

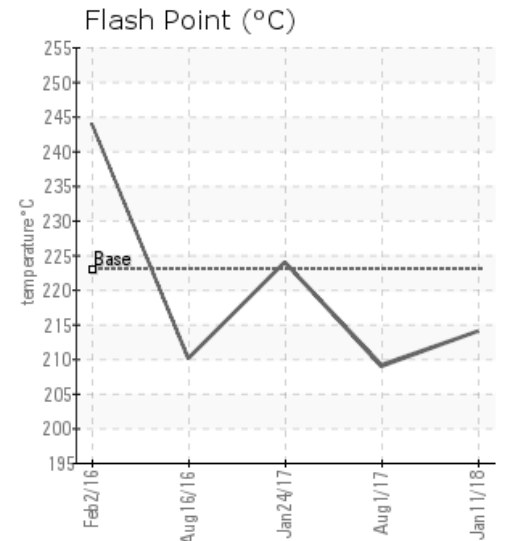
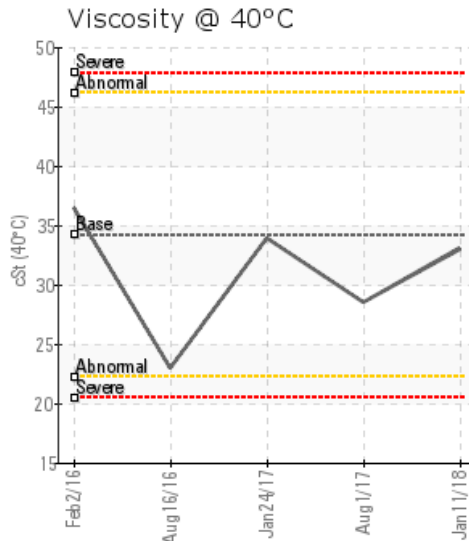
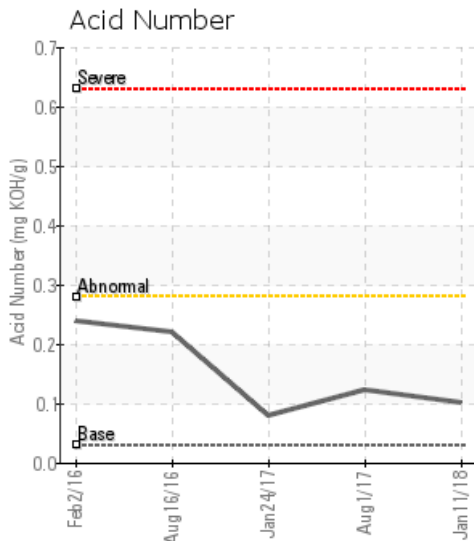
## [14-20-56-23W5] TOURMALINE WILDRIVER PLANT 1 CONDESATE STABILIZER

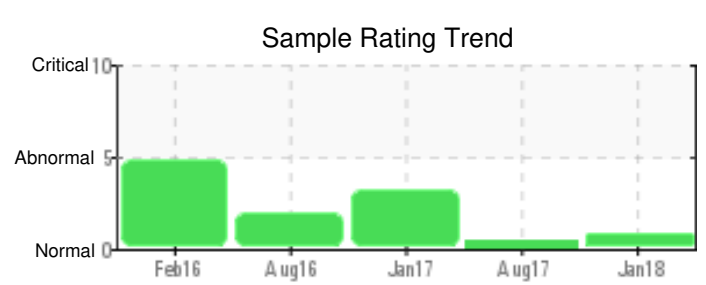
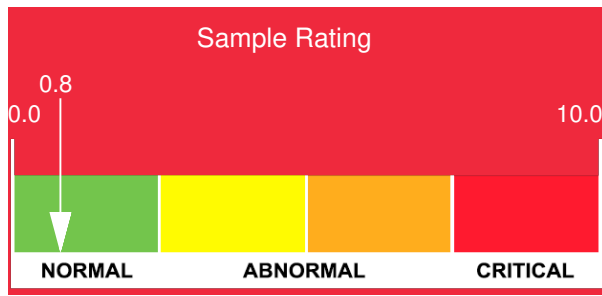
Customer: PTRHTF20046	System Information	Sample Information
QUADRA CHEMICALS 12925 146TH STREET EDMONTON, AB T5L 2H6 CANADA Attn: Ada Aponte Tel: E-Mail: Ada_Aponte@quadra.ca	System Volume: 4000 ltr Bulk Operating Temp: 437F / 225C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02193417 Analyst: Peter Hartevelde Sample Date: 01/11/18 Received Date: 01/18/18 Completed: 01/22/18 To discuss this report contact Peter Hartevelde at (780)967-4234

Recommendation: Please fill in service life of the fluid. This is required for interpretation of the analysis. The fluid shows early signs of thermal degradation but is still in a good condition and suitable for further use. Please re-sample in 6 months.

Comments: (GCD) 90% Distillation Point is marginally low.

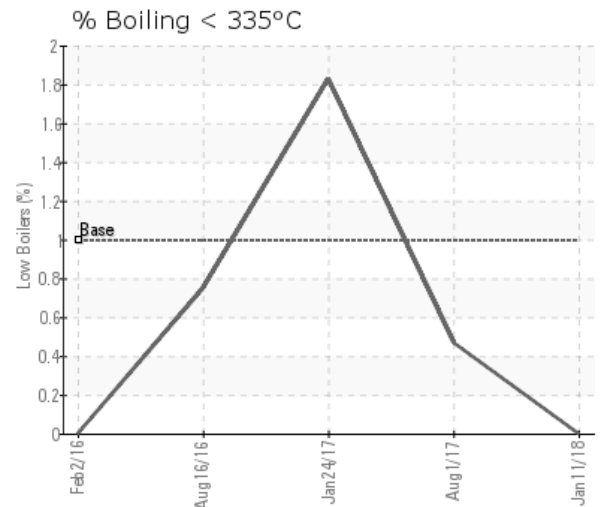
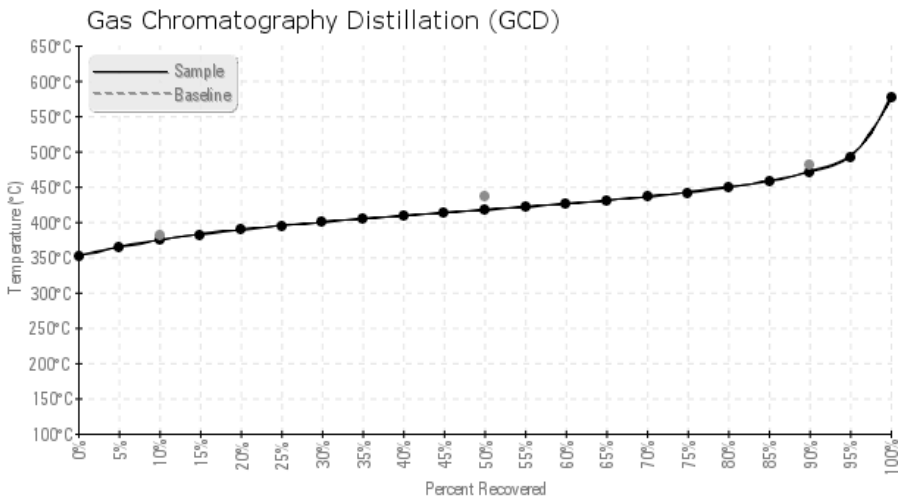
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/11/18	01/18/18	0y		417 / 214	2.1	33.0	0.102	0.038	705 / 374	782 / 417	880 / 471	0.00
08/01/17	08/03/17	0y		408 / 209	73.5	28.5	0.122	0.020	723 / 384	810 / 432	906 / 485	0.47
01/24/17	01/30/17	0y		435 / 224	1220.4	33.9	0.08	0.050	703 / 373	802 / 428	901 / 483	1.83
08/16/16	08/23/16	4y		410 / 210	6.1	23.0	0.22	0.044	715 / 379	809 / 431	904 / 485	0.75
02/02/16	02/05/16	4y		471 / 244	778.7	36.5	0.24	0.096	710 / 377	803 / 428	919 / 493	0.00
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	
01/11/18	12	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
08/01/17	18	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
01/24/17	20	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
08/16/16	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02/02/16	9	0	0	0	0	0	0	0	0	0	1	11	1	0	0	0	0	0	4	0	0	0	1	0	
<b>Baseline Data</b>			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 good condition and suitable for further use. Water content has decreased significantly. It is important to indicate the service life of the fluid on the sample label. Please re-sample in 12 months.
01/24/17	The fluid is in good condition but the water content is high again. Has this sample been taken from a low - or drain point in the system ? The fluid is suitable for further use but water needs to be boiled off by venting water vapor to atmosphere. 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.
08/16/16	Compared to the previous sample the fluid is now dry. Water content has drastically reduced. The viscosity is reported low for Petro-Therm but there is no indication why viscosity is 23 cSt/40C. This is not a concern at this time. The fluid is in good condition and suitable for further use. Please re-sample in 6 months.
02/02/16	The water content of the fluid is high. Please drain free water from a low drain in the system and boil-off the remainder of the water at 105 degrees C by venting to atmosphere. A combination of elevated TAN, Flash Point and 90% GCD temperature indicates fluid oxidation. The current level of oxidation is normal for a fluid that has been in service for 4 years. Water contamination levels are abnormally high. Water contamination levels are abnormally high.. ppm Water contamination levels are abnormally high. (GCD) 90% Distillation Point is marginally high.

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