SPR CRUDE OIL COMPREHENSIVE ANALYSIS

Sample ID **MLI001** **BRYAN MOUND, SWEET** **Date of Assay** **5/15/1998**

Crude

Specific Gravity, 60/60° F	0.8454	Ni, ppm	3.41	RVP, psi @ 100° F		5.28
API Gravity	35.9	V, ppm	4.12	Acid number, mg KOH/g		0.10
Sulfur, Wt. %	0.33	Fe, ppm	0.822	Mercaptan Sulfur, ppm		7.26
Nitrogen, Wt. %	0.111	Cu, ppm	na	H_2S Sulfur, ppm		na
Micro Car. Res., Wt. %	2.21	Org. Cl, ppm	na	Viscosity: 77° F	6.99 cSt	
Pour Point, °F	25	UOP "K"	11.96	100° F	4.666 cSt	

Fraction	Gas	1	2	3	4	5	6	Residuum	Residuum
Cut Temp.	C_2 - C_4	C5 - 175° F	175° - 250° F	250° - 375° F	375° - 530° F	530° - 650° F	650° - 1050° F	650° F+	1050° F+
Vol. %	1.9	7.0	8.2	14.1	16.8	12.5	28.8	39.6	10.8
Vol. Sum %	1.9	8.8	17.0	31.1	47.9	60.4	89.2	100.0	100.0
Wt. %	1.3	5.5	7.2	12.9	16.5	12.7	31.1	43.9	12.8
Wt. Sum %	1.3	6.8	14.0	26.9	43.4	56.1	87.2	100.0	100.0
Specific Gravity, 60/60° F		0.6747	0.7391	0.7774	0.8275	0.8604	0.9143	0.9371	0.998
API Gravity		78.2	60.0	50.5	39.5	33.0	23.3	19.5	10.4
Sulfur, Wt. %		0.0013	0.0018	0.0113	0.07	0.25	0.51	0.65	0.98
Molecular Weight		96	111	134	185	245	403		
Hydrogen, Wt. %		15.88	14.73	na				12.91	10.82
Mercaptan Sulfur, ppm		3.6	8.8	27.8	19.4				
H_2S Sulfur, ppm		< 0.1	< 0.1	< 0.1	< 0.1				
Organic Cl, ppm		4.1	1.0	0.1	< 0.1				
Research Octane Number*		69.9	62.4	46.7					
Motor Octane Number*		67.5	60.0	44.8					
Flash Point, ° F				77	172	246	301		
Aniline Point, ° F				123.0	143.2	163.0	194.1		
Acid Number, mg KOH/g					0.04	0.10			
Cetane Index					45.5	51.0			
Diesel Index				62.1	56.6	53.7			
Naphthalenes, Vol. %					4.83	10.24			
Smoke point, mm					19.9	15.6			
Nitrogen, Wt. %					0.0006	0.010	0.154	0.276	0.572
Viscosity, cSt 77° F					2.537				
100° F					1.990	5.691			
130° F						3.814	39.07	109.5	
180° F							14.77	32.12	2923
210° F									920.6
250° F									143.5
Freezing Point, °F					-28.1				
Cloud Point, °F						31.1	105		
Pour Point, °F						27.0	101	85	
Ni, ppm								7.66	25.8
V, ppm								9.29	31.4
Fe, ppm								6.41	21.6
Cu, ppm								na	na
Micro Car. Res., Wt. %								5.00	17.25

Compositional Analysis Report (MLI001)

	Gas	1	2	3
	IBP 59° F	59 - 175° F	175° - 250° F	250° - 375° F
Paraffins, Wt.%	99.85	77.86	52.61	41.48
Naphthenes, Wt.%	0.15	20.86	40.54	36.50
Aromatics, Wt.%	0.00	1.28	6.86	22.02
Benzene Precursor Index	0.03	11.14	5.14	0.02

Composition, Wt.%

Ethane	0.21	-	-	-
Propane	16.33	0.00	0.00	0.00
N-Butane	54.66	1.47	0.00	0.00
I-Butane	14.43	0.08	0.00	0.00
N-Pentane	4.39	18.44	0.04	0.00
I-Pentane	9.36	12.64	0.01	0.00
Cyclopentane	0.16	4.16	0.05	0.00
N-Hexane	0.05	15.87	2.93	0.00
2-Methylpentane	0.10	10.93	0.63	0.00
3-Methylpentane	0.04	6.59	0.58	0.00
2,2-Dimethtylbutane	0.01	0.16	0.00	0.00
2,3-Dimethlybutane	0.04	3.03	0.13	0.00
Methylcyclopentane	0.02	10.50	2.98	0.00
Cyclohexane	0.01	5.16	4.99	0.01
Benzene	0.00	1.54	1.37	0.00
N-Heptane	0.00	1.18	12.64	0.13
2-Methylhexane	0.00	1.39	4.82	0.02
3-Methylhexane	0.00	1.22	5.38	0.02
2-2-Dimethylpentane	0.00	0.30	0.23	0.00
2,3-Dimethylpentane	0.00	0.85	2.85	0.01
2,4-Dimethylpentane	0.00	0.32	0.30	0.00
3,3-Dimethylpentane	0.00	0.11	0.23	0.00
2,3,3-Trimethylbutane	0.00	0.04	0.04	0.00
3-Ethylpentane	0.00	0.05	0.28	0.00
1,1-Dimethylcyclopentane	0.00	0.04	0.09	0.00
1,Cis-2-DimethylcyC5	0.00	0.07	0.82	0.01
1,Cis-3-DimethylcyC5	0.00	0.57	2.48	0.01
1-Trans-2-DimethcyC5	0.00	0.92	4.08	0.02
1-Trans-3-DimethcyC5	0.00	0.80	3.08	0.01
Ethylcyclopentane	0.00	0.11	2.18	0.04
Methylcyclohexane	0.00	1.14	17.08	0.24
Toluene (Methylbenzene)	0.00	0.12	5.94	0.31
N-Octane	0.00	0.02	3.77	1.54
I-Octane	0.00	0.14	14.16	2.10
Methyl-Ethylcyclopentane	0.00	0.04	4.22	0.63
Dimethylcyclohexane	0.00	0.00	0.65	0.97
P-Xylene	0.00	0.00	0.00	0.00
M-Xylene	0.00	0.00	0.00	0.00
O-Xylene	0.00	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00	0.00
N-Nonane	0.00	0.00	0.00	0.00
C9 isoparaffins	0.00	0.00	0.71	1.54

Sample ID **MLI002 BRYAN MOUND, SOUR** **Date of Assay** **5/15/1998**