

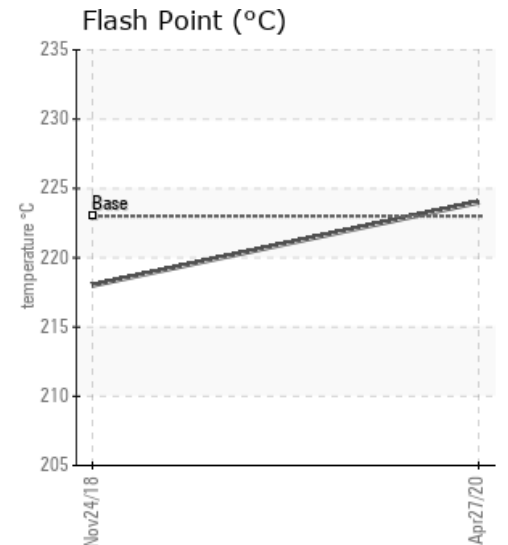
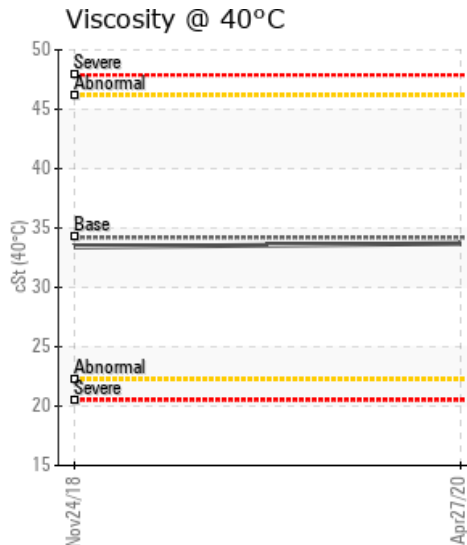
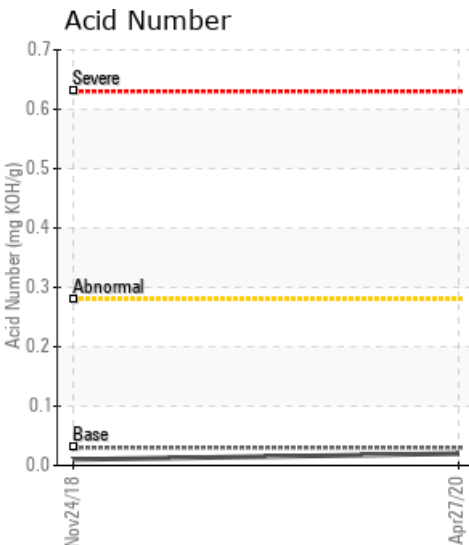
[2-11-80-16W6M] 5500-2

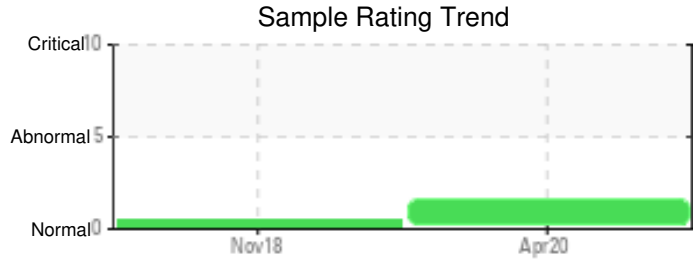
Customer: PTRHTF20156	System Information	Sample Information
TOURMALINE OIL 9920 98a Ave FORT ST. JOHN, BC V1J 1S2 Canada Attn: Brandon Braun Tel: (250)262-5420 E-Mail: Brandon.braun@tourmalineoil.com	System Volume: 15000 ltr Bulk Operating Temp: 345F / 174C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02351290 Analyst: Clinton Buhler Sample Date: 04/27/20 Received Date: 04/29/20 Completed: 05/04/20 Clinton Buhler Clinton.Buhler@PetroCanadaLSP.com

Recommendation: Sample results indicate that the heat transfer fluid is suitable for continued service. However, there is 722ppm of water in the sample. this could indicate that the sample point and hardware may not have been purged thoroughly prior to taking the sample or, if a representative sample, indicates water contamination. Carefully vent off steam from system to get rid of the water. Re-sample in 6 months after water has been safely vented from the system.

Comments: Water contamination levels are abnormally high.

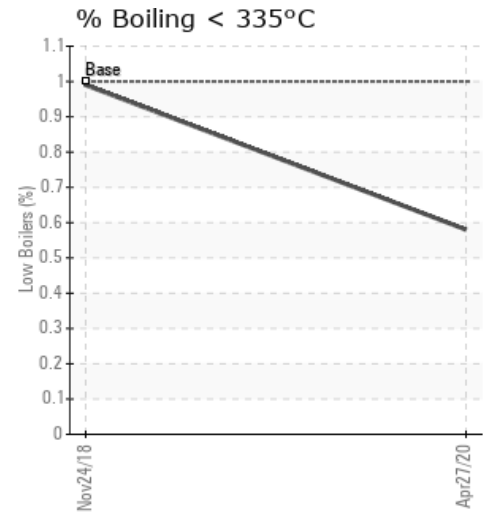
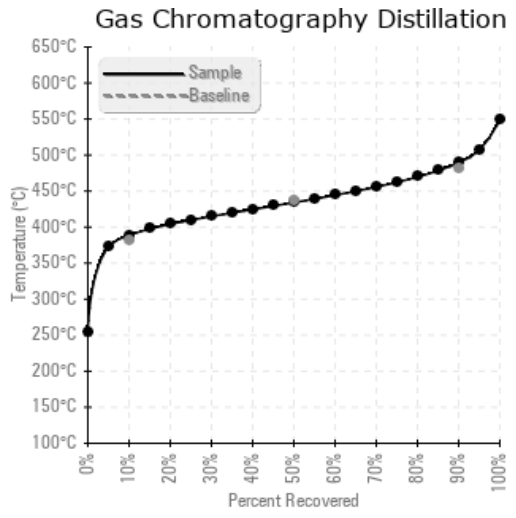
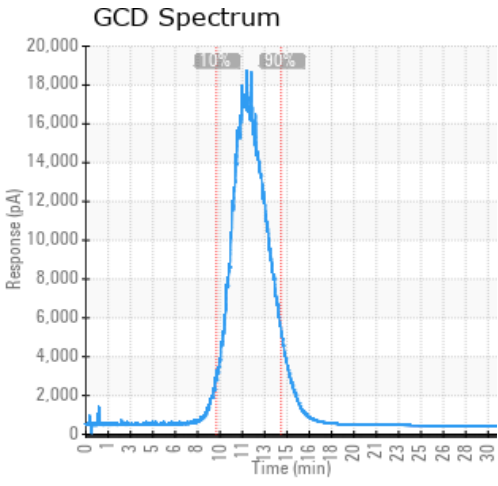
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
04/27/20	04/29/20	17m	EXPANSION TANK SUCTI	435 / 224	722.6	33.7	0.02	0.060	731 / 389	814 / 434	913 / 489	0.58
11/24/18	12/18/18	3m		424 / 218	123.3	33.4	0.01	0.044	720 / 382	807 / 431	910 / 488	0.99
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
04/27/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11/24/18	0	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

11/24/18	The fluid is in excellent condition and suitable for further use. Please re-sample in 6 months.

Petro-Canada makes no representation or warranty of any kind, either express or implied, as to the accuracy or completeness of the analysis and assumes no responsibility and shall have no liability whatsoever with respect to such analysis, or a party's use of it. Petro-Canada is a division of HollyFrontier Corporation.