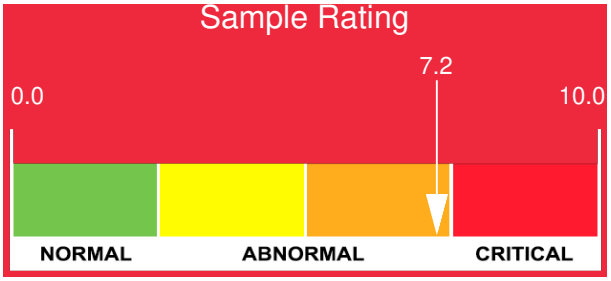
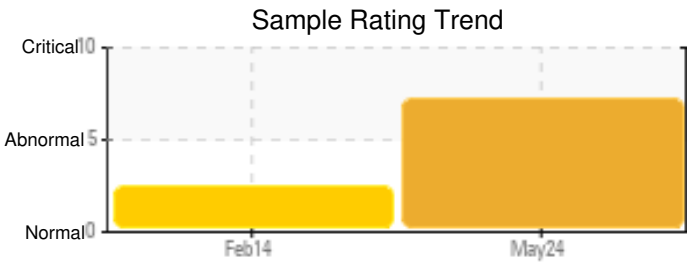




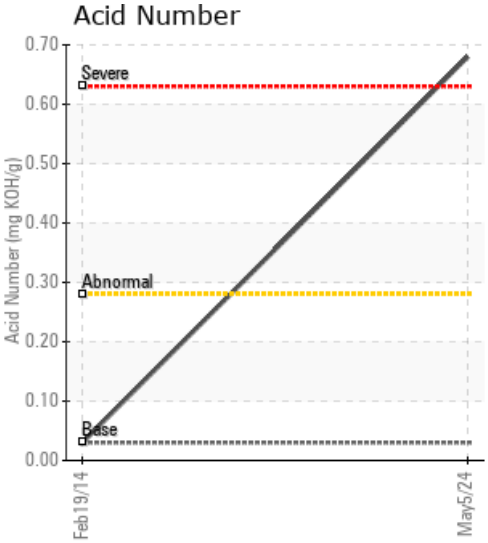
[15-12-50-21W5] TOURMALINE BANSHEE 6650-1

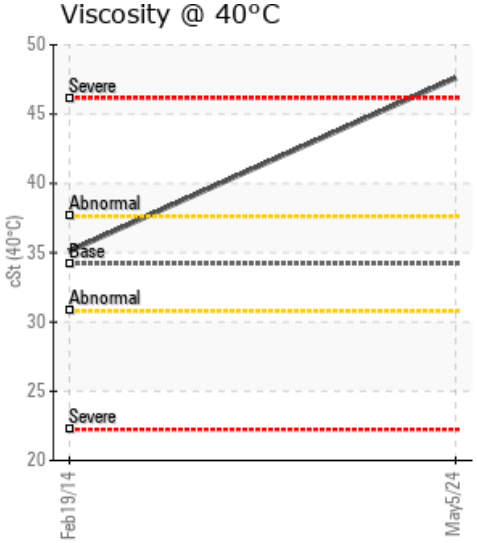
Customer: PTRHTF60079	System Information	Sample Information
Tourmaline 15-12-50-21W5 Edson, AB T7E 1R8 CA Attn: Justin Thebeau Tel: E-Mail: justin.thebeau@tourmalineoil.com	System Volume: 18000 ltr Bulk Operating Temp: 536F / 280C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: Rushton	Lab No: 02638724 Analyst: Clinton Buhler Sample Date: 05/05/24 Received Date: 05/29/24 Completed: 06/04/24 Clinton Buhler Clinton.Buhler@HFSinclair.com

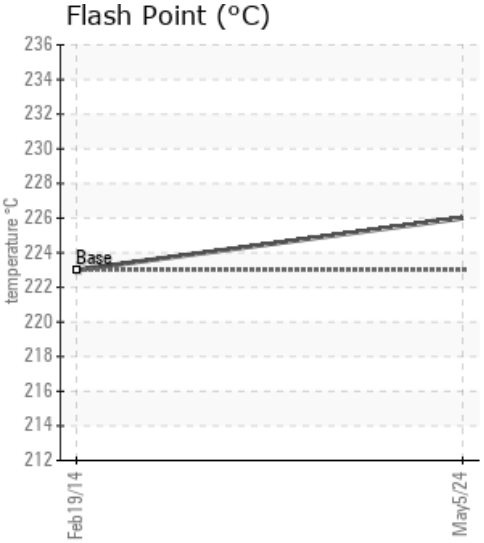
Recommendation: Sample results indicate ongoing fluid degradation with oxidation being the most likely mode. This is based on the elevated Acid Number of 0.68, high fluid viscosity of 47.6 cSt and solids content of 0.725%. Make sure expansion tank blanket gas is operational to prevent air from entering. Consider sweetening system to reduce the Acid Number (and would also lower fluid viscosity). Iron content is at 108 ppm which is likely related to the higher acid number. The solids content would point to a need to clean the system in the future. Please re-sample in 4-6 months.

Comments: Iron ppm levels are marginal. Pentane Insolubles levels are severely high. Acid Number (AN) is severely high. Visc @ 40°C is severely high. (GCD) 90% Distillation Point is abnormally high.

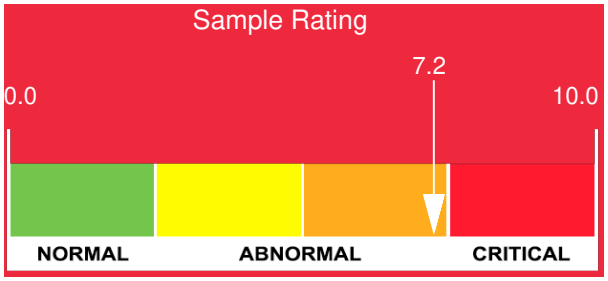
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
05/05/24	05/29/24	8.0y	return line upstream	439 / 226	171	47.6	0.68	0.725	728 / 386	818 / 437	929 / 499	1.76
02/19/14	03/13/14	3.0y		433 / 223	183.2	35.1	0.03	0.151	712 / 378	810 / 432	925 / 496	0.99
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00

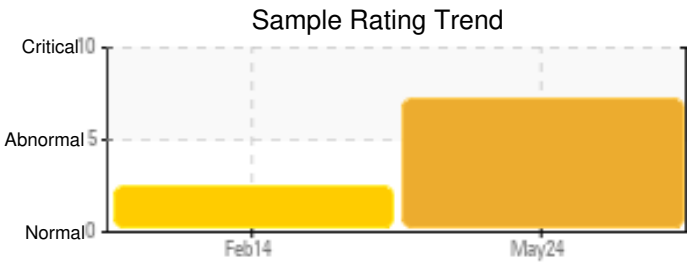






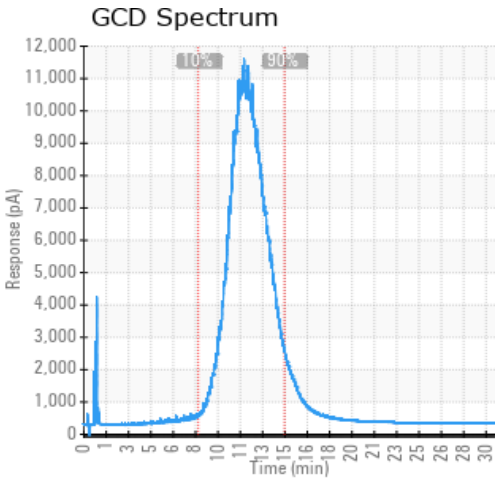
PETRO-CANADA LUBRICANTS

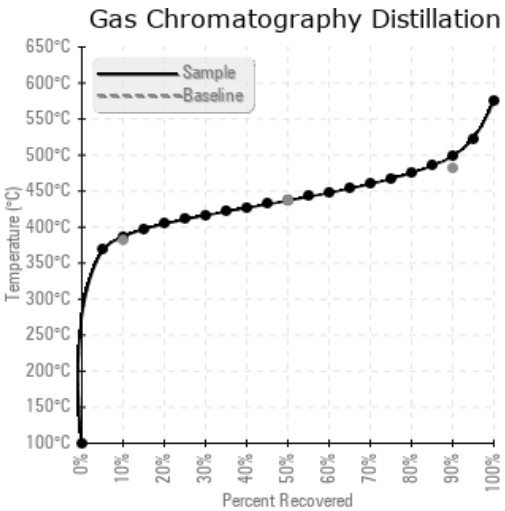


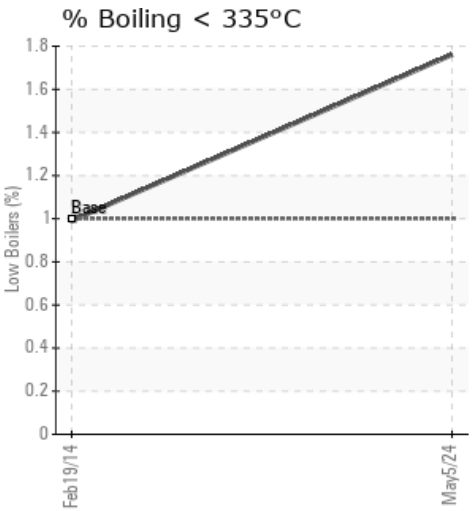


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
05/05/24	108	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
02/19/14	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Baseline Data			0	0						0			0	0					0				0	

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







Historical Comments

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.The fluid contains a bit of water. It is recommended to boil that off by venting via the expansion tank.Please re-sample in 6 months time. (GCD) 90% Distillation Point is marginally high.