Dev.</b>			0.08	2.1	7.7	0.13	0.05	2.9	0.23	19	-
<b>Avg+StdDev</b>			0.27	67.3	726.5	0.36	0.85	78.5	1.13	120	-
<b>Avg-StdDev</b>			0.11	63.1	711	0.10	0.74	72.8	0.67	83	-

A slightly lighter and less viscous sample of CRW was received for testing in July. Increased pentanes were observed, while C16s x C19s were marginally decreased. This sample contained 140 ppmw of sediment, which is about average for this stream. No olefin or oxygenates were detected.

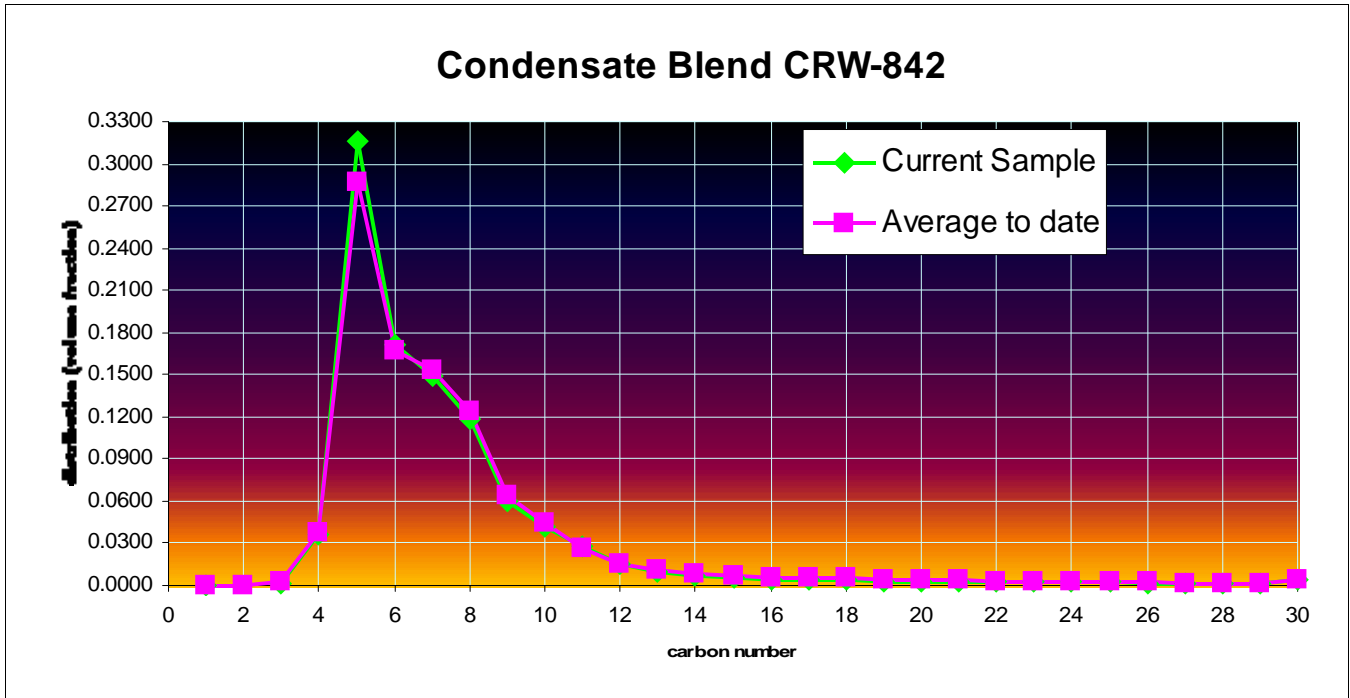


Figure 1: C30+ Compositional Analysis for CRW-842



# C30+ COMPOSITIONAL ANALYSIS

A941762:Q16084

MaxID

Client ID

Meter Number

Laboratory Number

CRUDE QUALITY INC.

Operator Name

LSD

Well ID

CRUDE QUALITY INC. JUL09 LIGHT CRUDES

ENBRIDGE

Well Name

Initials of Sampler

Sampling Company

COND. BLEND CRW-842

1L CAN

Field or Area

Pool or Zone

Sample Point

Container Identity

Percent Full

Test Recovery

Interval

Elevations (m)

Sample Gathering Point

Solution Gas

Test Type

No.

Multiple Recovery

From:

To:

KB

GRD

Well Fluid Status

Well Status Mode

Production Rates

Gauge Pressures kPa

Temperature °C

Well Status Type

Well Type

Water m3/d

Oil m3/d

Gas 1000m3/d

Source

As Received

Source

As Received

Gas or Condensate Project

Licence No.

2009/07/12

2009/08/10

2009/09/03

SK1,CB

Date Sampled Start

Date Sampled End

Date Received

Date Reported

Date Reissued

Analyst

## COMPOSITION

COMPONENT	MOLE FRACTION	MASS FRACTION	VOLUME FRACTION
N2			
CO2			
H2S			
C1	0.0000	0.0000	0.0000
C2	Trace	Trace	Trace
C3	0.0027	0.0013	0.0017
IC4	0.0060	0.0038	0.0047
NC4	0.0430	0.0269	0.0319
IC5	0.1827	0.1420	0.1575
NC5	0.1852	0.1438	0.1579
C6	0.1789	0.1658	0.1714
C7+	0.4015	0.5164	0.4749
TOTAL	1.0000	1.0000	1.0000

## PROPERTIES

RESIDUE	RELATIVE DENSITY @ 15 °C		RELATIVE MOLECULAR MASS		DATA SUMMARY		
	OBSERVED	CALCULATED	OBSERVED	CALCULATED	MOLE FRACTION	MASS FRACTION	VOLUME FRACTION
C5+		0.697		95	0.9483	0.9680	0.9617
C6+		0.731		109	0.5804	0.6822	0.6463
C7+	0.754		119	119	0.4015	0.5164	0.4749
C10+					0.0866	0.1709	0.1477
C12+					0.0384	0.0950	0.0783
TOTAL		0.693		93			

Calculated Absolute Density Total Sample:  
Gas Equivalent Factor:

692.4 kg/m3 @ 15°C  
176.39 m3 Gas/m3 Liquid

\*\* Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:



# C30+ COMPOSITIONAL ANALYSIS

CRUDE QUALITY INC.

A941762:Q16084

Operator Name

Laboratory Number

CRUDE QUALITY INC. JUL09 LIGHT CRUDES

COND. BLEND CRW-842

Well Name

Sample Point

ENBRIDGE

Sampling Company

MaxxID

Client ID

2009/07/12

2009/08/10

2009/09/03

SK1,CB

Date Sampled Start

Date Sampled End

Date Received

Date Reported

Date Reissued

Analyst

COMPONENT	BOILING POINT (°C)	MOLE FRACTION	MASS FRACTION	VOLUME FRACTION
Nitrogen	-196			
Carbon Dioxide	-79			
Hydrogen Sulphide	-60			
Methane	-162	0.0000	0.0000	0.0000
Ethane	-89	Trace	Trace	Trace
Propane	-42	0.0027	0.0013	0.0017
Iso-Butane	-12	0.0060	0.0038	0.0047
n-Butane	0	0.0430	0.0269	0.0319
Iso-Pentane	28	0.1827	0.1420	0.1575
n-Pentane	36	0.1852	0.1438	0.1579
Hexanes	37-69	0.1789	0.1658	0.1714
Heptanes	70-98	0.1536	0.1538	0.1489
Octanes	99-126	0.1112	0.1261	0.1178
Nonanes	127-151	0.0501	0.0656	0.0605
Decanes	152-174	0.0295	0.0445	0.0418
Undecanes	175-196	0.0187	0.0314	0.0276
Dodecanes	197-216	0.0099	0.0183	0.0157
Triadecanes	217-236	0.0056	0.0111	0.0095
Tetradecanes	237-253	0.0037	0.0080	0.0067
Pentadecanes	254-271	0.0031	0.0069	0.0058
Hexadecanes	272-287	0.0021	0.0052	0.0043
Heptadecanes	288-302	0.0022	0.0056	0.0046
Octadecanes	303-317	0.0019	0.0052	0.0042
NonaDecanes	318-331	0.0012	0.0035	0.0028
Eicosanes	332-343	0.0011	0.0033	0.0027
Heneicosanes	344-357	0.0009	0.0029	0.0024
Docosanes	358-369	0.0009	0.0029	0.0023
Triacosanes	370-380	0.0008	0.0029	0.0023
Tetracosanes	381-391	0.0008	0.0029	0.0022
Pentacosanes	392-402	0.0008	0.0029	0.0023
Hexacosanes	403-412	0.0006	0.0022	0.0018
Heptacosanes	413-422	0.0006	0.0024	0.0019
Octacosanes	423-432	0.0006	0.0021	0.0017
Nonacosanes	433-441	0.0005	0.0020	0.0015
triacontanes+	442-449+	0.0011	0.0047	0.0036
Totals		1.0000	1.0000	1.0000
neoHexane	50	0.0006	0.0005	0.0005
Methylcyclopentane	70	0.0342	0.0310	0.0286
Benzene	80	0.0144	0.0121	0.0096
Cyclohexane	81	0.0153	0.0139	0.0124
Methylcyclohexane	101	0.0361	0.0382	0.0345
Toluene	111	0.0189	0.0188	0.0150
Ethylbenzene	136	0.0019	0.0023	0.0018
m&p-Xylene	139	0.0104	0.0118	0.0095
o-Xylene	144	0.0029	0.0033	0.0026
1,2,4-Trimethylbenzene	169	0.0029	0.0038	0.0030

\*\* Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:



# TRACE SULPHUR ANALYSIS

A941762:Q16085

MaxID

Client ID

Meter Number

Laboratory Number

CRUDE QUALITY INC.

Operator Name

LSD

Well ID

CRUDE QUALITY INC. JUL09 LIGHT CRUDES

ENBRIDGE

Well Name

Initials of Sampler

Sampling Company

COND. BLEND CRW-842

VIAL

Field or Area

Pool or Zone

Sample Point

Container Identity

Percent Full

Test Recovery

Interval

Elevations (m)

Sample Gathering Point

Solution Gas

Test Type

No.

Multiple Recovery

From:

To:

KB

GRD

Well Fluid Status

Well Status Mode

Production Rates

Gauge Pressures kPa

Temperature °C

Well Status Type

Well Type

Water m3/d

Oil m3/d

Gas 1000m3/d

Source

As Received

Source

23.0

As Received

Gas or Condensate Project

Licence No.

2009/07/12

2009/08/10

2009/09/03

AG

Date Sampled Start

Date Sampled End

Date Received

Date Reported

Date Reissued

Analyst

COMPOSITION			Boiling Pt. (°C)	Sulphur mole ppm	Sulphur mass ppm	PROPERTIES
Component	Common Name					
Hydrogen Sulphide	H2S		-60.4	5.2	1.5	Molecular Wt. (g/mole) Measured
Carbonyl Sulphide	COS		-50	<0.5	<0.5	
Methanethiol	Methyl mercaptan		6.2	6.3	1.8	
Ethanethiol	Ethyl mercaptan		35	73.8	20.9	
Dimethyl Sulphide	DMS		38	30.4	8.6	Molecular Wt. (g/mole) Calculated
Carbon Disulphide	CS2		46.5	4.9	1.4	
Iso-Propanethiol	Iso-propyl mercaptan		58	119.2	33.8	Onsite H2S ppm(mole) mole%
t-Butanethiol	tert-butyl mercaptan		64	17.9	5.1	
Methyl Ethyl Sulphide	MES		67	19.8	5.6	
n-Propanethiol	Propyl mercaptan		70	17.1	4.8	
Unknown			36-69	<0.5	<0.5	
Thiophene/sec-Butanethiol	Thiophene/sec-Butyl mercaptan		84/90	67.9	19.2	
Diethyl Sulphide	DES		92.1	8.5	2.4	
Iso-Butanethiol	Iso-butyl mercaptan		99	6.5	1.9	
n-Butanethiol	Butyl mercaptan		98	5.6	1.6	
Unknown			71-97	8.9	2.5	
Dimethyl Disulphide	DMDS		110	22.6	6.4	
n-Pentanethiol	Pentyl mercaptan		127	8.8	2.5	
Unknown			100-126	54.3	15.4	
n-Hexanethiol	Hexyl mercaptan		151	31.7	9.0	
Unknown			127-150	75.3	21.3	
n-Heptanethiol	Heptyl mercaptan		177	11.8	3.4	
Unknown			152-176	102.9	29.1	
Total Sulphur				6554	1856.0	

Mercaptan Sulphur on Naphtha fraction (IBP 204°C) ASTM D3227 (mass%)  
 Naphtha IBP 204°C (volume %)  
 Elemental Sulphur (mass ppm)

\*\* Information not supplied by client -- data derived from LSD information

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Remarks:

## Light Crude Quality Project Analyses Summary (December 2007)

Crude	Sample Date	No. Samples or Batch #	Sulphur (wt%)	API Density (degree)	Absolute Density (kg/m3)	Sediment (ppmw)	MCR (wt%)	Salt (ptb)	TAN (mgKOH/g)	Nickel (mg/L)	Vanadium (mg/L)
<b>CRW Condensate Blend</b>											
	2005 Q2	3	0.17	62.9	727.0		0.2			43.5	4.8
	2005 Q3	3	0.16	63.3	725.8		0.4			17.9	2.4
	2005 Q4	3	0.17	63.6	724.6		0.3				3.6
	2006 Q1	4	0.16	64.8	720.2		0.3				6.8
	2006 Q2	3	0.21	63.3	725.9		0.3				1.4
	2006 Q3	2	0.17	62.1	730.2		0.2				1.2
	2006 Q4	2	0.13	67.0	712.2		0.1				
	2007 Q1	3	0.13	65.4	718.1		0.2				
	2007 Q2	3	0.10	67.6	710.3		0.1				
	2007 Q3	3	0.13	65.7	717.0		0.2				
	2007 Q4	3	0.22	64.8	720.3		0.2				1.6
	2008 Q1	1	0.39	65.1	719.2		0.4				
	12/1/2007	CRW-753	0.15	67.6	710.2		0.1				
	1/1/2008	CRW-757	0.39	65.1	719.2		0.4				
	<b>Average</b>		<b>0.17</b>	<b>64.6</b>	<b>721.0</b>		<b>0.2</b>			<b>35.0</b>	<b>3.2</b>
	<b>Std Dev</b>		<b>0.07</b>	<b>2.1</b>	<b>7.7</b>		<b>0.1</b>			<b>13.1</b>	<b>2.0</b>
	<b>Avg + StdDev</b>		<b>0.24</b>	<b>66.7</b>	<b>728.7</b>		<b>0.4</b>			<b>48.1</b>	<b>5.2</b>
	<b>Avg - StdDev</b>		<b>0.10</b>	<b>62.5</b>	<b>713.3</b>		<b>0.1</b>			<b>21.9</b>	<b>1.2</b>

## Light Crude Quality Project Light Ends Summary (December 2007)

Crude Sample Date	Count of Batches or Batch No.	Ethane (vol%)	Propane (vol%)	Butanes (vol%)	Pentanes (vol%)	Hexanes (vol%)	Heptanes (vol%)	Octanes (vol%)	Nonanes (vol%)	Decanes (vol%)	Benzene (vol%)	Toluene (vol%)	Ethyl Benzene (vol%)	Xylenes (vol%)	
<b>CRW Condensate Blend</b>															
2005 Q2	3	0.02	0.32	3.54	23.63	21.20	15.23	10.08	5.12	2.28	1.15	2.10	0.23	1.86	
2005 Q3	3	0.02	0.23	3.23	23.45	21.28	16.37	10.77	5.51	2.45	1.23	2.34	0.25	2.03	
2005 Q4	3	0.02	0.23	3.15	21.79	21.60	16.33	11.80	6.09	2.40	1.16	2.26	0.30	2.13	
2006 Q1	4	0.02	0.19	2.76	22.50	22.77	14.89	10.86	6.18	2.49	1.23	2.07	0.28	1.92	
2006 Q2	3	0.02	0.27	3.42	22.51	19.93	15.65	10.90	5.69	2.30	1.06	2.08	0.26	1.86	
2006 Q3	2	0.02	0.28	2.96	20.36	19.74	16.38	11.82	6.08	2.52	1.06	2.19	0.29	2.06	
2006 Q4	2	0.02	0.22	3.37	25.43	22.50	15.32	10.35	5.29	2.09	1.13	2.00	0.25	1.82	
2007 Q1	3	0.02	0.24	3.33	24.64	24.26	15.17	10.54	5.29	2.17	1.27	2.10	0.27	1.93	
2007 Q2	3	0.02	0.20	3.22	25.40	23.30	15.51	10.59	5.37	1.96	1.25	2.15	0.27	1.86	
2007 Q3	3	0.02	0.24	3.42	23.97	20.53	15.46	10.25	5.10	2.08	1.08	2.13	0.25	1.82	
2007 Q4	3	0.02	0.26	3.49	24.77	21.60	16.06	11.39	5.70	2.22	1.08	2.15	0.30	1.97	
2008 Q1	1	0.02	0.21	3.06	25.40	21.80	16.14	11.48	5.53	2.05	1.07	2.13	0.31	1.99	
12/1/2007	CRW-753	0.02	0.18	2.89	26.08	22.84	16.97	11.76	5.53	2.07	1.14	2.22	0.3	1.94	
1/1/2008	CRW-757	0.02	0.21	3.06	25.4	21.8	16.14	11.48	5.53	2.05	1.07	2.13	0.31	1.99	
<b>Average</b>		<b>0.02</b>	<b>0.24</b>	<b>3.25</b>	<b>23.56</b>	<b>21.77</b>	<b>15.65</b>	<b>10.85</b>	<b>5.59</b>	<b>2.27</b>	<b>1.16</b>	<b>2.14</b>	<b>0.27</b>	<b>1.93</b>	
<b>Std Dev</b>		<b>0.01</b>	<b>0.06</b>	<b>0.34</b>	<b>2.28</b>	<b>1.95</b>	<b>0.94</b>	<b>0.96</b>	<b>0.65</b>	<b>0.30</b>	<b>0.12</b>	<b>0.16</b>	<b>0.04</b>	<b>0.16</b>	
<b>Avg + StdDev</b>		<b>0.03</b>	<b>0.30</b>	<b>3.59</b>	<b>25.84</b>	<b>23.72</b>	<b>16.59</b>	<b>11.82</b>	<b>6.24</b>	<b>2.56</b>	<b>1.28</b>	<b>2.30</b>	<b>0.31</b>	<b>2.09</b>	
<b>Avg - StdDev</b>		<b>0.01</b>	<b>0.18</b>	<b>2.91</b>	<b>21.28</b>	<b>19.82</b>	<b>14.71</b>	<b>9.89</b>	<b>4.94</b>	<b>1.97</b>	<b>1.04</b>	<b>1.99</b>	<b>0.23</b>	<b>1.78</b>	