

Heavy 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: Heavy Low Resid											
OSH Suncor Synthetic H											
	2006 Q2	3	3.05	19.8	933.6	314	0.4	5.6	3.35	3.4	7.8
	2006 Q3	2	3.01	19.9	933.0	553		2.7	2.91	2.3	6.3
	2006 Q4	1	3.07	19.9	932.9		0.5		3.42	3.7	9.8
	2007 Q1	2	3.02	20.0	932.4	113	0.6	4.4	3.36	2.3	6.4
	2007 Q2	1	3.09	19.6	935.6		1.0		3.39	3.5	10.7
	2007 Q3	3	3.00	20.1	932.3	80	0.8	5.8	3.54	4.3	10.8
	2007 Q4	1	2.92	20.1	932.9		0.3		3.70	2.6	6.9
	2008 Q1	3	3.05	19.9	933.7		0.5		3.39	2.3	6.0
	2008 Q2	3	3.04	20.1	932.3	84	0.3	2.9	3.61	1.9	4.8
	2008 Q3	3	3.02	19.8	934.7	254	0.7	5.4	3.58	3.0	7.8
	2008 Q4	2	2.96	19.9	934.1		0.3		3.74	1.4	3.7
	2009 Q1	3	3.04	19.7	935.2	200	0.6	2.1	3.64	2.6	8.0
	2009 Q2	3	3.04	19.7	935.1	220	0.8	5.6	3.68	4.3	10.0
	2009 Q3	2	3.00	19.9	933.5		0.9		3.38	3.5	8.0
	2009 Q4	3	3.02	20.0	933.1	129	0.9	3.8	3.60	4.0	9.5
	2010 Q1	3	3.08	20.0	933.6	184	1.3	3.7	3.45	7.2	18.3
	2010 Q2	2	3.08	19.4	937.0	106	1.1	2.7	3.63	5.5	13.8
	5/17/2010	OSH-660	3.07	19.5	936.2	106	0.86	2.7	3.7	4.3	11.5
	Average		3.03	19.9	933.8	203	0.7	4.1	3.52	3.5	8.8
	Std Dev		0.05	0.3	2.0	132	0.4	1.3	0.20	1.8	4.2
	Avg + StdDev		3.09	20.2	935.8	335	1.1	5.4	3.72	5.3	13.0
	Avg - StdDev		2.98	19.6	931.8	72	0.3	2.8	3.31	1.7	4.6

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Crude Grade: Heavy Sour - Conventional											
BRN Bow River North											
	2005 Q1	7	2.82	21.1	926.2	348	8.5	31.4	0.83	36.7	88.3
	2005 Q2	4	2.96	20.3	931.1		9.1		0.70	38.9	90.8
	2005 Q3	6	3.02	19.3	937.2	204	9.2	42.0	0.93	39.7	92.9
	2005 Q4	6	2.93	20.2	932.3	292	8.6	37.6	0.75	37.6	89.6
	2006 Q1	5	2.87	21.1	926.6	539	8.3	35.3	0.72	35.9	86.4
	2006 Q2	6	3.09	20.8	927.4	309	8.6	36.3	0.65	36.2	83.8
	2006 Q3	3	2.86	20.7	928.4	316	8.4	13.6	0.73	37.9	87.0
	2006 Q4	3	2.84	21.1	925.9	385	8.5	28.4	0.69	36.0	86.2
	2007 Q1	3	2.82	21.7	922.6	280	8.5	19.6	0.74	34.4	84.1
	2007 Q2	2	2.85	21.1	926.5	398	8.6	9.7	0.64	35.2	84.2
	2007 Q3	3	3.08	19.4	937.2	374	8.7	28.3	0.96	39.5	94.7
	2007 Q4	2	2.96	20.3	931.4	330	8.5	24.4	0.98	36.8	91.6
	2008 Q1	3	2.88	21.4	924.9	303	8.5	20.0	0.86	37.4	93.5
	2008 Q2	3	2.95	20.2	931.7	480	8.4	25.5	0.88	38.0	90.1
	2008 Q3	3	2.84	20.2	931.7	132	8.3	30.6	0.84	36.7	86.4
	2008 Q4	3	2.74	21.3	925.2		8.2		0.79	34.2	81.6
	2009 Q1	3	2.57	22.5	918.0	340	7.6	36.8	0.80	35.5	88.1
	2009 Q2	3	2.39	23.4	912.6	730	7.4	36.8	0.81	31.0	71.6
	2009 Q3	3	2.36	23.7	911.2	230	7.7	41.4	0.67	32.7	73.1
	2009 Q4	3	2.51	22.7	916.8	395	8.0	26.5	0.76	35.7	81.8
	2010 Q1	3	2.47	23.6	911.3	268	7.4	35.7	0.77	30.9	70.8
	2010 Q2	1	2.70	22.2	919.6		6.7		1.04	27.4	65.3
	5/17/2010	BRN-156	2.7	22.2	919.6		6.69		1.04	27.4	65.3
	Average		2.83	21.1	926.3	343	8.3	29.4	0.79	35.9	85.1
	Std Dev		0.24	1.3	7.7	132	0.6	11.1	0.13	4.5	10.6
	Avg + StdDev		3.07	22.4	934.0	476	8.9	40.5	0.92	40.4	95.7
	Avg - StdDev		2.58	19.8	918.5	211	7.7	18.2	0.66	31.3	74.5

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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: Heavy Sour - Conventional											
BRS Bow River South											
	2005 Q1	3	2.78	22.6	917.5	150	8.4	9.5	0.28	28.7	77.6
	2005 Q2	3	2.88	22.5	917.8	194	8.6	6.5	0.23	32.5	90.8
	2005 Q3	3	2.90	22.1	920.3	176	8.5	13.3	0.27	31.2	84.7
	2005 Q4	3	2.96	23.0	914.9	69	8.5	3.6	0.32	30.6	84.8
	2006 Q1	3	2.81	23.1	914.7	146	8.4	12.7	0.34	35.1	86.0
	2006 Q2	3	2.75	23.7	910.7	246	8.0	15.5	0.32	32.2	85.4
	2006 Q3	3	2.77	23.3	912.9	201	7.9	13.0	0.26	35.6	86.4
	2006 Q4	3	2.75	23.7	910.9	144	7.8	14.0	0.38	35.1	88.2
	2007 Q1	3	2.77	24.1	908.5	216	7.5	14.0	0.34	33.1	85.0
	2007 Q2	3	2.84	23.7	910.7	251	8.3	14.1	0.40	34.6	91.0
	2007 Q3	3	2.83	23.0	914.8	280	8.1	9.0	0.40	36.5	97.6
	2007 Q4	3	2.79	23.9	909.9	305	7.9	15.5	0.52	34.9	89.4
	2008 Q1	3	2.82	23.3	913.6	297	8.5	19.2	0.40	35.7	94.2
	2008 Q2	3	2.83	23.2	913.8	213	8.2	15.1	0.53	36.1	94.5
	2008 Q3	3	2.94	22.7	916.7	72	8.2	12.7	0.53	34.5	92.7
	2008 Q4	3	2.93	22.9	915.9		8.2		0.51	35.3	95.2
	2009 Q1	3	2.97	23.2	914.1	340	8.3	22.8	0.47	33.5	88.8
	2009 Q2	3	2.92	23.2	913.9	220	8.4	17.5	0.43	36.7	95.1
	2009 Q3	3	2.93	22.7	916.9	300	8.2	15.7	0.44	35.9	97.0
	2009 Q4	3	2.93	22.8	916.3	151	8.4	20.6	0.43	32.9	89.5
	2010 Q1	3	2.78	23.7	910.7	195	7.9	8.2	0.34	28.9	78.1
	Average		2.85	23.2	914.1	207	8.2	13.0	0.39	33.8	89.1
	Std Dev		0.11	0.7	4.1	70	0.3	4.6	0.10	3.2	7.5
	Avg + StdDev		2.96	23.9	918.1	277	8.5	17.5	0.49	36.9	96.7
	Avg - StdDev		2.75	22.5	910.0	137	7.9	8.4	0.29	30.6	81.6

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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: Heavy Sour - Conventional											
F	Fosterton										
	2005 Q1	3	3.00	20.7	928.9	300	9.5	11.4	0.13	45.3	101.8
	2005 Q2	3	3.17	20.3	931.7	254	9.9	6.5	0.13	40.7	93.3
	2005 Q3	3	3.21	19.8	934.5	192	10.0	6.1	0.09	43.1	100.7
	2005 Q4	3	3.19	20.0	933.2	113	9.7	6.3	0.22	42.6	100.3
	2006 Q1	3	3.16	20.7	928.7	232	10.1	9.0	0.10	46.5	103.8
	2006 Q2	3	3.20	20.1	932.8	320	9.6	12.7	0.18	42.9	97.8
	2006 Q3	3	3.20	20.0	933.2	198	8.4	7.3	0.11	47.3	105.2
	2006 Q4	3	3.16	20.1	932.7	267	9.3	8.4	0.14	44.3	101.8
	2007 Q1	3	3.18	20.7	928.8	144	9.7	11.0	0.19	42.5	100.2
	2007 Q2	3	3.10	20.9	928.0	178	9.3	7.7	0.20	43.1	102.8
	2007 Q3	3	3.24	19.9	934.1	196	9.6	6.2	0.18	46.0	109.8
	2007 Q4	3	3.21	19.8	934.4	280	9.8	10.0	0.26	41.2	94.5
	2008 Q1	3	3.16	20.7	928.7	210	9.6	13.5	0.20	41.2	94.5
	2008 Q2	3	3.18	20.2	931.9	228	9.6	11.3	0.19	51.7	118.6
	2008 Q3	3	3.27	19.8	934.5	98	9.7	9.3	0.22	49.9	116.8
	2008 Q4	3	3.20	20.3	931.2		9.2		0.24	49.2	115.2
	2009 Q1	3	3.14	21.6	923.7	290	9.2	13.6	0.20	43.8	117.6
	2009 Q2	3	3.25	20.6	929.8	190	9.7	9.3	0.19	49.2	114.6
	2009 Q3	3	3.28	20.1	932.5	273	9.9	18.8	0.20	46.0	106.6
	2009 Q4	3	3.25	20.2	932.2	268	9.8	14.3	0.22	44.7	112.5
	2010 Q1	3	3.25	21.0	927.1	220	9.7	13.6	0.16	44.9	98.8
	Average		3.19	20.4	931.1	221	9.6	9.7	0.18	45.3	105.7
	Std Dev		0.07	0.5	3.3	67	0.4	3.2	0.05	3.6	8.9
	Avg + StdDev		3.26	20.9	934.4	288	10.0	12.9	0.23	48.9	114.6
	Avg - StdDev		3.12	19.8	927.7	154	9.2	6.4	0.13	41.7	96.9

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Crude Grade: Heavy Sour - Conventional											
LLB Lloyd Blend											
	2005 Q1	6	3.25	21.6	923.3	498	9.6	52.5	0.73	48.7	108.1
	2005 Q2	4	3.36	20.9	927.7		9.7		0.64	43.7	117.1
	2005 Q3	6	3.58	19.8	934.3	271	9.9	33.3	0.75	50.0	113.9
	2005 Q4	6	3.47	20.9	927.4	402	9.6	13.2	0.69	58.7	131.1
	2006 Q1	6	3.39	21.8	922.3	342	9.9	30.8	0.68	56.5	122.4
	2006 Q2	6	3.44	21.2	925.3	369	9.6	18.2	0.64	55.6	121.6
	2006 Q3	3	3.52	20.0	932.4	469	9.8	30.1	0.59	61.2	129.5
	2006 Q4	3	3.47	20.7	928.2	285	9.4	47.0	0.72	57.5	123.5
	2007 Q1	3	3.41	21.8	921.9		9.4		0.76	55.5	124.0
	2007 Q2	3	3.44	21.2	926.2	345	9.4	29.8	0.75	53.9	116.3
	2007 Q3	3	3.56	19.6	935.5	436	9.7	59.8	0.88	58.8	126.8
	2007 Q4	3	3.46	20.7	928.8	371	9.5	27.0	0.78	57.9	126.3
	2008 Q1	3	3.43	21.6	923.4	412	9.2	63.5	0.76	59.8	133.5
	2008 Q2	3	3.47	20.9	927.7	366	9.7	60.0	0.76	59.4	131.6
	2008 Q3	3	3.55	19.8	934.4		9.7		0.80	58.7	130.5
	2008 Q4	3	3.47	21.2	925.8	410	9.3	55.5	0.77	57.2	129.4
	2009 Q1	3	3.35	21.6	923.1	260	9.3	71.0	0.78	57.8	143.6
	2009 Q2	3	3.47	20.8	928.4	270	9.0	82.0	0.77	56.3	122.0
	2009 Q3	3	3.62	19.8	934.3	490	10.0	70.0	0.77	63.4	141.0
	2009 Q4	3	3.54	20.9	927.9	269	9.7	65.9	0.82	59.4	133.3
	2010 Q1	3	3.44	21.6	923.6	384	9.4	60.8	0.78	55.9	129.1
	2010 Q2	2	3.42	21.0	926.6	113	9.4	57.9	0.89	55.1	121.3
	5/29/2010	LLB-833	3.43	20.7	928.9	113	9.36	57.9	0.88	55.2	120
	Average		3.45	20.9	927.5	369	9.6	47.7	0.75	56.6	126.4
	Std Dev		0.11	0.8	4.8	101	0.4	18.8	0.09	6.0	12.5
	Avg + StdDev		3.56	21.7	932.2	469	9.9	66.5	0.84	62.6	138.9
	Avg - StdDev		3.34	20.1	922.7	268	9.2	29.0	0.66	50.6	113.9

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Crude Grade: Heavy Sour - Conventional											
LLK Lloyd Kerrobert											
	2005 Q1	6	2.87	21.4	925.0	300	8.9	35.6	0.88	33.7	81.7
	2005 Q2	4	3.04	20.9	927.5	400	9.3	31.5	0.84	39.2	93.0
	2005 Q3	6	3.17	19.4	936.6	277	9.6	33.7	0.85	35.3	89.8
	2005 Q4	6	3.09	20.5	930.3	293	9.4	30.1	0.97	42.0	97.4
	2006 Q1	6	3.01	21.2	925.6	245	9.4	28.8	0.74	44.4	102.2
	2006 Q2	6	3.07	20.8	927.4	551	9.2	18.6	0.78	42.4	96.4
	2006 Q3	6	3.20	19.7	934.4	365	9.4	19.5	0.94	48.7	104.8
	2006 Q4	6	3.17	20.6	929.1	279	9.3	134.0	0.85	47.3	99.6
	2007 Q1	6	3.14	21.5	923.6	225	9.3	31.5	0.85	44.9	100.3
	2007 Q2	6	3.17	20.9	927.6	320	9.2	24.3	0.85	44.2	96.3
	2007 Q3	6	3.26	19.4	936.8	333	9.5	44.3	0.90	46.8	104.1
	2007 Q4	6	3.19	20.4	930.6	358	9.3	35.0	0.91	49.3	104.2
	2008 Q1	6	3.16	21.4	925.3	321	9.2	47.0	0.89	49.7	110.6
	2008 Q2	6	3.22	20.9	927.6	287	9.2	44.8	0.89	47.8	102.0
	2008 Q3	6	3.36	19.7	935.2		9.5		0.94	47.3	109.6
	2008 Q4	6	3.35	20.7	928.8	370	9.0	41.5	0.94	47.1	109.4
	2009 Q1	5	3.27	21.3	925.2	310	9.1	60.6	0.96	50.8	115.7
	2009 Q2	4	3.30	20.8	928.2	220	9.4	46.0	1.06	49.5	112.5
	2009 Q3	3	3.39	19.4	936.7	466	9.8	49.2	0.94	49.3	113.5
	2009 Q4	3	3.29	20.6	929.5	352	9.3	52.7	0.94	46.9	108.0
	2010 Q1	3	3.20	21.4	924.7	213	9.0	46.6	0.96	46.4	106.2
	2010 Q2	2	3.31	21.3	925.2	303	9.2	44.9	1.03	46.5	105.5
	5/25/2010	LLK-495	3.31	21.1	926.4	303	9.08	44.9	1.02	45.3	99.7
	Average		3.18	20.6	929.3	322	9.3	40.7	0.90	45.5	103.0
	Std Dev		0.14	0.8	4.6	85	0.3	22.1	0.09	5.7	10.6
	Avg + StdDev		3.32	21.4	933.9	408	9.6	62.7	1.00	51.2	113.6
	Avg - StdDev		3.04	19.9	924.6	237	9.0	18.6	0.81	39.8	92.3

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Crude Grade: Heavy Sour - Conventional											
WCB Western Canadian Blend											
	2005 Q1	3	2.92	21.4	924.4	540	8.3	133.0	0.60	37.0	80.3
	2005 Q2	2	3.00	20.8	928.3	406	8.6	54.3	0.50	39.5	84.0
	2005 Q3	3	3.09	19.6	935.6	448	8.8	85.4	0.64	43.8	92.5
	2005 Q4	3	3.06	20.7	928.9	299	8.7	26.9	0.66	46.1	95.2
	2006 Q1	3	3.03	21.6	923.7	197	8.8	47.9	0.66	46.2	94.5
	2006 Q2	3	3.06	21.0	926.4	558	8.2	18.6	0.53	42.9	88.8
	2006 Q3	3	3.12	19.9	933.3	272	8.5	11.5	0.65	46.5	94.9
	2006 Q4	3	3.05	20.8	927.8		8.4		0.58	49.2	100.3
	2007 Q1	3	2.95	21.6	923.1	277	8.1	40.0	0.62	40.9	85.6
	2007 Q2	3	3.06	21.0	927.3	236	8.1	45.1	0.58	41.8	77.9
	2007 Q3	3	3.11	19.8	934.4	347	8.2	56.5	0.76	42.9	88.5
	2007 Q4	3	3.03	20.7	929.3		8.5		0.72	44.4	94.1
	2008 Q1	3	3.02	21.4	924.6		8.5		0.64	45.6	99.8
	2008 Q2	3	3.17	20.8	928.2	120	8.6	85.0	0.71	48.0	102.4
	2008 Q3	3	3.21	19.7	934.9	285	8.8	75.0	0.78	44.4	96.2
	2008 Q4	3	3.18	20.9	927.6	250	8.5	66.5	0.72	47.8	106.1
	2009 Q1	3	3.20	21.5	924.2	350	8.4	99.0	0.75	46.8	117.7
	2009 Q2	3	3.23	20.7	929.1	320	8.7	117.5	0.73	46.3	98.7
	2009 Q3	3	3.33	19.5	936.1	155	9.0	89.4	0.68	49.3	108.5
	2009 Q4	3	3.29	20.7	929.0	179	8.8	67.9	0.71	47.4	99.3
	2010 Q1	3	3.24	21.4	924.9	398	8.8	61.2	0.70	42.6	96.8
	2010 Q2	2	3.25	20.9	928.0		8.6		0.75	44.0	96.0
	5/18/2010	WCB-645	3.24	20.5	930.3		8.81		0.78	44.8	95.9
	Average		3.12	20.7	928.6	307	8.5	60.7	0.67	44.8	95.5
	Std Dev		0.12	0.7	4.5	127	0.3	30.9	0.10	5.1	12.3
	Avg + StdDev		3.23	21.5	933.1	433	8.9	91.6	0.77	49.9	107.9
	Avg - StdDev		3.00	20.0	924.1	180	8.2	29.7	0.57	39.7	83.2

Heavy 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: Heavy Sour - Dilbit											
AWB Access Western Blend											
	2008 Q3	6	3.94	22.7	917.1	193	10.8	7.9	1.83	70.7	193.7
	2008 Q4	6	3.98	22.4	918.9	216	10.7	7.0	1.75	70.4	191.3
	2009 Q1	6	3.82	22.5	918.1	980	10.0	5.2	1.55	64.6	189.9
	2009 Q2	6	3.97	21.7	923.0	180	10.9	5.3	1.76	71.4	183.6
	2009 Q3	3	4.07	20.5	930.4	100	11.2	5.6	1.70	78.6	205.5
	2009 Q4	3	3.95	21.7	923.0	644	10.7	8.7	1.67	71.6	190.8
	2010 Q1	3	3.84	22.4	918.6	72	10.4	7.5	1.62	67.8	183.1
	2010 Q2	2	3.86	21.8	922.4	120	10.4	5.7	1.65	69.7	187.4
	5/27/2010	AWB-766	3.9	21.5	924.2		10.5		1.7	69.3	190.9
	Average		3.93	22.1	920.7	253	10.6	7.1	1.70	70.6	191.1
	Std Dev		0.11	0.8	4.8	214	0.5	1.5	0.12	5.4	9.5
	Avg + StdDev		4.04	22.9	925.4	467	11.2	8.5	1.83	76.1	200.6
	Avg - StdDev		3.83	21.3	915.9	39	10.1	5.6	1.58	65.2	181.6

Heavy 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: Heavy Sour - Dilbit											
CL	Cold Lake										
	2005 Q1	6	3.44	21.5	923.7	200	10.2	14.4	0.79	54.5	143.3
	2005 Q2	4	3.50	20.8	928.1		10.7		0.75	51.4	135.8
	2005 Q3	6	3.76	19.4	936.7		10.7		0.84	54.1	147.1
	2005 Q4	6	3.73	20.6	929.7	262	10.7	11.4	0.86	64.4	164.8
	2006 Q1	6	3.58	21.6	923.6	182	10.6	9.2	0.85	64.2	171.8
	2006 Q2	5	3.63	21.0	926.2	209	10.4	10.3	0.70	64.6	164.8
	2006 Q3	6	3.76	19.9	933.2	242	10.5	18.0	0.82	68.0	171.4
	2006 Q4	6	3.74	19.9	933.0	129	10.4	11.8	0.73	68.3	172.9
	2007 Q1	6	3.65	21.7	922.9	130	9.9	10.8	0.87	61.9	160.2
	2007 Q2	6	3.72	21.0	927.3		10.6		0.92	62.8	165.6
	2007 Q3	6	3.80	19.7	935.1	144	10.7	17.0	1.01	65.3	161.8
	2007 Q4	6	3.72	20.5	929.9	151	10.5	8.8	0.95	64.4	162.8
	2008 Q1	6	3.68	21.7	923.1	159	10.2	11.6	0.94	65.0	169.0
	2008 Q2	6	3.75	21.1	926.7	102	10.3	9.4	1.01	65.8	170.2
	2008 Q3	6	3.83	19.9	933.9		10.4		1.02	64.9	170.4
	2008 Q4	6	3.76	21.2	925.8	125	10.2	8.7	0.99	65.3	173.9
	2009 Q1	6	3.74	21.7	922.9	190	10.3	11.1	0.92	65.6	179.0
	2009 Q2	6	3.82	20.8	928.1	290	10.7	11.3	1.03	65.5	168.5
	2009 Q3	6	3.91	19.8	934.8	190	11.0	13.9	0.97	67.0	174.0
	2009 Q4	6	3.84	20.9	927.5	492	10.6	12.4	0.98	65.1	172.2
	2010 Q1	6	3.74	21.8	922.3	71	10.5	12.8	0.97	63.3	167.1
	2010 Q2	4	3.76	21.3	925.4	235	10.5	10.6	0.93	61.9	162.3
	5/25/2010	CL(H)-779	3.78	21	927.4		10.5		0.92	62	164.1
	5/25/2010	CL(E)-749	3.78	21	926.9		10.6		0.97	60.2	157.6
	Average		3.72	20.8	928.2	192	10.5	11.8	0.93	64.2	167.0
	Std Dev		0.12	0.8	5.1	103	0.4	2.5	0.11	5.4	13.1
	Avg + StdDev		3.85	21.6	933.3	295	10.8	14.3	1.03	69.6	180.1
	Avg - StdDev		3.60	20.0	923.2	89	10.1	9.3	0.82	58.8	153.8

Heavy 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: Heavy Sour - Dilbit											
PH	Peace River Heavy										
	2005 Q3	3	4.91	20.0	933.4	148	9.3	6.8	3.09	45.0	141.0
	2005 Q4	1	4.94	20.0	933.1		9.4		3.12	53.9	155.0
	2006 Q1	2	4.92	20.2	931.9	131	9.8	14.7	2.86	59.0	174.0
	2006 Q2	2	4.87	20.5	929.4	130	9.6	6.0	2.93	51.8	154.7
	2006 Q3	1	4.96	20.3	931.0	298	9.1	6.8	2.48	65.6	194.4
	2006 Q4	2	4.52	20.7	928.3	146	8.8	10.5	2.86	56.2	159.1
	2007 Q1	1	3.49	22.3	919.2		9.8		1.52	44.2	120.3
	2007 Q2	2	4.76	20.8	928.5	113	8.9	9.9	2.80	53.0	153.6
	2007 Q3	1	4.82	20.0	933.2	208	8.8	11.2	2.78	50.5	141.5
	2007 Q4	2	4.76	19.6	935.5	140	9.7	7.6	3.12	61.0	166.4
	2008 Q1	1	4.81	20.6	929.6		9.8		3.30	73.1	231.0
	2008 Q2	2	4.90	21.4	925.0	300	8.9	11.0	2.61	53.3	154.0
	2008 Q3	1	4.98	20.5	930.3	230	8.5	9.1	2.26	50.6	151.8
	2008 Q4	2	5.09	21.0	926.9	490	8.7	64.9	2.23	55.5	170.2
	2009 Q1	1	5.20	21.2	926.0	190	9.3	30.4	2.09	52.0	177.9
	2009 Q2	2	5.10	21.0	927.0	110	9.1	15.0	2.29	57.1	168.3
	2009 Q3	1	5.22	19.9	933.9	267	9.0	16.5	2.18	54.8	170.0
	2009 Q4	2	5.09	21.1	926.6	106	9.1	18.7	2.38	55.5	165.1
	2010 Q1	1	5.07	21.2	925.7	95	9.3	18.2	2.61	57.6	181.3
	2010 Q2	1	5.13	21.0	927.3		9.4		2.61	57.2	167.0
	Average		4.88	20.6	929.3	187	9.2	15.2	2.66	54.8	162.7
	Std Dev		0.31	0.6	3.9	99	0.4	13.4	0.43	6.8	20.9
	Avg + StdDev		5.19	21.3	933.2	285	9.7	28.6	3.08	61.6	183.6
	Avg - StdDev		4.57	20.0	925.3	88	8.8	1.8	2.23	48.1	141.8

Heavy 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: Heavy Sour - Dilbit											
SH	Seal Heavy										
	2005 Q4	10	4.73	20.4	930.6	203	10.0	15.0	2.11	66.4	188.7
	2006 Q1	12	4.53	21.2	925.9	212	9.5	14.8	1.83	62.0	171.9
	2006 Q2	12	4.62	21.0	926.3	296	9.4	15.9	1.79	62.6	178.4
	2006 Q3	6	4.38	20.2	931.3	349	9.5	11.8	1.40	64.0	173.9
	2006 Q4	6	4.58	20.4	930.5	143	9.3	19.0	1.69	65.2	174.4
	2007 Q1	5	4.54	20.8	927.9		9.2	22.4	1.71	56.9	162.9
	2007 Q2	6	4.50	21.0	927.0	215	8.9	19.1	1.81	55.3	149.8
	2007 Q3	3	4.69	19.6	935.6	202	9.2	18.2	2.06	54.0	147.9
	2007 Q4	3	4.57	19.7	935.3	176	9.3	12.8	1.93	54.4	148.4
	2008 Q1	3	4.58	20.7	928.7	136	9.2	22.0	1.93	56.3	157.9
	2008 Q2	3	4.63	20.9	927.7		9.1		1.89	54.6	152.0
	2008 Q3	3	4.71	19.9	934.1	159	9.1	17.9	2.03	55.1	157.3
	2008 Q4	3	4.58	21.1	926.9	183	9.1	18.3	1.90	52.9	151.1
	2009 Q1	3	4.56	21.3	925.0	420	9.0	21.9	1.90	53.6	154.5
	2009 Q2	3	4.65	20.6	929.9	120	9.5	21.0	1.86	55.1	155.1
	2009 Q3	3	4.73	19.4	937.2	296	9.6	21.0	1.81	57.1	160.0
	2009 Q4	3	4.78	20.3	931.4	189	9.7	31.4	2.02	55.9	158.2
	2010 Q1	3	4.60	21.8	922.6	112	9.3	23.9	1.87	53.3	154.9
	2010 Q2	2	4.86	20.4	930.6	116	9.5	23.0	2.04	53.7	152.4
	5/29/2010	SH-936	4.77	20.2	931.7	116	9.38	23	2.15	51.2	145.5
	Average		4.60	20.7	929.0	218	9.4	17.6	1.85	58.6	164.7
	Std Dev		0.16	0.7	4.2	105	0.5	5.0	0.24	5.9	16.7
	Avg + StdDev		4.76	21.3	933.2	323	9.9	22.6	2.09	64.5	181.3
	Avg - StdDev		4.45	20.0	924.8	113	8.9	12.6	1.61	52.8	148.0

Heavy 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: Heavy Sour - Dilbit											
SC	Smiley-Coleville										
	2005 Q1	3	2.85	20.7	929.2	676	9.1	22.7	0.85	30.0	86.2
	2005 Q2	2	2.89	20.2	931.9	124	9.2	22.9	0.82	29.9	85.7
	2005 Q3	4	3.04	19.0	939.5	177	9.5	16.6	0.93	30.5	87.6
	2005 Q4	3	3.02	19.6	935.3	225	9.5	14.9	0.90	34.1	95.3
	2006 Q1	3	2.94	20.9	928.0	243	9.3	16.6	0.75	34.7	96.7
	2006 Q2	3	2.99	20.3	930.9	189	9.0	14.8	0.77	33.8	92.7
	2006 Q3	3	3.02	19.2	937.7	405	9.5	12.6	0.94	36.6	97.1
	2006 Q4	3	2.96	19.8	933.5	238	9.4	18.6	0.90	36.3	96.1
	2007 Q1	3	2.91	20.8	928.4	223	9.1	20.2	0.86	34.6	95.5
	2007 Q2	3	2.90	20.6	929.8	236	9.1	24.4	0.92	34.0	98.1
	2007 Q3	3	3.03	19.2	938.3	245	9.4	21.6	1.03	35.7	95.2
	2007 Q4	3	2.96	19.8	934.1	192	9.3	17.0	1.01	35.1	91.8
	2008 Q1	3	2.93	20.7	928.6	288	9.2	22.0	0.93	36.4	101.1
	2008 Q2	3	2.93	20.2	931.9		9.2		0.95	35.5	93.7
	2008 Q3	3	3.03	19.2	938.0	261	9.4	20.1	1.02	36.9	99.3
	2008 Q4	3	3.01	20.0	933.3	313	9.3	20.4	1.01	35.7	98.2
	2009 Q1	3	2.94	20.6	929.9	250	9.4	22.7	0.96	34.3	94.8
	2009 Q2	3	2.92	20.3	931.5	200	9.5	23.2	1.04	35.0	94.8
	2009 Q3	3	3.07	19.0	939.7	376	9.8	19.6	0.96	37.1	99.2
	2009 Q4	3	2.96	19.8	934.6	201	9.4	23.2	0.97	34.7	95.3
	2010 Q1	3	2.90	20.6	929.7	131	9.0	22.6	0.98	33.9	92.7
	2010 Q2	2	2.94	20.1	932.5	236	9.2	27.0	0.96	33.0	88.8
	5/23/2010	SC-296	2.91	19.9	933.7	236	9.17	27	0.93	32.3	85.4
	Average		2.96	20.0	933.1	243	9.3	19.5	0.93	34.6	94.7
	Std Dev		0.07	0.7	4.2	107	0.3	4.0	0.09	2.9	6.2
	Avg + StdDev		3.03	20.7	937.3	349	9.6	23.5	1.02	37.5	100.9
	Avg - StdDev		2.89	19.3	929.0	136	9.0	15.5	0.84	31.7	88.5

Heavy 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: Heavy Sour - Dilbit											
WH	Wabasca Heavy										
	2005 Q1	13	3.64	21.4	924.7	381	8.4	19.0	0.75	45.3	125.3
	2005 Q2	4	3.79	21.0	927.1	284	8.4	7.8	0.72	46.2	124.1
	2005 Q3	7	4.02	19.9	933.7	94	8.6	7.3	0.75	44.0	122.4
	2005 Q4	7	4.01	19.9	933.5	94	8.8	8.4	0.78	49.9	135.6
	2006 Q1	6	3.88	20.8	928.6	107	8.8	9.8	0.73	52.6	144.3
	2006 Q2	6	4.05	20.8	928.0	154	8.7	9.5	0.79	52.1	140.8
	2006 Q3	3	4.05	19.8	933.6	389	8.8	9.2	0.89	54.8	143.5
	2006 Q4	3	4.09	20.1	932.0	150	8.3	10.0	1.04	54.7	146.5
	2007 Q1	3	3.95	20.8	928.4	156	8.5	8.8	0.93	50.9	143.5
	2007 Q2	3	3.93	20.5	929.9	332	8.6	9.2	0.96	50.2	138.5
	2007 Q3	3	4.12	19.0	939.6	212	8.8	11.1	1.05	52.9	140.8
	2007 Q4	3	4.12	19.7	935.0	159	8.8	7.8	1.10	52.3	137.4
	2008 Q1	3	4.08	20.6	929.5		8.9		1.04	53.1	145.7
	2008 Q2	3	4.05	20.3	931.2	190	8.5	6.7	1.00	52.2	139.6
	2008 Q3	3	4.07	19.7	935.1	140	9.0	15.0	1.04	51.1	139.3
	2008 Q4	3	4.06	20.8	928.2	206	8.7	11.3	1.06	49.9	137.4
	2009 Q1	6	4.07	21.0	927.4	253	8.6	15.4	0.97	52.3	143.8
	2009 Q2	6	4.15	20.6	929.6	167	8.7	15.0	1.02	53.7	142.0
	2009 Q3	3	4.24	19.3	937.2	201	9.1	13.7	1.09	55.0	152.1
	2009 Q4	3	4.13	20.3	931.2	355	8.7	13.9	1.02	54.1	147.1
	2010 Q1	3	4.09	21.2	925.7	65	8.8	13.4	0.99	51.3	140.3
	2010 Q2	2	4.12	20.1	933.0	113	8.6	41.5	0.99	50.1	139.8
	5/27/2010	WH-610	4.17	20.1	932.7	105	8.66	71.1	0.92	50.3	140.9
	Average		3.99	20.5	930.2	198	8.7	13.2	0.92	50.8	138.2
	Std Dev		0.22	0.7	4.5	120	0.3	9.5	0.16	4.9	11.9
	Avg + StdDev		4.20	21.2	934.7	318	9.0	22.7	1.08	55.7	150.1
	Avg - StdDev		3.77	19.7	925.7	78	8.3	3.7	0.76	45.9	126.3

Heavy 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: Heavy Sour - Dilbit											
WCS Western Canadian Select											
	2005 Q1	12	2.99	21.0	926.8	424	8.7	55.6	0.81	43.7	111.1
	2005 Q2	8	3.14	20.4	930.6	362	8.9	41.1	0.78	44.4	110.6
	2005 Q3	11	3.34	19.4	937.0	272	9.5	40.3	0.81	47.2	116.7
	2005 Q4	12	3.25	20.5	929.9	309	9.3	34.2	0.83	51.8	127.3
	2006 Q1	12	3.25	21.4	924.4	330	9.4	24.9	0.72	54.3	131.6
	2006 Q2	12	3.29	20.8	928.0	450	9.3	27.6	0.70	56.9	131.9
	2006 Q3	6	3.42	19.5	935.8	697	9.4	24.0	0.87	57.6	133.1
	2006 Q4	6	3.34	20.6	928.9	357	9.1	41.5	0.83	55.9	131.9
	2007 Q1	6	3.24	21.3	924.8	328	8.8	39.0	0.89	51.7	125.3
	2007 Q2	6	3.38	21.0	927.1	314	9.5	47.0	0.88	52.6	132.2
	2007 Q3	6	3.40	19.4	936.7	324	9.6	54.0	0.94	55.0	129.8
	2007 Q4	6	3.41	20.5	930.3	453	9.6	39.5	0.85	56.0	129.5
	2008 Q1	6	3.36	21.4	924.4	523	9.4	42.5	0.87	58.2	140.4
	2008 Q2	6	3.32	20.7	929.1		9.2		0.92	53.3	127.3
	2008 Q3	6	3.52	19.6	936.0	305	9.6	40.5	0.96	56.4	136.0
	2008 Q4	6	3.47	20.7	928.9	468	9.3	47.7	0.97	55.7	136.9
	2009 Q1	6	3.43	21.4	924.4	400	9.2	52.5	0.93	58.5	162.8
	2009 Q2	6	3.49	20.6	929.8	390	9.5	62.3	1.00	58.4	141.8
	2009 Q3	6	3.60	19.5	936.5	355	10.1	46.7	0.90	58.7	143.6
	2009 Q4	6	3.52	20.6	929.7	391	9.7	46.1	0.88	58.6	139.1
	2010 Q1	6	3.48	21.4	924.6	301	9.6	40.3	0.94	54.2	130.1
	2010 Q2	4	3.34	21.5	924.0		9.1		0.90	50.3	119.3
	5/14/2010	WCS-846	3.41	21.1	926.6		9.31		0.96		
	5/26/2010	WCS-863	3.15	22.5	917.8		8.83		0.8	47.9	113.8
	Average		3.34	20.6	929.4	372	9.4	40.3	0.86	53.7	129.9
	Std Dev		0.16	0.8	4.9	95	0.4	12.5	0.11	6.0	13.0
	Avg + StdDev		3.50	21.4	934.3	467	9.8	52.8	0.97	59.7	142.9
	Avg - StdDev		3.17	19.8	924.6	277	9.0	27.8	0.76	47.7	116.9

Heavy 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: Heavy Sour - Dilsynbit											
AHS Albian Heavy Synthetic											
	2005 Q1	11	2.54	19.7	935.0	759	11.0	11.7	0.51	47.4	105.2
	2005 Q2	4	2.63	19.6	935.5		11.9		0.41	36.8	85.7
	2005 Q3	6	2.54	19.4	937.3	606	11.0	10.4	0.33	39.1	84.1
	2005 Q4	7	2.58	19.4	937.0	558	11.0	9.2	0.49	41.1	89.7
	2006 Q1	7	2.58	19.4	937.1	304	10.5	7.5	0.51	41.8	88.2
	2006 Q2	5	2.78	19.6	934.8	411	10.6	6.1	0.45	46.5	91.7
	2006 Q3	7	2.73	19.3	936.6	138	10.5	6.8	0.61	44.9	103.5
	2006 Q4	6	2.65	19.3	937.1	614	11.2	9.9	0.40	44.6	89.9
	2007 Q1	3	2.54	19.2	937.8	620	10.5	10.0	0.53	38.7	82.6
	2007 Q2	3	2.40	19.5	936.4	772	11.8	11.4	0.57	40.1	78.4
	2007 Q3	3	2.47	19.1	939.0	904	11.9	11.8	0.57	37.5	71.8
	2007 Q4	3	2.56	19.0	939.5	972	10.6	9.1	0.74	41.6	84.6
	2008 Q1	3	2.45	19.4	936.6	522	10.1	9.0	0.54	39.0	89.0
	2008 Q2	3	2.31	19.6	935.9	660	10.8	10.4	0.45	30.6	54.8
	2008 Q3	3	2.29	19.2	938.4	621	11.2	10.4	0.43	38.4	73.8
	2008 Q4	3	2.56	19.2	937.9		11.8		0.50	44.8	99.8
	2009 Q1	3	2.23	19.2	938.6	850	11.2	10.2	0.39	42.0	83.8
	2009 Q2	3	2.49	18.9	939.9	790	12.4	12.7	0.54	46.0	93.3
	2009 Q3	3	2.40	18.8	941.0	640	12.6	14.6	0.45	49.6	94.9
	2009 Q4	3	2.37	18.9	940.2	1348	12.1	15.8	0.49	45.7	95.5
	2010 Q1	3	2.28	19.0	939.3	1084	12.4	13.7	0.41	50.7	91.9
	2010 Q2	2	2.89	19.2	938.0	730	10.8	12.1	0.69	48.8	100.2
	5/15/2010	AHS-635	2.9	19.1	938.5		10.5		0.67	51.7	101
	Average		2.54	19.3	937.2	682	11.2	10.5	0.50	42.6	88.4
	Std Dev		0.20	0.4	2.2	253	1.1	2.3	0.13	6.8	14.7
	Avg + StdDev		2.74	19.7	939.5	935	12.3	12.8	0.63	49.4	103.1
	Avg - StdDev		2.34	19.0	935.0	429	10.1	8.1	0.37	35.8	73.7

Heavy 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: Heavy Sour - Synbit											
PSH	Long Lake Heavy										
	2008 Q2	2	2.90	20.1	932.4		7.4		1.64	48.9	129.5
	2008 Q3	6	3.02	19.5	936.4	580	7.3	6.5	1.92	48.8	131.2
	2008 Q4	6	2.72	20.6	929.4	220	6.4	4.7	2.01	42.4	116.3
	2009 Q1	6	2.73	21.5	923.8	180	6.7	6.7	1.94	45.4	125.8
	2009 Q2	6	2.84	22.1	920.7	100	7.2	8.6	2.28	44.9	120.5
	2009 Q3	3	3.06	20.5	929.9	169	7.7	5.8	2.07	50.6	138.4
	2009 Q4	3	3.00	20.4	930.6	203	7.6	6.7	2.19	49.6	133.5
	2010 Q1	3	3.18	21.0	927.4	60	8.1	9.4	2.04	50.9	138.2
	2010 Q2	2	2.79	21.3	925.0	109	6.7	7.7	2.31	43.8	118.8
	5/11/2010	PSH-778	2.58	21.5	923.9	109	6.34	7.7	2.37	39.4	105.3
	Average		2.89	20.8	928.1	244	7.1	7.0	2.04	47.3	128.4
	Std Dev		0.25	1.1	6.5	253	0.7	1.4	0.21	4.4	12.6
	Avg + StdDev		3.14	21.9	934.6	498	7.9	8.3	2.25	51.7	141.0
	Avg - StdDev		2.64	19.8	921.6	0	6.4	5.6	1.83	42.9	115.8

Heavy 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: Heavy Sour - Synbit											
SHB Surmont Heavy Blend											
	2009 Q1	5	2.80	20.3	931.3	400	6.7	6.4	1.34	49.4	136.0
	2009 Q2	3	2.92	19.7	935.4	210	7.3	5.0	1.39	47.3	124.0
	2009 Q3	2	3.05	19.1	939.2	97	7.7	5.5	1.36	52.8	145.9
	2009 Q4	3	2.92	19.4	937.0	98	7.2	6.5	1.35	50.7	139.2
	2010 Q1	3	2.88	20.0	933.5	106	7.1	4.1	1.32	47.1	132.2
	2010 Q2	2	2.94	19.6	935.9		7.2		1.34	50.0	137.4
	5/29/2010	SHB-969	2.93	19.3	937.5		7.21		1.36	48	129.8
	Average		2.90	19.8	934.7	219	7.1	5.6	1.35	49.3	135.1
	Std Dev		0.10	0.5	3.1	193	0.4	0.9	0.12	2.8	9.4
	Avg + StdDev		2.99	20.3	937.8	411	7.5	6.5	1.47	52.1	144.5
	Avg - StdDev		2.80	19.3	931.6	26	6.8	4.8	1.23	46.5	125.7

Heavy 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											
LSB Light Sour Blend											
	2006 Q3	6	1.23	35.6	845.8	677	3.1	2.7	0.14	5.7	7.8
	2006 Q4	6	1.22	36.0	844.1	437	2.5	58.0	0.13	5.8	8.6
	2007 Q1	6	1.24	35.8	845.3	556	3.1	183.0	0.12	4.9	8.8
	2007 Q2	6	1.26	35.5	846.6	493	3.3	220.0	0.18	5.0	9.6
	2007 Q3	6	1.20	35.4	847.2	614	3.3	152.0	0.15	5.5	8.9
	2007 Q4	6	1.35	34.7	850.5	431	3.7	50.0	0.19	8.4	15.1
	2008 Q1	6	1.22	36.0	844.1		3.5			10.1	18.8
	2008 Q2	6	1.07	36.8	840.1		2.8		0.15	5.6	8.9
	2008 Q3	3	0.93	37.3	837.3		2.6		0.26	4.3	6.9
	2008 Q4	3	0.83	38.4	832.2		2.4		0.16	4.1	7.0
	2009 Q1	6	0.87	38.4	832.3	555	2.2	237.5	0.14	4.2	8.3
	2009 Q2	1	0.80	38.6	831.3		2.3		0.17	6.6	7.5
	2009 Q3	5	0.90	38.0	833.8	450	2.5	107.0		7.4	10.3
	2009 Q4	4	0.83	38.8	830.3	791	2.5	80.8	0.15	4.6	6.8
	2010 Q1	3	0.91	38.7	830.8	459	2.6	80.9	0.28	5.4	8.3
	2010 Q2	2	0.91	38.3	832.3	430	2.6	68.5	0.11	4.6	7.4
	5/24/2010	LSB-798	0.84	38.8	830.3		2.5			4.4	7.6
	Average		1.10	36.6	840.8	525	2.9	117.9	0.16	5.7	9.4
	Std Dev		0.19	1.4	7.1	120	0.5	76.6	0.07	2.0	4.1
	Avg + StdDev		1.29	38.1	847.9	645	3.4	194.5	0.23	7.7	13.5
	Avg - StdDev		0.90	35.2	833.7	405	2.4	41.3	0.09	3.7	5.3

Heavy 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											
SLE	SLE										
	2006 Q2	6	1.01	36.4	842.2		2.9			11.0	20.5
	2006 Q3	5	1.12	37.7	835.5		2.9			12.0	28.2
	2006 Q4	6	1.10	37.2	838.0		2.8			13.4	30.6
	2007 Q1	5	1.15	37.3	837.8		3.0			11.2	27.6
	2007 Q2	6	1.09	36.9	839.4		3.0			8.8	27.4
	2007 Q3	3	1.09	35.5	846.8		3.5			12.3	28.1
	2007 Q4	3	0.89	38.4	832.2		2.3			4.9	11.4
	2008 Q1	3	0.81	39.8	825.4		1.6			4.2	13.0
	2008 Q2	3	0.81	39.9	825.0		1.5			3.2	7.3
	2008 Q3	3	0.91	39.0	829.4		2.4			4.1	9.8
	2008 Q4	3	0.91	39.1	828.5		2.4			5.8	13.8
	2009 Q1	3	0.88	38.9	829.5		2.3		0.20	6.1	15.4
	2009 Q2	3	0.80	39.5	826.8		2.1		0.22	5.9	10.5
	2009 Q3	3	0.70	40.5	821.9		1.9		0.20	5.3	10.3
	2009 Q4	3	0.93	39.3	827.9		2.8		0.35	9.3	20.1
	2010 Q1	3	0.88	38.0	833.9		2.6		0.27	7.4	16.4
	2010 Q2	2	1.02	36.8	840.1		3.1		0.30	11.7	27.3
	5/25/2010	SLE-951	1.09	36	843.8		3.4		0.3	15.8	38.5
	Average		0.97	38.0	834.1		2.6		0.24	8.0	18.5
	Std Dev		0.15	1.6	8.0		0.6		0.07	3.7	9.3
	Avg + StdDev		1.12	39.6	842.0		3.2		0.31	11.6	27.8
	Avg - StdDev		0.83	36.4	826.1		2.0		0.17	4.3	9.2

Heavy 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: Medium Sour											
MSM Midale											
	2005 Q1	6	2.42	29.4	879.0	545	6.0	41.1	0.19	16.7	33.3
	2005 Q2	4	2.35	29.3	879.1	542	5.9	8.4	0.13	12.2	24.1
	2005 Q3	6	2.34	29.4	878.7	195	5.8	28.6	0.21	14.0	28.1
	2005 Q4	6	2.38	29.5	878.2	631	6.0	35.5	0.31	15.4	29.1
	2006 Q1	6	2.33	29.8	876.4	175	5.9	31.4	0.30	15.3	27.0
	2006 Q2	6	2.28	29.9	875.9	724	5.0	4.3	0.09	14.2	25.7
	2006 Q3	4	2.26	29.6	877.3	613	5.6	17.6	0.09	14.3	26.1
	2006 Q4	6	2.26	29.8	876.5	130	5.2	42.0	0.15	15.0	27.1
	2007 Q1	5	2.27	30.4	873.3	575	5.3	89.2	0.14	14.6	28.8
	2007 Q2	6	2.25	30.5	872.8	363	5.7	63.3	0.24	14.5	28.5
	2007 Q3	6	2.27	30.1	874.9	353	5.6	42.8	0.22	15.5	30.6
	2007 Q4	6	2.22	30.2	874.5	629	5.5	24.0	0.24	14.3	26.5
	2008 Q1	6	2.26	30.1	875.0		5.8			21.4	43.7
	2008 Q2	6	2.03	30.2	874.5		5.7		0.22	15.4	29.8
	2008 Q3	2	2.05	30.0	875.4		5.7		0.24	15.4	31.2
	2008 Q4	2	1.74	30.9	870.8		5.3		0.17	12.9	25.4
	2009 Q1	3	2.06	30.1	875.0	490	5.3	90.3	0.18	14.5	33.0
	2009 Q2	2	1.95	30.6	871.9	460	5.7	102.0	0.17	15.5	29.8
	2009 Q3	2	1.81	31.4	867.8	87	5.3	72.0	0.13	14.5	26.8
	2009 Q4	3	2.04	31.2	869.3	229	5.4	69.0	0.15	15.4	29.9
	2010 Q1	3	1.99	31.4	867.7	261	5.3	66.7	0.20	11.7	22.4
	2010 Q2	2	1.80	30.7	871.7	110	5.3	12.5	0.13	12.8	24.5
	5/27/2010	MSM-269	1.89	31	870.2	110	5.3	12.5		12.4	24.1
	Average		2.21	30.1	875.1	415	5.5	44.9	0.19	14.9	28.9
	Std Dev		0.19	0.6	3.4	209	0.3	34.3	0.08	2.6	5.6
	Avg + StdDev		2.41	30.7	878.5	624	5.9	79.2	0.27	17.5	34.5
	Avg - StdDev		2.02	29.4	871.8	206	5.2	10.6	0.12	12.3	23.3

Heavy 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: Medium Sour											
SO Mixed Sour Blend											
	2006 Q3	3	1.66	30.8	870.8	298	5.0	9.5	0.28	19.4	39.3
	2006 Q4	3	1.73	31.6	866.9	413	5.4	23.0	0.34	23.4	49.4
	2007 Q1	6	1.59	31.1	869.4	272	5.1	16.4	0.28	18.3	40.2
	2007 Q2	6	1.82	31.0	870.1	314	6.0	16.5	0.45	20.0	45.5
	2007 Q3	6	1.82	29.4	878.8	304	5.9	24.6	0.38	22.3	45.6
	2007 Q4	6	1.96	29.0	880.9	341	6.0	6.4	0.50	24.5	51.5
	2008 Q1	6	1.69	30.2	874.5		5.4			24.6	53.9
	2008 Q2	6	1.61	30.6	872.1		5.1		0.42	19.1	38.7
	2008 Q3	6	1.53	31.8	866.0		4.9		0.54	16.4	35.0
	2008 Q4	6	1.40	33.5	857.1		4.8		0.32	14.8	33.1
	2009 Q1	4	1.27	34.2	853.3	510	4.3	19.6	0.24	12.8	37.5
	2009 Q2	4	1.27	34.7	850.6	390	4.5	9.6	0.39	20.9	36.6
	2009 Q3	4	1.35	36.6	840.9		4.8		0.30	16.9	35.9
	2009 Q4	2	1.55	32.8	860.5		5.3			18.0	39.4
	2010 Q1	1	1.61	30.9	870.3	277	5.7	19.6		20.2	43.2
	2010 Q2	4	1.56	30.8	871.1		5.1		0.31	23.2	50.3
	5/12/2010	SO-706	1.69	30.4	873.2		5.5			27.7	61.4
	5/25/2010	SO-707	1.49	30	875.2		5.1				
	Average		1.61	31.6	866.9	336	5.2	16.3	0.39	19.6	42.2
	Std Dev		0.22	2.2	11.5	72	0.6	7.2	0.12	4.9	9.7
	Avg + StdDev		1.82	33.8	878.4	408	5.8	23.5	0.50	24.5	51.9
	Avg - StdDev		1.39	29.4	855.4	264	4.6	9.1	0.27	14.8	32.5

Heavy 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: Medium Sour											
SHE	SHE										
	2005 Q1	6	2.00	32.6	861.3	664	4.4	42.0	0.28	16.2	45.5
	2005 Q2	2	1.97	32.8	860.5	450	4.3	7.0	0.28	17.0	48.6
	2005 Q3	3	1.80	33.6	856.4	232	4.0	14.9	0.21	14.6	43.6
	2005 Q4	3	1.89	33.6	856.5	522	4.4	33.2	0.20	19.3	55.7
	2006 Q1	3	1.77	33.6	856.2	368	4.0	31.2	0.17	17.3	47.4
	2006 Q2	6	1.61	35.5	846.9	232	3.3	4.4	0.08	15.3	40.1
	2006 Q3	5	1.60	35.5	846.6	72	3.5	4.6	0.09	12.6	32.7
	2006 Q4	6	1.67	34.9	849.5	621	3.5	6.6	0.16	20.1	52.0
	2007 Q1	6	1.73	36.3	842.6		3.6		0.18	16.9	48.2
	2007 Q2	6	1.75	33.9	855.0	249	4.1	36.7	0.31	15.6	46.0
	2007 Q3	3	1.89	32.8	860.7	180	4.3	10.5	0.26	18.1	48.6
	2007 Q4	3	1.85	32.8	860.6	188	4.4	27.0	0.28	18.7	50.8
	2008 Q1	3	1.70	33.5	856.8		4.5			20.7	57.5
	2008 Q2	3	1.71	34.7	850.7		3.9		0.29	19.7	52.9
	2008 Q3	2	1.63	34.2	853.2		4.0		0.31	15.7	45.0
	2008 Q4	3	1.32	37.3	837.5		3.2		0.19	12.8	39.5
	2009 Q1	3	1.10	38.1	833.7		2.6		0.20	8.9	27.5
	2009 Q2	3	1.05	38.7	830.8		2.7		0.35	10.0	24.3
	2009 Q3	3	1.26	37.9	834.8		3.4		0.22	13.4	35.7
	2009 Q4	3	2.01	38.7	830.6		5.4		0.83	31.5	80.0
	2010 Q1	3	2.42	33.5	857.2		6.3		0.93	33.4	94.3
	2010 Q2	2	1.99	34.1	853.7		5.3		0.64	26.1	71.1
	5/17/2010	SHE-930	1.92	33.3	857.9		5		0.64	24	65.2
	Average		1.71	34.9	849.6	366	4.0	20.7	0.27	17.9	49.4
	Std Dev		0.33	2.1	10.8	187	0.9	15.3	0.20	6.7	17.2
	Avg + StdDev		2.04	37.1	860.4	552	4.8	36.0	0.47	24.5	66.5
	Avg - StdDev		1.39	32.8	838.8	179	3.1	5.4	0.07	11.2	32.2