

Light Crude Quality Project Analyses Summary (May 2010)

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)
Crude Grade: Light Sour											
	BCL	BC Light									
	2006 Q1	2	0.56	40.7	821.2		0.9			2.0	5.3
	2006 Q3	1	0.54	40.5	821.8		1.0			2.1	7.2
	2006 Q4	1	0.55	41.0	819.8		0.7			1.5	5.3
	2007 Q1	2	0.54	42.5	812.5		0.9			1.1	5.0
	2007 Q2	1	0.54	41.6	816.7		1.0			1.4	4.7
	2007 Q3	1	0.57	40.2	823.3		1.2			1.8	6.2
	2008 Q1	1	0.62	40.5	821.9		1.0			2.6	9.1
	2008 Q2	1	0.57	40.9	820.3		1.0			2.0	7.3
	2008 Q3	2	0.62	40.1	823.9		1.1			1.6	7.2
	2008 Q4	3	0.57	40.1	824.1		1.1			1.8	6.1
	2009 Q1	1	0.64	38.9	829.5		1.2			2.8	8.0
	2009 Q3	1	0.61	39.9	824.9		1.2			2.2	6.4
	2009 Q4	2	0.60	40.1	823.8		1.0			1.5	4.7
	Average		0.58	40.6	821.8		1.0			1.8	6.1
	Std Dev		0.03	0.9	4.4		0.2			0.5	1.5
	Avg + StdDev		0.61	41.5	826.1		1.2			2.3	7.7
	Avg - StdDev		0.54	39.6	817.4		0.9			1.3	4.6

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Crude Grade: Light Sour											
BDY Boundary Lake											
	2006 Q1	2	0.77	36.8	840.3		2.7			9.1	27.1
	2006 Q2	1	0.75	36.6	841.2		2.6			10.1	29.2
	2006 Q3	2	0.81	36.3	842.4		2.6			9.6	29.9
	2006 Q4	1	0.78	36.1	843.7		2.3			9.2	28.7
	2007 Q1	1	0.81	36.5	841.7		1.8			9.9	31.4
	2007 Q2	2	0.79	36.5	841.8		2.7			8.2	27.5
	2007 Q3	2	0.75	36.9	839.9		2.4			7.8	25.4
	2007 Q4	1	0.79	35.6	845.9		2.4			9.4	29.6
	2008 Q1	2	0.79	36.0	843.9		2.6			8.7	27.4
	2008 Q2	1	0.72	37.5	836.4		2.3			7.2	21.3
	2008 Q3	1	0.80	35.8	844.9		2.4			8.6	29.4
	2008 Q4	1	0.81	35.7	845.7		2.9			8.9	27.7
	2009 Q2	2	0.81	36.4	841.8		2.8			9.4	29.0
	2009 Q3	1	0.81	36.2	842.8		2.8			9.4	29.2
	2009 Q4	2	0.81	37.5	836.3		2.8			9.2	28.4
	Average		0.79	36.5	841.6		2.6			8.9	28.0
	Std Dev		0.03	0.7	3.6		0.3			0.8	2.6
	Avg + StdDev		0.82	37.2	845.2		2.9			9.7	30.6
	Avg - StdDev		0.75	35.8	838.0		2.3			8.1	25.4

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Crude Grade: Light Sour											
MGS	Gibson	Light Sour									
	2009 Q1	3	0.67	38.1	833.4		2.9			8.8	19.9
	2009 Q2	2	0.70	40.5	822.0		3.2			13.6	35.0
	2009 Q3	3	1.94	35.4	847.5		5.8			31.3	83.8
	2009 Q4	3	2.38	37.8	835.2		6.3			35.4	98.0
	2010 Q1	1	2.62	32.6	861.5		7.3			41.0	118.6
	2010 Q2	1	2.61	31.9	865.2		7.4			42.9	154.9
	Average		1.66	36.9	839.9		5.1			26.0	73.0
	Std Dev		0.92	3.1	15.7		2.1			15.0	47.7
	Avg + StdDev		2.59	40.0	855.6		7.2			40.9	120.6
	Avg - StdDev		0.74	33.8	824.3		3.0			11.0	25.3

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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)
Crude Grade: Light Sour											
CAL Koch Alberta											
	2006 Q1	2	1.16	33.7	855.8		4.1			12.5	23.7
	2006 Q2	1	1.10	34.4	851.9		3.6			13.7	22.7
	2006 Q3	2	1.08	34.6	851.1		3.6			12.8	23.6
	2006 Q4	3	1.05	35.1	848.8		3.6			11.0	19.9
	2007 Q1	3	0.99	36.1	843.5		3.2			10.0	18.9
	2007 Q2	3	1.03	36.6	841.0		3.6			8.2	18.6
	2007 Q3	2	1.06	35.3	847.5		3.8			11.6	22.3
	2007 Q4	3	1.17	35.6	846.2		4.1			12.4	25.4
	2008 Q1	2	1.16	34.5	852.0		4.0			13.3	28.9
	2008 Q2	2	1.03	37.3	837.8		3.6			13.2	26.1
	2008 Q3	3	0.95	38.7	830.6		3.2			8.4	19.7
	2008 Q4	3	0.86	39.2	828.3		3.2			8.5	17.5
	2009 Q1	3	0.85	38.6	831.1		3.2			8.6	15.2
	2009 Q2	3	0.92	38.6	831.3		3.3			10.9	18.9
	2009 Q3	2	0.92	38.7	830.7		3.3			13.7	21.9
	2009 Q4	3	1.00	38.4	832.3		3.4			10.8	21.6
	2010 Q1	3	0.95	36.8	840.0		3.5			12.3	21.4
	2010 Q2	2	1.05	35.5	847.0		3.9			11.3	25.6
	5/1/2010	CAL-394	1.09	34.8	850.3		4			12.3	23.5
	Average		1.01	36.8	840.3		3.5			10.9	21.2
	Std Dev		0.10	1.8	9.2		0.3			2.3	4.1
	Avg + StdDev		1.11	38.6	849.5		3.9			13.2	25.3
	Avg - StdDev		0.91	34.9	831.2		3.2			8.7	17.2

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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)
Crude Grade: Light Sour											
SPR Peace River Sour											
	2006 Q1	3	1.90	33.1	858.9		4.4			18.4	50.6
	2007 Q1	1	2.03	33.9	854.8		4.1			20.2	51.7
	2008 Q2	5	1.64	34.3	852.9		3.8			18.3	50.5
	2008 Q3	1	1.50	36.1	843.4		3.5			13.7	41.8
	2008 Q4	2	1.21	36.9	839.8		3.3			10.7	28.2
	2009 Q1	2	1.27	37.6	835.9		3.0			11.0	29.2
	2009 Q2	1	1.26	38.3	832.6		3.0			12.7	30.7
	2009 Q3	2	1.27	38.4	832.3		2.4			10.3	27.6
	2009 Q4	1	1.33	38.0	834.1		2.9			12.1	34.4
	2010 Q1	2	1.56	37.0	839.3		3.2			14.2	41.6
	2010 Q2	1	1.99	34.3	852.6		4.1			17.6	50.4
	5/1/2010	SPR-591	1.99	34.3	852.6		4.1			17.6	50.4
	Average		1.55	35.8	845.4		3.5			15.0	41.3
	Std Dev		0.31	2.1	10.7		0.7			4.2	12.2
	Avg + StdDev		1.86	37.9	856.1		4.2			19.2	53.5
	Avg - StdDev		1.25	33.6	834.7		2.8			10.8	29.1

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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)
Crude Grade: Light Sour											
PLS Pembina Light Sour											
	2007 Q4	1	0.77	40.4	822.3		1.4			1.0	3.3
	2008 Q1	3	0.70	40.1	824.0		1.1			1.6	3.7
	2008 Q2	6	0.71	40.6	821.4		1.4			1.8	4.8
	2008 Q3	6	0.73	40.1	824.0		1.5			1.4	5.3
	2008 Q4	3	0.77	40.2	823.3		1.5			1.9	5.3
	2009 Q1	3	0.78	40.0	824.3		1.6			2.1	5.5
	2009 Q2	3	0.77	40.2	823.5		1.7			3.7	7.2
	2009 Q3	3	0.82	39.8	825.4		1.6			3.2	7.2
	2009 Q4	3	0.81	40.5	822.3		1.6			3.4	9.3
	2010 Q1	3	0.85	39.2	828.1		2.0			4.5	12.0
	2010 Q2	2	0.85	38.8	830.4		2.2			4.5	15.1
	5/4/2010	PLS-570	0.92	38.7	830.8		2.2			4.9	13.6
	Average		0.77	40.1	824.1		1.6			2.7	7.0
	Std Dev		0.06	0.6	2.9		0.3			1.4	3.8
	Avg + StdDev		0.83	40.7	827.0		1.9			4.0	10.9
	Avg - StdDev		0.70	39.5	821.2		1.2			1.3	3.2

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Crude Grade: Mixed Sweet Blend											
MSW Mixed Sweet Blend											
	2006 Q1	5	0.45	39.2	828.4		1.9			3.8	7.4
	2006 Q2	6	0.46	39.1	828.7		1.8			4.7	8.4
	2006 Q3	6	0.47	39.3	827.8		2.0			5.3	10.2
	2006 Q4	6	0.44	39.3	827.9		1.6			4.2	8.0
	2007 Q1	6	0.43	40.1	824.1		1.6			2.7	6.3
	2007 Q2	6	0.41	39.4	827.1		1.8			2.3	6.5
	2007 Q3	6	0.44	39.4	827.2		2.0			4.3	7.7
	2007 Q4	6	0.46	39.6	826.3		2.0			3.9	6.9
	2008 Q1	6	0.46	40.1	824.0		1.9			4.3	7.9
	2008 Q2	6	0.47	40.1	824.2		1.9			4.8	8.6
	2008 Q3	6	0.47	39.5	826.6		1.8			3.2	7.2
	2008 Q4	6	0.47	39.8	825.8		1.9			3.7	7.3
	2009 Q1	6	0.42	40.0	824.5		1.8			3.7	7.0
	2009 Q2	6	0.44	40.3	822.9		1.8			4.5	8.2
	2009 Q3	6	0.47	40.0	824.3		1.9			4.6	8.8
	2009 Q4	6	0.49	39.8	825.4		2.0			4.4	9.5
	2010 Q1	6	0.45	39.4	827.5		2.0			4.6	9.3
	2010 Q2	4	0.42	38.7	830.6		1.9			4.2	9.9
	5/17/2010	SW-848	0.43	38.8	830.2		1.9			4.1	8.4
	5/30/2010	SW-874	0.46	39.4	827.5		2				
	Average		0.45	39.6	826.2		1.9			4.1	8.0
	Std Dev		0.03	0.6	2.8		0.2			0.9	1.5
	Avg + StdDev		0.48	40.2	829.0		2.1			5.0	9.5
	Avg - StdDev		0.42	39.1	823.4		1.7			3.1	6.5

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Crude Grade: MSW Feeder											
BG	Bonnie Glen										
	2006 Q2	1	0.47	40.7	821.3		2.0				
	2006 Q3	1	0.52	40.2	823.5		2.3			5.1	12.2
	2006 Q4	2	0.37	42.3	813.6		1.6			3.2	8.3
	2007 Q1	2	0.42	41.2	818.9		1.9			3.1	7.9
	2007 Q2	2	0.36	41.5	817.6		1.3			3.3	5.8
	2007 Q3	2	0.47	40.3	823.3		1.5			3.8	10.2
	2007 Q4	1	0.34	41.8	816.0		0.7			1.6	4.4
	2008 Q1	2	0.41	40.3	823.1		1.7			2.8	7.3
	2008 Q2	1	0.33	41.7	816.3		0.9			2.1	6.0
	2008 Q4	2	0.55	40.5	821.9		1.9			3.5	10.0
	2009 Q1	2	0.24	43.5	808.3		1.1			1.4	3.1
	2009 Q2	1	0.28	42.3	813.7		0.9			2.3	2.3
	2009 Q3	2	0.41	41.0	820.1		1.5			3.5	7.3
	2009 Q4	1	0.53	39.8	825.4		1.9			5.4	12.8
	2010 Q1	2	0.39	40.7	821.3		1.5			2.7	6.8
	2010 Q2	1	0.50	39.2	828.5		2.0			5.2	13.8
	6/1/2010	BG-407	0.50	39.2	828.5		2			5.2	13.8
	Average		0.41	41.1	819.2		1.5			3.2	7.7
	Std Dev		0.09	1.1	5.3		0.4			1.2	3.2
	Avg + StdDev		0.50	42.2	824.5		1.9			4.4	10.8
	Avg - StdDev		0.32	40.0	813.9		1.1			2.0	4.5

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Crude Grade: MSW Feeder											
FD	Federated										
	2006 Q1	5	0.40	40.4	822.8		1.6			2.7	6.9
	2006 Q2	4	0.36	40.1	824.0		1.6			3.6	5.9
	2006 Q3	4	0.39	40.2	823.4		1.7			4.7	7.8
	2006 Q4	3	0.38	40.1	824.1		1.4			3.8	8.2
	2007 Q1	3	0.37	40.7	821.2		1.5			2.9	7.4
	2007 Q2	3	0.39	40.5	822.2		1.6			3.1	7.4
	2007 Q3	3	0.45	40.0	824.3		1.7			3.7	9.1
	2007 Q4	3	0.44	40.3	823.3		1.8			4.0	9.9
	2008 Q1	2	0.37	40.6	821.7		1.6			3.2	8.1
	2008 Q2	3	0.38	41.3	818.6		1.3			3.5	8.9
	2008 Q3	3	0.39	40.7	821.1		1.5			2.0	6.2
	2008 Q4	3	0.41	40.3	822.9		1.5			2.4	5.8
	2009 Q1	3	0.39	40.1	824.3		1.3			2.2	5.0
	2009 Q2	3	0.36	40.8	820.6		1.5			3.7	5.5
	2009 Q3	2	0.44	39.8	825.1		1.9			5.1	8.2
	2009 Q4	3	0.44	39.9	825.2		1.7			4.3	8.2
	2010 Q1	2	0.44	39.9	825.0		1.9			4.5	8.4
	2010 Q2	3	0.46	38.9	829.8		2.0			4.9	11.2
	5/10/2010	FD-997	0.41	38.4	832.2		1.9			4.1	7.4
	Average		0.40	40.3	823.3		1.6			3.5	7.6
	Std Dev		0.04	0.7	3.1		0.2			1.2	2.6
	Avg + StdDev		0.44	40.9	826.4		1.9			4.7	10.3
	Avg - StdDev		0.36	39.6	820.2		1.4			2.4	5.0

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Crude Grade: MSW Feeder											
MGL Gibson Light Sweet											
	2006 Q4	2	0.43	42.0	815.0		2.0			4.2	8.4
	2007 Q1	1	0.51	40.8	820.8		1.9			4.6	9.4
	2007 Q2	2	0.39	40.5	822.1		1.5			2.4	5.0
	2007 Q3	1	0.36	39.7	825.7		1.8			3.7	6.0
	2007 Q4	1	0.53	42.2	814.0		1.9			4.9	9.9
	2008 Q1	2	0.39	41.9	815.8		1.2			3.9	7.3
	2008 Q2	1	0.40	40.9	820.1		1.6			4.0	7.0
	2008 Q3	2	0.42	41.0	819.9		1.8			3.3	7.5
	2008 Q4	1	0.43	41.8	816.0		1.9			3.2	6.3
	2009 Q1	1	0.41	41.6	817.0		1.8			2.8	5.4
	2009 Q2	2	0.40	42.5	812.9		1.6			4.3	7.9
	2009 Q3	1	0.47	39.8	825.2		2.1			4.3	8.0
	2009 Q4	2	0.50	43.2	809.5		1.6			4.9	10.6
	2010 Q1	1	0.43	37.2	837.9		2.1			3.8	5.8
	2010 Q2	1	0.38	31.9	865.2		1.4			4.4	9.5
	Average		0.43	40.8	820.6		1.7			3.9	7.7
	Std Dev		0.06	2.4	12.0		0.3			0.9	2.3
	Avg + StdDev		0.48	43.3	832.5		2.1			4.8	10.0
	Avg - StdDev		0.37	38.4	808.6		1.4			3.0	5.4

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Crude Grade: MSW Feeder											
JCM Joarcam											
	2006 Q2	1	0.42	39.4	827.5		2.3			4.6	8.5
	2006 Q3	2	0.43	40.5	822.3		2.3			5.8	11.9
	2006 Q4	2	0.37	39.4	827.4		1.9			4.7	9.3
	2007 Q1	3	0.42	40.0	824.4		1.8			4.1	8.1
	2007 Q2	2	0.50	39.0	829.0		2.0			3.7	11.3
	2007 Q3	1	0.42	39.4	827.4		2.0			4.0	8.7
	2007 Q4	2	0.45	39.1	828.4		2.0			4.2	9.1
	2008 Q1	2	0.40	39.6	826.0		1.8			3.8	7.8
	2008 Q2	1	0.44	39.9	825.1		1.5			4.4	8.8
	2008 Q3	2	0.32	40.0	824.5		1.6			2.1	5.2
	2008 Q4	1	0.31	39.7	826.0		1.8			2.7	6.0
	2009 Q1	1	0.16	38.0	834.0		1.4				
	2009 Q2	2	0.26	39.3	828.2		1.6			2.4	4.4
	2009 Q3	1	0.41	37.9	834.5		2.3			4.9	10.8
	2009 Q4	1	0.46	38.5	831.6		2.3			4.7	11.7
	2010 Q1	1	0.44	38.3	832.7		2.1			4.4	10.0
	Average		0.39	39.4	827.4		1.9			3.9	8.6
	Std Dev		0.09	0.8	3.6		0.3			1.2	2.7
	Avg + StdDev		0.48	40.2	831.0		2.2			5.1	11.2
	Avg - StdDev		0.30	38.6	823.7		1.6			2.8	5.9

Light Crude Quality Project Analyses Summary (May 2010)

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)
Crude Grade: MSW Feeder											
KSW Kerrobert Sweet											
	2008 Q1	6	0.34	36.6	840.9		2.4			5.2	8.7
	2008 Q2	6	0.28	35.6	846.1		2.3			4.4	5.7
	2008 Q3	3	0.30	35.6	846.0		2.4			4.0	6.6
	2008 Q4	3	0.24	37.1	838.6		2.2			3.4	3.7
	2009 Q1	3	0.24	37.0	839.0		2.4			3.7	4.0
	2009 Q2	3	0.21	38.3	832.8		2.3			4.0	3.7
	2009 Q3	3	0.33	38.3	832.6		2.4			5.0	7.2
	2009 Q4	3	0.34	37.3	837.8		2.6			5.0	7.6
	2010 Q1	3	0.22	36.0	844.2		2.4			3.7	3.6
	2010 Q2	2	0.25	35.8	845.0		2.4			3.5	4.0
	5/25/2010	KSW-133	0.27	35.6	846.1		2.5			3.8	4.7
	Average		0.28	36.7	840.7		2.4			4.2	5.5
	Std Dev		0.06	1.1	5.3		0.2			0.8	2.3
	Avg + StdDev		0.34	37.7	846.0		2.6			5.1	7.8
	Avg - StdDev		0.22	35.6	835.5		2.2			3.4	3.2

Light Crude Quality Project Analyses Summary (May 2010)

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)
Crude Grade: MSW Feeder											
MPR Peace											
	2006 Q1	6	0.44	40.5	822.1		1.6			2.9	6.6
	2006 Q2	6	0.46	39.8	825.4		1.6			4.2	7.3
	2006 Q3	3	0.45	39.1	828.8		1.9			5.2	8.9
	2006 Q4	3	0.45	39.8	825.5		1.5			4.2	7.6
	2007 Q1	3	0.43	38.8	830.5		1.7			3.3	5.8
	2008 Q1	1	0.42	39.6	826.2		1.5			3.2	5.3
	2008 Q2	5	0.42	39.4	827.4		1.8			3.8	6.7
	2008 Q3	2	0.42	39.3	827.8		1.9			2.5	4.5
	2008 Q4	4	0.41	39.4	827.5		1.8			3.0	5.7
	2009 Q1	3	0.39	40.9	820.3		1.8			3.2	4.9
	2009 Q2	3	0.40	40.2	823.4		1.9			4.1	5.6
	2009 Q3	2	0.39	39.9	825.1		1.9			4.2	5.5
	2009 Q4	3	0.41	39.9	825.2		1.7			3.5	6.2
	2010 Q1	3	0.43	39.9	824.9		1.9			4.5	7.9
	2010 Q2	2	0.45	39.5	826.7		2.1			5.0	10.2
	5/1/2010	MPR-835	0.46	40.1	824.1		2			5.1	9.9
	Average		0.43	39.8	825.6		1.7			3.8	6.6
	Std Dev		0.04	0.9	4.4		0.3			0.8	1.7
	Avg + StdDev		0.47	40.7	829.9		2.0			4.6	8.3
	Avg - StdDev		0.39	38.9	821.2		1.5			2.9	4.9

Light Crude Quality Project Analyses Summary (May 2010)

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)
Crude Grade: MSW Feeder											
P	Pembina										
	2006 Q1	5	0.46	38.7	830.9		1.8			3.1	6.8
	2006 Q2	5	0.46	38.2	833.0		1.5			5.3	10.2
	2006 Q3	3	0.41	38.1	833.6		1.8			4.2	8.5
	2006 Q4	2	0.39	38.8	830.5		1.8			3.5	6.6
	2007 Q1	3	0.43	39.8	825.4		1.7			3.2	7.3
	2007 Q2	3	0.44	40.6	821.7		1.7			2.3	6.4
	2007 Q3	3	0.43	39.7	826.0		1.6			2.8	6.5
	2007 Q4	3	0.44	39.8	825.5		1.9			3.6	8.7
	2008 Q1	4	0.43	40.0	824.6		1.9			3.6	8.1
	2008 Q2	3	0.45	40.4	822.6		1.5			2.8	6.1
	2008 Q3	3	0.47	40.5	822.2		1.6			2.4	7.4
	2008 Q4	3	0.44	40.4	822.5		1.7			2.8	6.5
	2009 Q1	3	0.41	40.6	821.6		1.7			2.6	5.4
	2009 Q2	3	0.40	40.9	820.1		1.6			3.5	5.8
	2009 Q3	3	0.39	40.8	820.4		1.7			3.4	6.5
	2009 Q4	3	0.41	41.0	819.8		1.8			3.9	9.2
	2010 Q1	3	0.38	40.7	821.3		1.8			3.0	6.0
	2010 Q2	2	0.37	39.8	825.5		1.8			2.6	5.9
	5/1/2010	P-542	0.38	39.7	825.7		1.8			2.9	6.6
	Average		0.43	39.8	825.2		1.7			3.3	7.1
	Std Dev		0.04	1.0	4.9		0.2			1.0	2.0
	Avg + StdDev		0.46	40.9	830.1		1.9			4.2	9.1
	Avg - StdDev		0.39	38.8	820.3		1.5			2.3	5.2

Light Crude Quality Project Analyses Summary (May 2010)

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)
Crude Grade: MSW Feeder											
RA	Rainbow										
	2006 Q1	6	0.51	38.8	830.3		2.4			5.2	9.1
	2006 Q2	6	0.53	38.6	831.2		1.9			7.6	12.5
	2006 Q3	3	0.48	38.3	832.4		2.2			5.8	10.0
	2006 Q4	2	0.47	39.0	829.2		1.9			4.7	9.2
	2007 Q1	3	0.47	39.5	826.9		1.9			3.9	7.8
	2007 Q2	3	0.47	37.5	836.7		2.2			3.4	7.8
	2007 Q3	2	0.45	38.7	830.8		2.2			3.9	7.2
	2007 Q4	2	0.54	38.6	831.1		2.3			5.5	11.9
	2008 Q1	3	0.44	39.0	829.4		2.3			6.2	13.5
	2008 Q2	4	0.47	39.0	829.3		2.0			4.8	9.1
	2008 Q3	3	0.39	39.4	827.4		1.9			3.5	7.8
	2008 Q4	3	0.44	39.2	828.4		2.2			4.7	9.8
	2009 Q1	3	0.45	40.1	823.7		2.0			4.3	8.2
	2009 Q2	3	0.42	39.4	827.4		2.2			5.9	10.3
	2009 Q3	3	0.50	39.0	829.2		2.4			6.6	12.5
	2009 Q4	3	0.44	39.5	826.9		2.3			5.6	12.1
	2010 Q1	3	0.43	39.7	825.9		2.3			7.0	14.1
	2010 Q2	2	0.43	39.6	826.1		2.2			5.2	9.9
	5/5/2010	RA-680	0.40	39.5	826.7		2.2			5.2	9.0
		Average	0.47	39.0	829.2		2.1			5.2	10.1
		Std Dev	0.06	0.7	3.7		0.3			1.8	3.9
		Avg + StdDev	0.53	39.8	832.8		2.4			7.0	14.0
		Avg - StdDev	0.41	38.3	825.5		1.9			3.4	6.3

Light Crude Quality Project Analyses Summary (May 2010)

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)
Crude Grade: MSW Feeder											
RDW Redwater											
	2006 Q3	1	0.43	35.1	848.6		3.2			8.9	3.5
	2006 Q4	1	0.43	36.0	843.8		2.9			7.8	3.7
	2007 Q1	2	0.42	35.5	846.3		3.1			9.3	4.1
	2007 Q2	1	0.44	35.4	847.0		3.2			6.9	3.7
	2007 Q3	2	0.44	35.2	848.1		3.0			8.8	4.0
	2007 Q4	1	0.44	34.9	849.8		3.4			8.8	4.3
	2008 Q1	3	0.41	37.5	836.7		3.0			9.7	4.5
	2008 Q2	1	0.41	38.2	833.4		2.8			8.8	4.2
	2008 Q3	2	0.39	38.5	832.0		2.8			7.8	4.2
	2008 Q4	1	0.38	38.3	832.5		2.9			7.2	3.6
	2009 Q1	2	0.39	38.0	834.5		3.0			7.8	3.7
	2009 Q2	1	0.37	39.0	829.4		2.9			8.2	3.3
	Average		0.41	36.9	839.8		3.0			8.5	4.0
	Std Dev		0.02	1.6	7.8		0.2			1.0	0.4
	Avg + StdDev		0.44	38.4	847.6		3.2			9.4	4.4
	Avg - StdDev		0.39	35.3	832.0		2.8			7.5	3.6

Light Crude Quality Project Analyses Summary (May 2010)

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)
Crude Grade: MSW Feeder											
	MST	Tundra Sweet									
	2007 Q4	1	0.50	39.7	825.7		1.3			6.6	4.0
	2008 Q1	6	0.48	39.9	825.0		1.8			5.3	2.9
	2008 Q2	5	0.43	40.0	824.4		1.7			5.9	2.8
	2008 Q3	3	0.43	39.9	824.8		1.8			3.8	1.6
	2008 Q4	3	0.45	39.5	826.8		1.7			3.6	1.7
	2009 Q1	4	0.41	39.9	824.8		1.8			4.7	1.8
	2009 Q2	2	0.29	40.6	821.4		1.6			6.1	1.4
	2009 Q3	3	0.34	40.1	824.0		1.7			4.9	1.3
	2009 Q4	3	0.35	40.6	821.5		1.5			4.2	1.4
	2010 Q1	3	0.41	39.8	825.4		2.0			6.2	2.0
	2010 Q2	2	0.39	40.0	824.5		2.0			5.6	2.5
	5/24/2010	MST-219	0.35	39.8	825.2		2			4.7	1.2
		Average	0.41	40.0	824.5		1.8			5.0	2.0
		Std Dev	0.06	0.5	2.6		0.2			1.1	0.8
		Avg + StdDev	0.48	40.5	827.0		2.0			6.1	2.7
		Avg - StdDev	0.35	39.5	821.9		1.5			3.9	1.2

Light Crude Quality Project Analyses Summary (May 2010)

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)
Crude Grade: Sweet Synthetic											
CNS	CNRL Light Sweet Synthetic										
	2009 Q2	4	0.04	34.8	850.1						
	2009 Q3	3	0.04	35.1	848.6						
	2009 Q4	3	0.05	34.7	850.7						
	2010 Q1	3	0.06	35.8	845.3		0.1				
	2010 Q2	2	0.05	34.7	850.8						
	5/30/2010	CNS-901	0.05	34.4	852.2						
	Average		0.05	35.0	849.1		0.1				
	Std Dev		0.01	0.9	4.4		0.0				
	Avg + StdDev		0.06	35.9	853.5		0.1				
	Avg - StdDev		0.04	34.1	844.6		0.1				

Light Crude Quality Project Analyses Summary (May 2010)

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)
Crude Grade: Sweet Synthetic											
HSB	Husky Synthetic Blend										
	2006 Q1	3	0.09	32.3	863.3		0.0				
	2006 Q2	2	0.10	33.8	855.3		0.0			0.6	1.0
	2006 Q3	3	0.10	32.8	860.4		0.0				
	2006 Q4	2	0.10	32.8	860.6		0.0				
	2007 Q1	3	0.10	32.7	860.8		0.0				
	2007 Q2	2	0.12	33.3	857.8		0.1				
	2007 Q3	3	0.10	31.8	865.7		0.0				
	2007 Q4	3	0.10	32.3	863.1		0.1				
	2008 Q1	3	0.11	32.2	863.4		0.1				1.5
	2008 Q2	3	0.10	31.9	865.0		0.1				
	2008 Q3	3	0.10	32.8	860.8						
	2008 Q4	3	0.10	32.1	864.2		0.1				
	2009 Q1	3	0.10	32.0	864.5		0.1				
	2009 Q2	3	0.11	32.5	862.1		0.1				
	2009 Q3	3	0.09	33.3	857.7						
	2009 Q4	3	0.09	33.0	859.3		0.1				
	2010 Q1	3	0.09	32.5	862.1		0.1				
	2010 Q2	2	0.09	33.0	859.9						
	5/25/2010	HSB-670	0.09	32.8	860.7						
	Average		0.10	32.6	861.7		0.1			0.6	1.3
	Std Dev		0.01	0.6	3.3		0.0			0.0	0.2
	Avg + StdDev		0.11	33.2	864.9		0.1			0.6	1.5
	Avg - StdDev		0.09	31.9	858.4		0.0			0.6	1.0

Light Crude Quality Project Analyses Summary (May 2010)

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)
Crude Grade: Sweet Synthetic											
PSC	Long Lake Light Synthetic										
	2009 Q2	1	0.20	36.8	840.2		0.2			1.1	2.1
	2009 Q3	2	0.08	36.4	842.0						
	2009 Q4	3	0.07	34.4	852.3		0.1				
	2010 Q1	3	0.09	37.6	836.5		0.1				1.2
	2010 Q2	2	0.05	35.8	845.3		0.1				2.0
	5/21/2010	PSC-603	0.05	35.5	846.6		0.1				
	Average		0.09	36.1	843.7		0.1			1.1	1.5
	Std Dev		0.06	2.1	10.4		0.0			0.0	0.4
	Avg + StdDev		0.14	38.2	854.2		0.1			1.1	2.0
	Avg - StdDev		0.03	34.0	833.3		0.1			1.1	1.1

Light Crude Quality Project Analyses Summary (May 2010)

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)
Crude Grade: Sweet Synthetic											
PAS	Premium Albian Synthetic										
	2006 Q1	1	0.24	33.6	856.4		0.7			4.0	5.8
	2006 Q2	1	0.06	34.0	854.4		0.7				
	2006 Q3	2	0.34	33.0	859.1		0.2			1.5	3.9
	2006 Q4	1	0.06	33.6	856.4						
	2007 Q1	2	0.13	33.4	857.5		0.0				
	2007 Q2	1	0.05	35.0	848.9		0.0				
	2007 Q3	2	0.05	33.2	858.3		0.1				
	2007 Q4	1	0.04	32.2	863.5						
	2008 Q3	3	0.05	33.6	856.3		0.1				
	2008 Q4	3	0.05	33.3	858.0		0.1				1.1
	2009 Q1	2	0.06	34.2	853.2		0.1				
	2009 Q2	1	0.04	34.6	851.1		0.1				
	2009 Q3	1	0.05	31.3	868.6						
	2009 Q4	1	0.04	32.9	860.0		0.1				
	2010 Q1	2	0.07	34.2	853.1		0.3				1.9
	Average		0.09	33.5	856.9		0.2			2.8	3.2
	Std Dev		0.11	0.8	4.3		0.2			1.3	1.8
	Avg + StdDev		0.20	34.3	861.2		0.4			4.0	5.0
	Avg - StdDev		0.00	32.7	852.5		0.0			1.5	1.3

Light Crude Quality Project Analyses Summary (May 2010)

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)
Crude Grade: Sweet Synthetic											
SSX	Shell Synthetic Light										
	2009 Q1	6	0.11	33.9	854.5		0.2				1.4
	2009 Q2	6	0.09	34.1	853.8		0.1				1.2
	2009 Q3	2	0.07	32.1	864.0		0.1				
	2009 Q4	3	0.07	33.2	858.4		0.1				
	2010 Q1	3	0.12	33.4	857.5		0.1				1.3
	2010 Q2	2	0.09	34.3	852.8		0.1				
	5/31/2010	SSX-715	0.10	33.9	854.9		0.1				
	Average		0.10	33.7	856.0		0.1				1.3
	Std Dev		0.03	1.2	6.2		0.1				0.1
	Avg + StdDev		0.12	34.9	862.1		0.2				1.4
	Avg - StdDev		0.07	32.5	849.8		0.1				1.2

Light Crude Quality Project Analyses Summary (May 2010)

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)
Crude Grade: Sweet Synthetic											
OSA	Suncor Synthetic A										
	2006 Q1	3	0.18	32.8	860.2		0.0				
	2006 Q2	3	0.21	32.7	861.2		0.0			3.4	3.5
	2006 Q3	3	0.17	33.5	856.9		0.0				
	2006 Q4	2	0.19	32.8	860.5		0.1				
	2007 Q1	4	0.19	32.8	860.1		0.0				
	2007 Q2	4	0.19	32.3	863.0		0.1				
	2007 Q3	3	0.20	32.1	863.8		0.0				
	2007 Q4	3	0.20	32.2	863.4		0.0				
	2008 Q1	6	0.19	32.7	861.0						
	2008 Q2	6	0.15	34.3	853.0						
	2008 Q3	6	0.17	34.3	852.7						
	2008 Q4	6	0.19	33.5	856.9						1.0
	2009 Q1	3	0.17	33.2	858.2		0.1				
	2009 Q2	3	0.19	32.4	862.8						
	2009 Q3	3	0.18	33.4	857.2						
	2009 Q4	3	0.22	32.1	864.2						
	2010 Q1	3	0.19	35.4	846.9						
	2010 Q2	2	0.21	32.3	863.5						
	5/28/2010	OSA-876	0.20	32.2	863.8						
	Average		0.19	33.2	858.6		0.0			3.4	2.7
	Std Dev		0.03	1.3	6.9		0.0			0.0	1.7
	Avg + StdDev		0.21	34.5	865.4		0.1			3.4	4.4
	Avg - StdDev		0.16	31.8	851.7		0.0			3.4	1.0

Light Crude Quality Project Analyses Summary (May 2010)

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)
Crude Grade: Sweet Synthetic											
SYN	Syncrude Synthetic										
	2006 Q1	2	0.08	30.9	870.5						
	2006 Q2	2	0.14	31.3	868.6						
	2006 Q3	3	0.11	30.9	870.4						
	2006 Q4	2	0.13	31.0	869.5						
	2007 Q1	3	0.11	31.4	867.7						
	2007 Q2	3	0.16	30.7	871.3						
	2007 Q3	3	0.16	31.1	869.3						
	2007 Q4	3	0.17	30.5	873.0						0.1
	2008 Q1	6	0.18	31.4	868.1						
	2008 Q2	6	0.16	31.4	868.1						
	2008 Q3	6	0.16	33.3	858.1						0.1
	2008 Q4	6	0.17	32.4	862.4						0.1
	2009 Q1	3	0.18	33.2	858.2						0.1
	2009 Q2	3	0.16	31.9	865.3						0.1
	2009 Q3	3	0.18	32.7	860.9						0.1
	2009 Q4	3	0.20	31.7	866.6						0.1
	2010 Q1	3	0.18	31.7	866.0						0.1
	2010 Q2	2	0.20	31.9	865.5						0.1
	5/29/2010	SYN-779	0.21	31.8	865.7						0.1
	Average		0.16	31.7	866.0						0.1
	Std Dev		0.03	1.1	5.8						0.0
	Avg + StdDev		0.19	32.8	871.8						0.1
	Avg - StdDev		0.13	30.7	860.3						0.0