

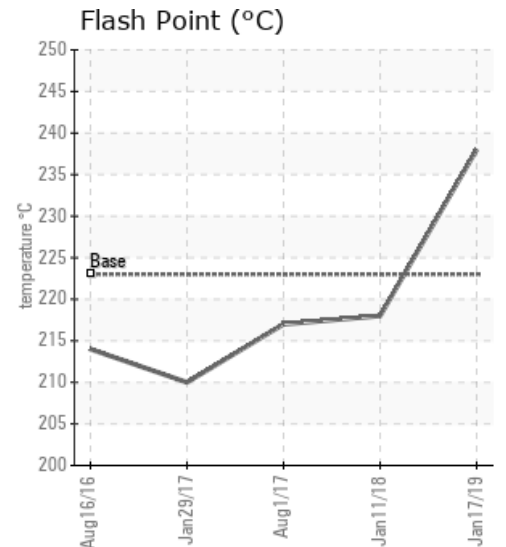
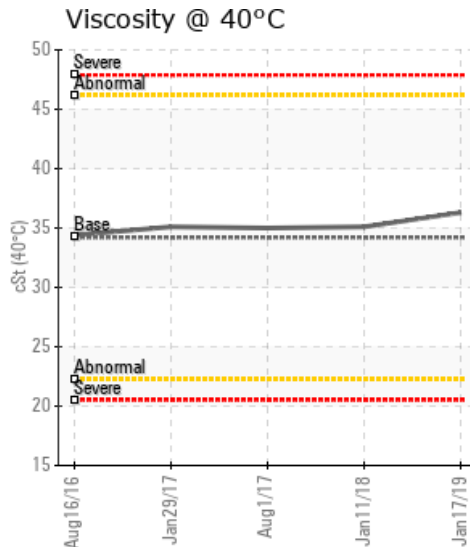
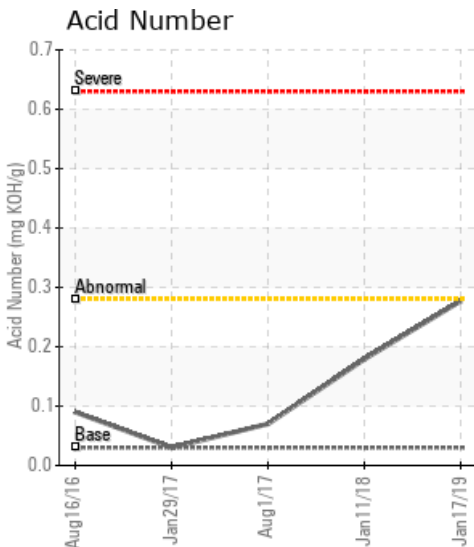
[TOURMALINE OIL CORP / LSD 14-20-56-23W5] WILDRIVER TRAIN 2 HEAT MEDIUM

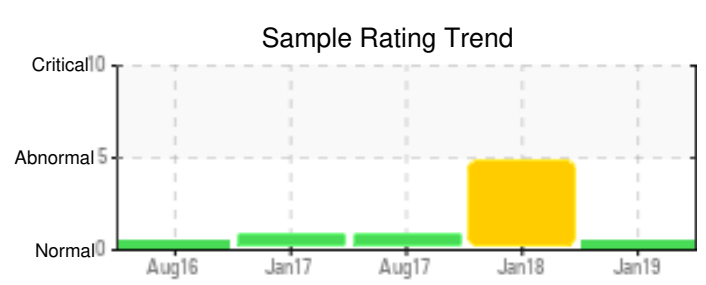
Customer: PTRHTF20046	System Information	Sample Information
QUADRA CHEMICALS 12925 146TH STREET EDMONTON, AB T5L 2H6 CANADA Attn: Quadra Samples Tel: E-Mail: quadra_samples@quadra.ca	System Volume: 29000 ltr Bulk Operating Temp: 446F / 230C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02265788 Analyst: Peter Harteveld Sample Date: 01/17/19 Received Date: 02/01/19 Completed: 03/04/19

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

Comments:

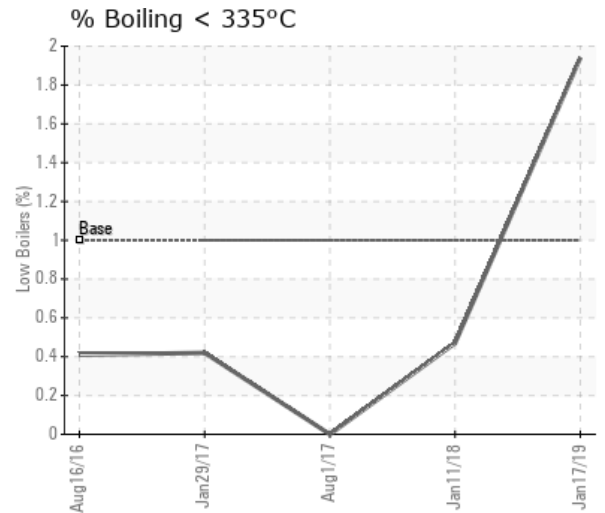
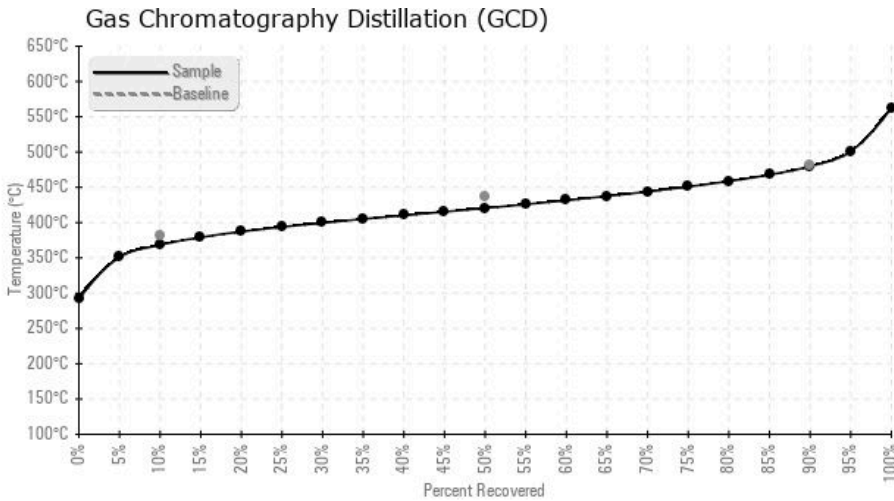
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/17/19	02/01/19	0y		460 / 238	109.4	36.3	0.277	0.229	695 / 368	789 / 421	896 / 480	1.94
01/11/18	01/18/18	0y		424 / 218	544.7	35.1	0.179	0.120	725 / 385	815 / 435	919 / 493	0.47
08/01/17	08/03/17	0y		423 / 217	42.5	35.0	0.070	0.021	730 / 388	813 / 434	923 / 495	0.00
01/29/17	01/30/17	0y		410 / 210	21.6	35.1	0.03	0.094	722 / 383	813 / 434	920 / 494	0.42
08/16/16	08/23/16	4y	PUMP	417 / 214	10.9	34.4	0.09	0.055	722 / 383	812 / 433	916 / 491	0.41
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
01/17/19	59	0	0	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0
01/11/18	21	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	4	1	0	0
08/01/17	8	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
01/29/17	14	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	2	0	0	0
08/16/16	6	0	0	0	0	0	0	0	0	0	0	0	0	0	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	
01/11/18	Please fill in service life of the oil on the analysis request form !The water content is elevated but other than that the oil is in good condition and suitable for further use. It is recommended to boil-off the water to atmosphere, check the source of water and rectify as necessary. Please re-sample in 6 months. Water contamination levels are marginally high. Water contamination levels are marginally high.. ppm Water contamination levels are marginally high. (GCD) 90% Distillation Point is marginally high.
08/01/17	The fluid is in good condition and suitable for further use. The 90% GCD temperature is slightly high. This indicates an acceptable rate of fluid degradation by oxidation. Ensure blanket gas is working properly. Listing the service life of the fluid on the sample label is important when sending in the next sample. Please re-sample in 12 months. (GCD) 90% Distillation Point is marginally high.
01/29/17	The fluid is in a good condition and suitable for further use. An increase in 90% GCD temperature indicates some moderate oxidation. Make sure to keep blanket gas on. Please re-sample in 6 months. (GCD) 90% Distillation Point is marginally high.
08/16/16	The fluid is in a good condition and suitable for further use. Please re-sample in 6 months.

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