

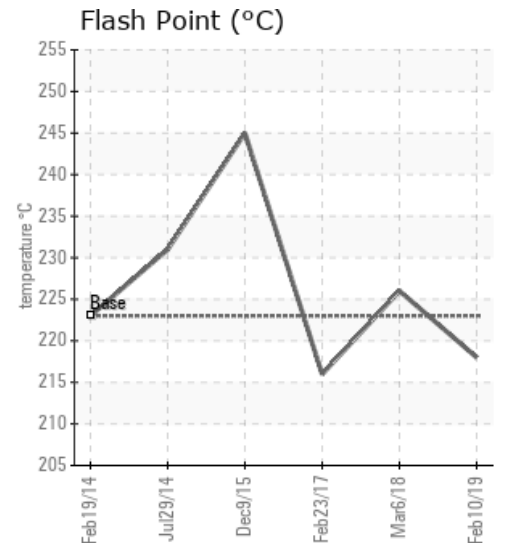
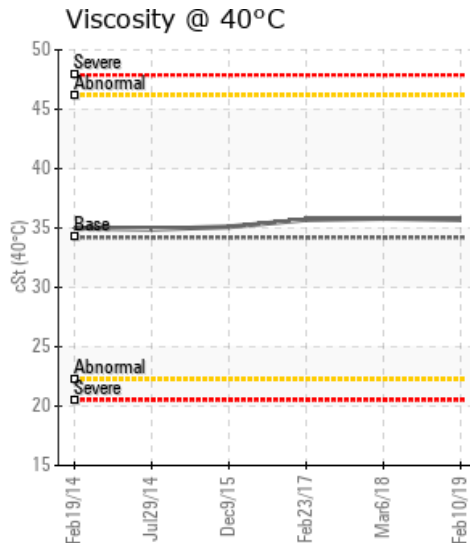
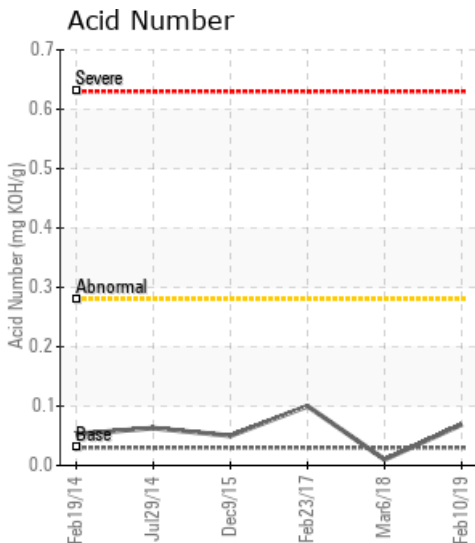
TOURMALINE BANSHEE 5500-1

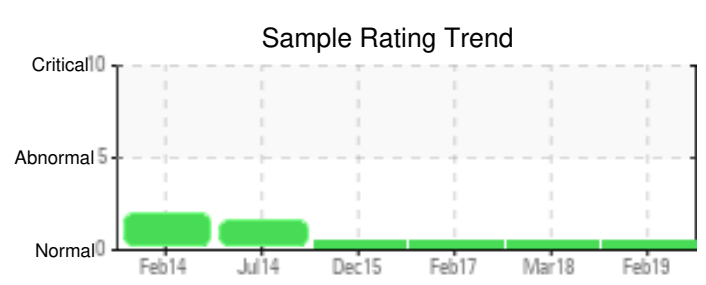
Customer: PTRHTF20046	System Information	Sample Information
QUADRA CHEMICALS 12925 146TH STREET EDMONTON, AB T5L 2H6 CANADA Attn: Quadra Samples Tel: E-Mail: quadra_samples@quadra.ca	System Volume: 20000 ltr Bulk Operating Temp: 482F / 250C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02268423 Analyst: Peter Hartevelde Sample Date: 02/10/19 Received Date: 02/19/19 Completed: 02/25/19

Recommendation: The fluid is in good condition and suitable for further use. Please re-sample in 12 months. When filling in the analysis request form please enter fluid service life.

Comments:

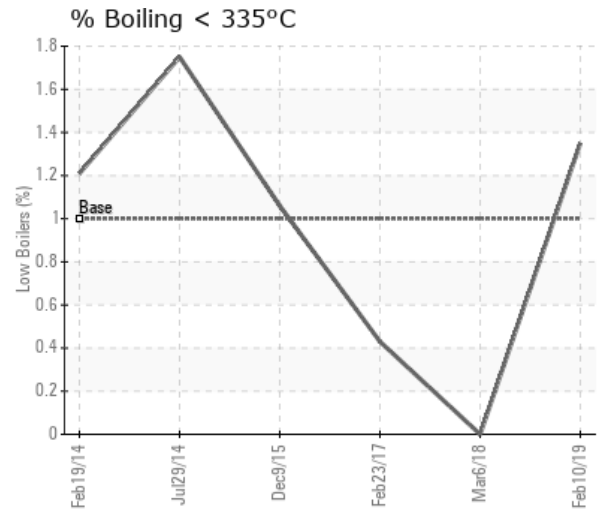
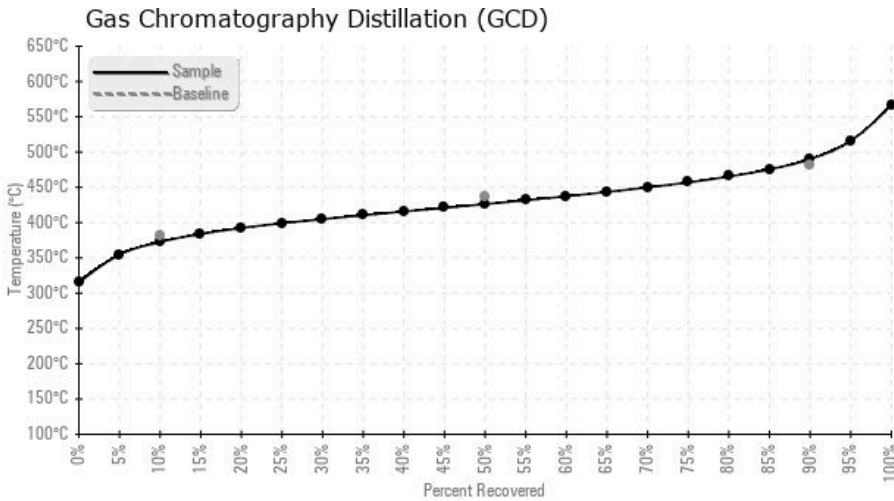
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
02/10/19	02/19/19	0y	15-12-50-21WS	424 / 218	12.6	35.7	0.069	0.064	702 / 372	799 / 426	914 / 490	1.35
03/06/18	03/13/18	662y		439 / 226	0.2	35.8	0.01	0.098	706 / 374	798 / 426	892 / 478	0.00
02/23/17	03/03/17	0y		421 / 216	7.1	35.7	0.100	0.117	704 / 373	805 / 429	915 / 490	0.43
12/09/15	12/14/15	2y		473 / 245	36.8	35.1	0.05	0.049	701 / 372	803 / 429	905 / 485	1.06
07/29/14	08/06/14	5y		448 / 231	401.2	34.9	0.063	0.053	691 / 366	800 / 426	918 / 492	1.75
02/19/14	03/13/14	18y		433 / 223	22.2	35.0	0.053	0.126	707 / 375	813 / 434	924 / 496	1.21
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
02/10/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03/06/18	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
02/23/17	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
12/09/15	4	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
07/29/14	8	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	1	0
02/19/14	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	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

03/06/18	The fluid is in excellent condition and suitable for further use. Please re-sample in 12 months and rectify fluid service life at that time.
02/23/17	The fluid is in good condition and suitable for further use. Please re-sample in 12 months.
12/09/15	The fluid is in excellent condition. Please re-sample in 12 months.
07/29/14	The fluid is in good condition. Water content is elevated but not alarming. The difference in water content compared with the sample taken in February 2014 is however large. Please check for source of water. It is recommended to vent off the water vapor via thief hatch. This is most efficient with blanket gas removed but should be done only a few hours at a time to avoid the fluid from oxidizing in contact with outside air at high temperature. Water contamination levels are marginally high. Water contamination levels are marginally high.. ppm Water contamination levels are marginally high.
02/19/14	The fluid is in good condition and suitable for further use. GCD 90% temperature is slightly elevated indicating some oxidation is taking place. It is recommended to re-sample in 6 months time. (GCD) 90% Distillation Point is marginally high.

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