

**CRUDE ASSAY TEST SUMMARY**

Client : World Energy Resources Inc.  
 Sample Description : Crude Blend

File Ref. E79087  
 Date Reported : 27/04/2007

**Distillation Fraction**

Sample Number	E79087	E79089	E79090	E79091	E79092	E79093
Description	Whole Sample	Naphtha	Light Diesel	Heavy Diesel	VGO	Residue
TBP Range, °C	---	IBP - 190	190 - 270	270 - 343	343 - 524	524+
TBP Range, °F	---	IBP - 374	374 - 518	518 - 649	649 - 975	975+
Yield, mass%		5,48	7,29	8,12	20,57	58,54
Yield, volume%		7,02	8,59	8,86	21,15	54,38
Position in Crude, mass%		IBP - 5,48	5,48 - 12,77	12,77 - 20,89	20,89 - 41,46	41,46 - 100,00
Position in Crude, volume%		IBP - 7,02	7,02 - 15,61	15,61 - 24,47	24,47 - 45,62	45,62 - 100,00
Mid mass%		2,74	9,13	16,83	31,18	70,73
Mid volume%		3,51	11,32	20,04	35,05	72,81

**Properties**

API Gravity, °API	10,43	52,10	37,35	24,85	15,74	1,55
Relative Density @ 15°C	0,9970	0,7707	0,8380	0,9050	0,9610	1,0635
Absolute Density @ 15°C, kg/m <sup>3</sup>	996,1	770,0	837,3	904,2	960,2	1062,6
Acid Number, Total, mg KOH/g	0,54	0,04	0,41	0,61	1,04	0,42
Aniline Point, °C/°F	---	---	43.8 / 110.8	43.8 / 110.8	51.4 / 124.5	---
Ash Content, mass%	---	---	---	---	---	0,257
Asphaltene, C <sub>7</sub> Insolubles, mass %	17,35	---	---	---	0,05	33,50

**Asphalt Testing**

Penetration @ 25°C, mm	---	---	---	---	---	0,5
Softening Point, °C/°F	---	---	---	---	---	70.0 / 158.0
Carbon Residue, Micro, mass %	13,02	---	---	---	0,12	21,63
Cetane Index - US Calc. (D976)	---	---	36,5	---	---	---
Cloud Point, °C/°F	---	<-75 / <-103	<-60 / <-76	-29.0 / -20.2	N/A <sup>Note 1</sup>	---

**Distillation, Atmospheric D86 (°C/°F)**

Volume % Recovered	---	---	97,7	---	---	---
Initial Boiling Point	---	---	107.2 / 225.0	---	---	---
5%	---	---	160.2 / 320.4	---	---	---
10%	---	---	170.0 / 338.0	---	---	---
15%	---	---	175.2 / 347.4	---	---	---
20%	---	---	181.6 / 358.9	---	---	---
25%	---	---	186.8 / 368.2	---	---	---
30%	---	---	194.2 / 381.6	---	---	---
40%	---	---	204.9 / 400.8	---	---	---
50%	---	---	214.9 / 418.8	---	---	---
60%	---	---	224.1 / 435.4	---	---	---
70%	---	---	234.6 / 454.3	---	---	---
80%	---	---	246.2 / 475.2	---	---	---
90%	---	---	263.4 / 506.1	---	---	---
95%	---	---	282.9 / 541.2	---	---	---
Final Boiling Point	---	---	284.3 / 543.7	---	---	---
Residue, volume%	---	---	0,3	---	---	---
Loss, volume%	---	---	2,0	---	---	---

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Mid mass%	2,74	9,13	16,83	31,18	70,73
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**Properties**

**Distillation, Simulated (°C/°F)**

Mass % Recovered  
 Initial Boiling Point  
 5%  
 10%  
 15%  
 20%  
 25%  
 30%  
 40%  
 50%  
 60%  
 70%  
 80%  
 90%  
 95%  
 Final Boiling Point  
 Residue, mass%  
 Flash Point, PMCC, °C/°F  
 Hydrogen Sulphide, ppm wt  
 K-Factor, Watson UOP  
 Mercaptans, ppm wt

D7169	---	---	---	---	---
80,94	---	---	---	---	---
39.0 / 102.2	---	---	---	---	---
139.2 / 282.6	---	---	---	---	---
206.3 / 403.3	---	---	---	---	---
260.2 / 500.4	---	---	---	---	---
307.3 / 585.1	---	---	---	---	---
352.6 / 666.7	---	---	---	---	---
397.5 / 747.5	---	---	---	---	---
476.5 / 889.7	---	---	---	---	---
558.3 / 1036.9	---	---	---	---	---
627.6 / 1161.7	---	---	---	---	---
671.4 / 1240.5	---	---	---	---	---
715.7 / 1320.3	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---
720.0 / 1328.0	---	---	---	---	---
19,06	---	---	---	---	---
37.0 / 98.6	---	---	---	---	---
---	<0.001	0,004	<0.001	<0.001	---
---	11,9	11,3	10,9	11,1	---
---	0,135	0,205	0,216	0,141	---
---	---	---	---	---	---
Arsenic, ppm wt	<1	---	---	---	---
Iron, ppm wt	10,3	---	---	<1	10,5
Nickel, ppm wt	41,8	---	---	<1	60,4
Vanadium, ppm wt	71,6	---	---	<1	100,8
Naphthalenes, volume %	---	2,91	1,33	---	---
Nitrogen, Basic, ppm wt	831,0	<1	1,5	128,0	359,0
Nitrogen, Total, ppm wt	1676,4	<1	12,1	143,7	750,1
---	---	---	---	---	---
Paraffins	---	49,0	24,1	17,6	13,5
Naphthenes	---	40,1	37,7	37,3	23,3
Aromatics	---	10,9	38,2	45,1	63,2
Pour Point, °C/°F	---	<-70 / <-94	<-70 / <-94	-57 / -70.6	-9 / 15.8
Refractive Index @ 70x°C	---	1,4032	1,4412	1,4789	1,5113
Salt in Crude, lbs/kbbl	281,8	---	---	---	---

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**Properties**

<b>SAPA, Detailed, mass %</b>	---	---	---	---	---	---
Saturates, mass %	---	---	---	---	---	1,5
Mono-aromatics, mass %	---	---	---	---	---	3,5
Di-aromatics, mass %	---	---	---	---	---	4,9
Poly-aromatics, mass %	---	---	---	---	---	5,3
Polars, mass %	---	---	---	---	---	52,5
Asphaltenes, mass %	---	---	---	---	---	32,3
Sediment in Crude, ppm wt	823,4	---	---	---	---	---
Smoke Point, mm	---	23,1	11,4	---	---	---
Sulphur, Total (> 100 ppm), mass%	7,714	0,904	2,354	4,023	5,491	9,921
<b>Viscosity, Kinematic</b>	---	---	---	---	---	---
cSt @ 30°C / 86°F	---	0,8203	1,6871	---	---	---
cSt @ 50°C / 122°F	1766	0,6897	1,2314	3,5204	42,59	---
cSt @ 60°C / 140°F	822,5	---	---	---	---	---
cSt @ 70°C / 158°F	---	---	---	2,3894	18,86	---
cSt @ 80°C / 176°F	---	---	---	---	---	886131
cSt @ 90°C / 194°F	---	---	---	---	---	279074
cSt @ 100°C / 212°F	---	---	---	---	---	98834
cSt @ 135°C / 275°F	---	---	---	---	---	5838
Wax Content, Standard, mass%	---	---	---	---	0,74	---

**ASTM D5236 Distillation method is a 1 to 2 theoretical plate distillation**

Notes:

1) Sample too dark for Cloud Point determination.