

[TOURMALINE OIL CORP / LSD 14-20-56-23W5] TOURMALINE WILDRIVER PLANT 1

Customer: PTRHTF20046
 QUADRA CHEMICALS
 12925 146TH STREET
 EDMONTON, AB T5L 2H6 CANADA
 Attn: Ada Aponte
 Tel:
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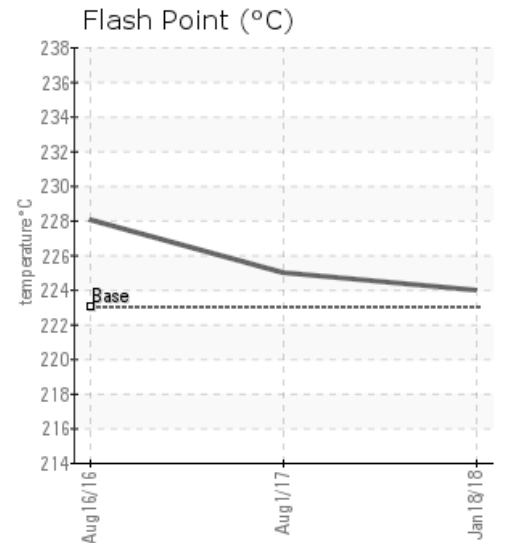
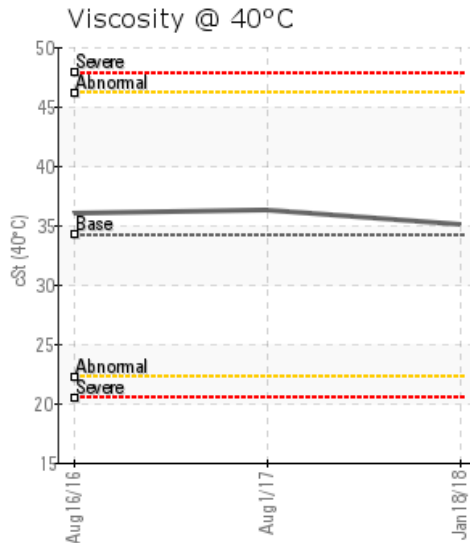
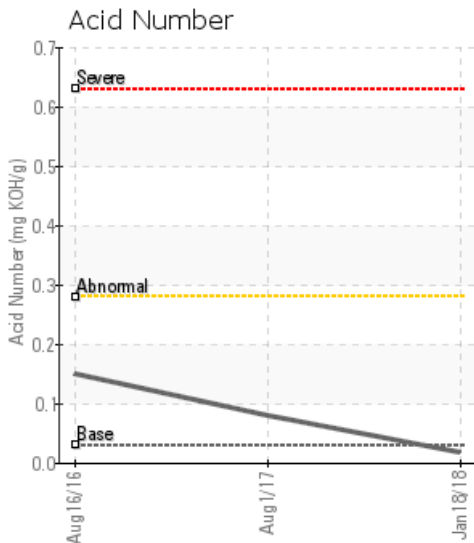
System Information
 System Volume: 2000 ltr
 Bulk Operating Temp: Not Specified
 Heating Source:
 Blanket:
 Fluid: PETRO CANADA PETRO-THERM
 Make:

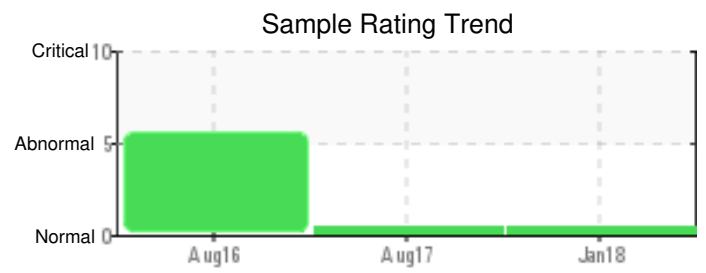
Sample Information
 Lab No: 02193416
 Analyst: Peter Hartevelde
 Sample Date: 01/18/18
 Received Date: 01/18/18
 Completed: 01/26/18
 To discuss this report contact Peter Hartevelde at (780)967-4234

Recommendation: The fluid is in good condition and suitable for further use. Please re-sample in 12 months.

Comments:

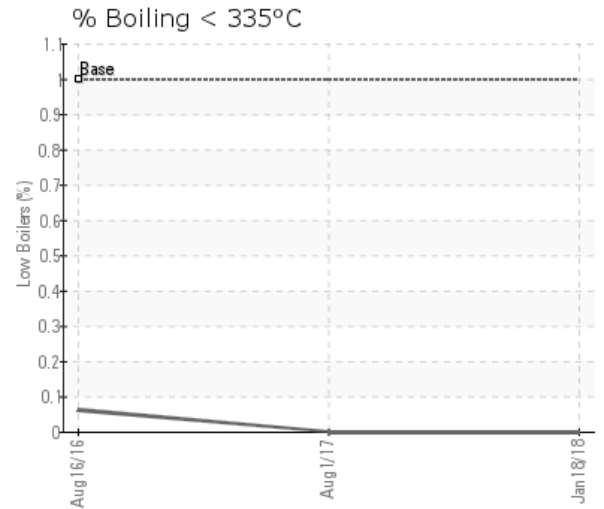
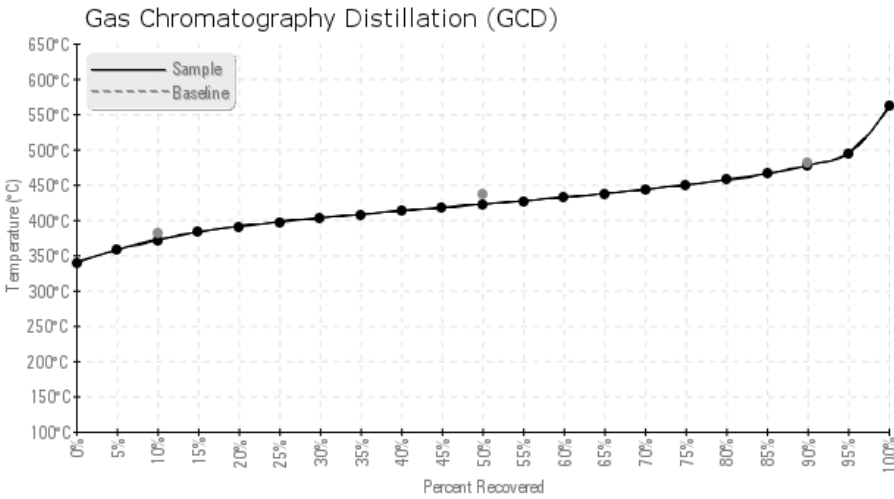
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/18/18	01/18/18	0y		435 / 224	0.1	35.1	0.017	0.055	701 / 372	792 / 422	891 / 477	0.00
08/01/17	08/03/17	0y		437 / 225	17.1	36.3	0.080	0.030	733 / 389	815 / 435	915 / 490	0.00
08/16/16	08/23/16	4y	PUMP	442 / 228	1129.0	36.0	0.15	0.067	727 / 386	816 / 436	920 / 493	0.06
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00





Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc	
01/18/18	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	
08/01/17	5	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
08/16/16	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Baseline Data			0	0						0			0	0					0				0		

Elemental analysis results (above) in parts per million (ppm). [10,000 ppm = 1.0%]



Historical Comments

08/01/17	The fluid is in excellent condition. Since the fluid had a high water content previously listing the operating temperature on the sample label is important when sending the next sample. Please re-sample in 12 months.
08/16/16	The water content of the fluid is high. There is no bulk fluid temperature listed, please advise with next sample. The 90% GCD temperature is slightly high. This indicates degradation of the fluid by oxidation. The water content has to be lowered to a more acceptable level to prevent corrosion from taking place over time. Please boil-off the water by venting to atmosphere on a regular basis. Besides the water content the fluid is in a good condition and suitable for further use. Please re-sample in 6 months. Water contamination levels are severely high. Water contamination levels are severely high.. ppm Water contamination levels are severely high. (GCD) 90% Distillation Point is marginally high.

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