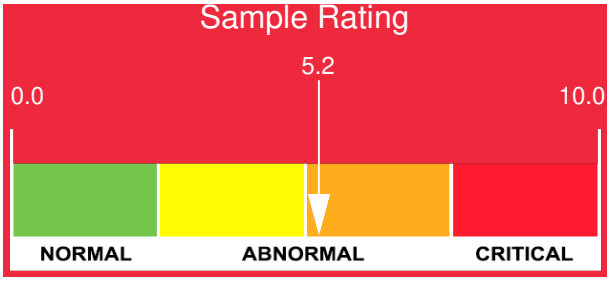
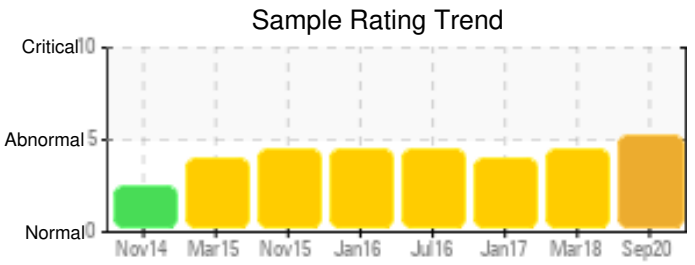




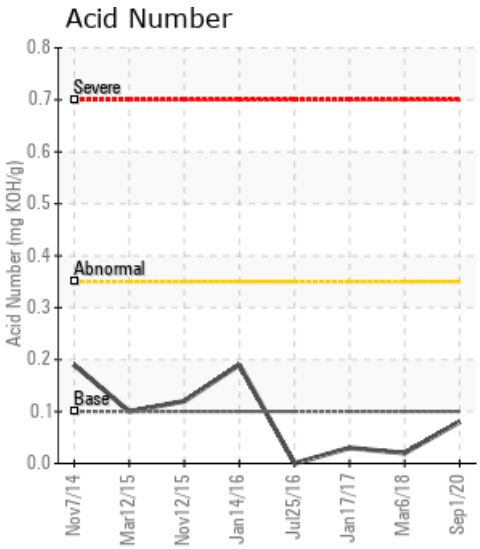
[TOURMALINE OIL CORP / 9-13-62-6-W6] MUSREAU 9-13

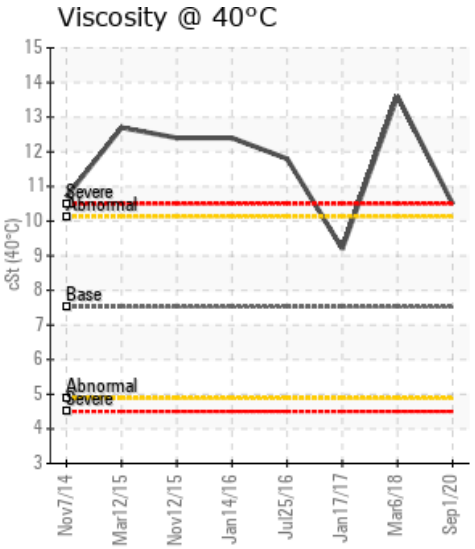
Customer: PTRHTF20149	System Information	Sample Information
TOURMALINE OIL MUSREAU 9-13-62-6-W6 GRAND PRARIE, AB Canada Attn: Anthony Mccoy Tel: (780)512-8408 E-Mail: mccoy@tourmalineoil.com	System Volume: 34000 ltr Bulk Operating Temp: 410F / 210C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO LT Make: ZIRCO 5500	Lab No: 02374996 Analyst: Clinton Buhler Sample Date: 09/01/20 Received Date: 09/10/20 Completed: 09/14/20 Clinton Buhler Clinton.Buhler@PetroCanadaLSP.com

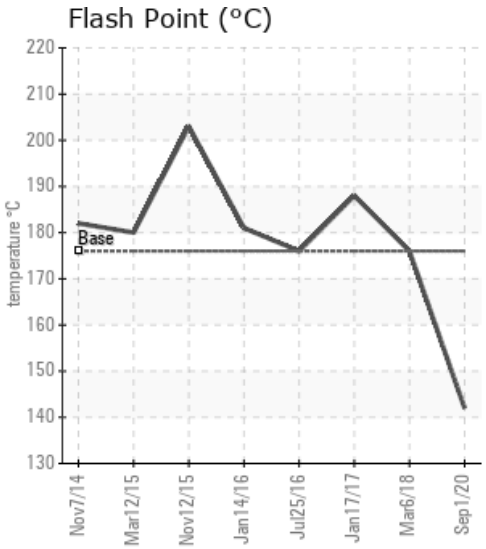
Recommendation: Sample results indicate that the fluid is suitable for continued service. The different parameters continue to be fairly consistent to the previous sample results. The fluid's viscosity and 50% and 90% distillation temperatures would seem to indicate a possible mixture of fluids in service. Please re-sample in 12 months

Comments:

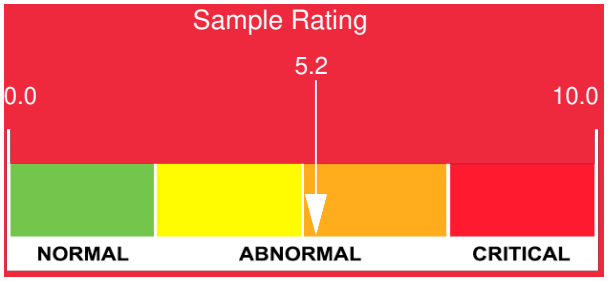
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
09/01/20	09/10/20	6y	Disch side of pump	288 / 142	12.9	10.5	0.08	0.190	608 / 320	709 / 376	862 / 461	28.28
03/06/18	03/14/18	5y		349 / 176	10.2	13.6	0.02	0.110	616 / 325	703 / 373	837 / 447	25.99
01/17/17	01/23/17	4y	PUMP DISCHARGE	370 / 188	35.5	9.2	0.03	0.063	613 / 323	705 / 374	856 / 458	27.09
07/25/16	07/28/16	3y	PUMP DISCHARGE	349 / 176	79.8	11.8	0.000	0.061	617 / 325	715 / 379	874 / 468	22.83
01/14/16	01/21/16	11000y	PUMP SUCTION	358 / 181	61.6	12.4	0.190	0.077	616 / 324	709 / 376	859 / 460	24.83
Baseline Data				349 / 176		7.52	0.1		604 / 318	640 / 338	734 / 390	47.0

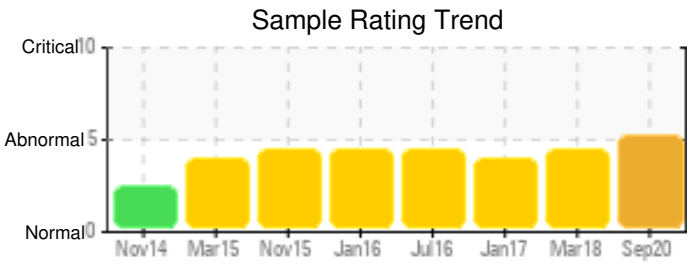






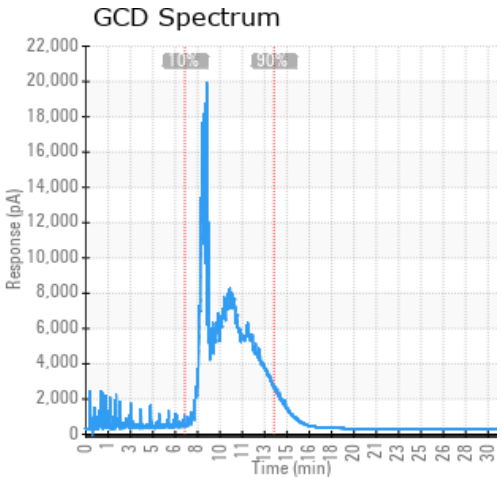
PETRO-CANADA LUBRICANTS

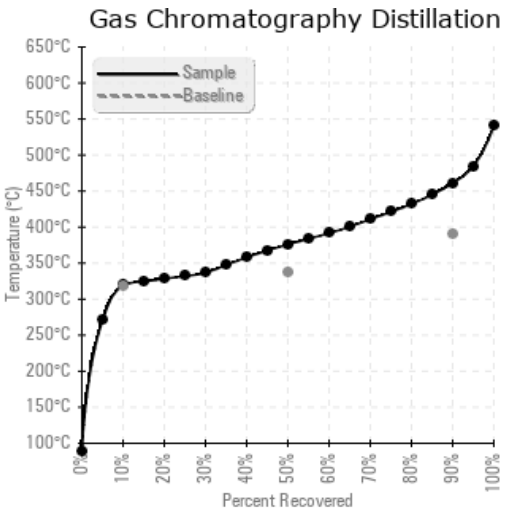


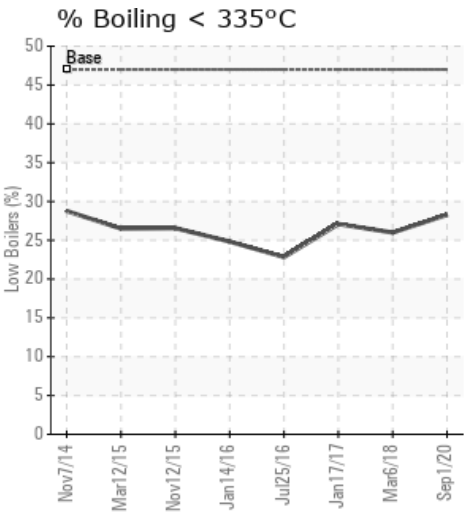


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
09/01/20	24	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	2	0	2	0	31	0
03/06/18	24	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	33	0
01/17/17	28	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	38	0
07/25/16	43	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	41	0
01/14/16	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	0
Baseline Data			0	0						0			0	0				0	0				270	

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







Historical Comments

03/06/18	Sample results indicate that the fluid is suitable for continued service.Please note 50% and 90% distillation point is consistently higher than expected as is the fluid's viscosity. This can be an indication of Oxidation, but the fluid's Total Acid Number is very low, so it is more likely that a heavier fluid has been possibly mixed in. Investigate the cause of oil thickening. It is good practice to ensure a blanket gas is applied to the expansion tank and set at 2-3 psi.Re-sample in 12 months. (GCD) 50% Distillation Point is severely high. (GCD) 90% Distillation Point is severely high. Visc @ 40°C is abnormally high.
01/17/17	Oil Condition: (GCD) 50% Distillation Point is severely high. (GCD) 90% Distillation Point is severely high. Sample has improved slightly since last sampled in July. Resample in 6 months (GCD) 50% Distillation Point is severely high. (GCD) 90% Distillation Point is severely high.
07/25/16	The viscosity of the fluid is high. This in combination with high 50% and 90% GCD temperatures indicates degradation of the fluid by oxidation or ingress of a heavier fluid. The fluid is suitable for further use. Please re-sample in 6 months. (GCD) 50% Distillation Point is severely high. (GCD) 90% Distillation Point is severely high. Visc @ 40°C is abnormally high.
01/14/16	(GCD) 50% Distillation Point is severely high. (GCD) 90% Distillation Point is severely high. Visc @ 40°C is abnormally high. Suspect that some heavier end in the oil either from contamination or thermal cracking. Oil does not appear to be getting any worse then previous samples. Continue to operate and resample in 6 -9 months. (GCD) 50% Distillation Point is severely high. (GCD) 90% Distillation Point is severely high. Visc @ 40°C is abnormally high.