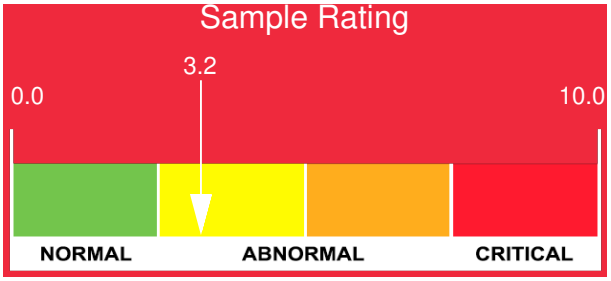
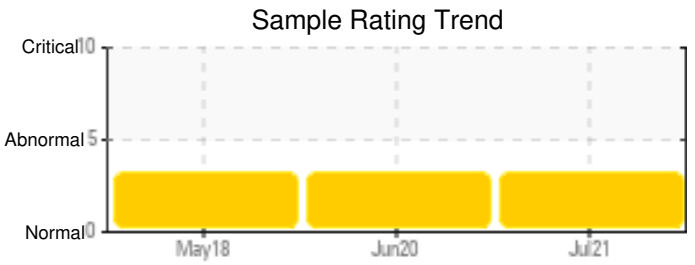




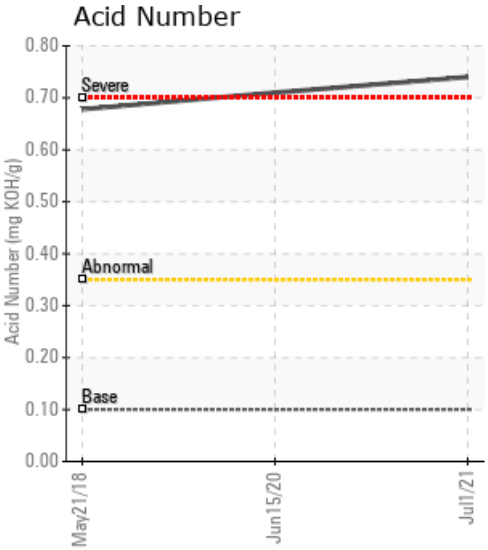
009-HE-103

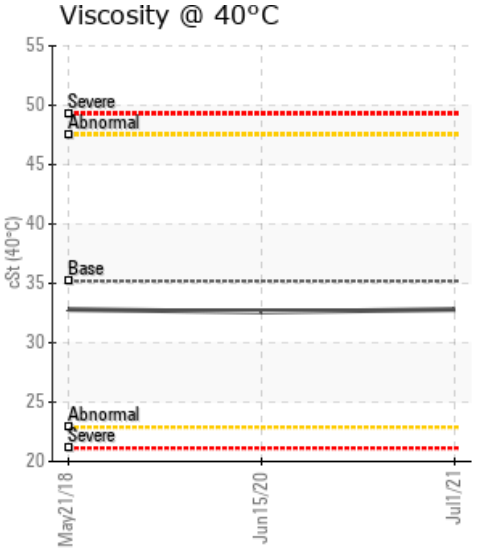
Customer: PTRHTF10177	System Information	Sample Information
Materia Inc 7629 State Hwy 75 South Huntsville, TX 77340 USA Attn: Robert Durr Tel: (713)447-9561 E-Mail: rdurr@materia-inc.com	System Volume: 300 gal Bulk Operating Temp: 320F / 160C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO HTF Make: ADVANTAGE	Lab No: 02434453 Analyst: Garrett Bapp Sample Date: 07/01/21 Received Date: 07/22/21 Completed: 07/30/21 Garrett Bapp Garrett.Bapp@hollyfrontier.com

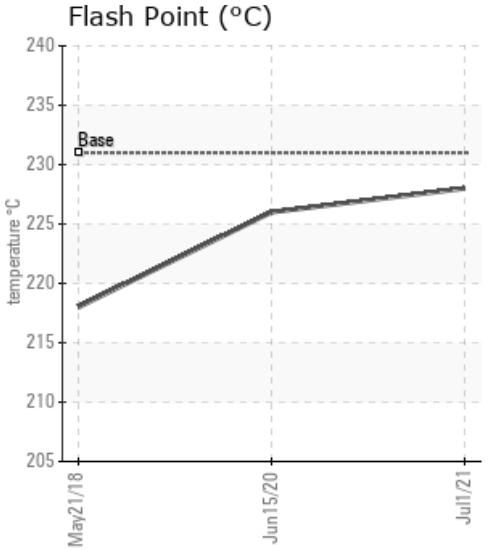
Recommendation: All parameters are inline except for acid number. Due to the volume size and overall good health of the fluid, we should engage in talks of system history to make a corrective action plan.

Comments: Acid Number (AN) is severely high.

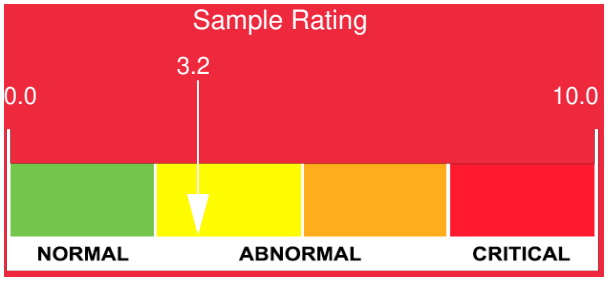
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
07/01/21	07/22/21	2.0y	TANK	442 / 228	15.0	32.8	0.74	0.095	705 / 374	800 / 427	902 / 484	0.55
06/15/20	06/25/20	4.0y	TANK	439 / 226	17.7	32.6	0.71	0.120	702 / 372	799 / 426	902 / 483	1.21
05/21/18	06/06/18	0.0y		424 / 218	14.7	32.8	0.678	0.052	709 / 376	781 / 416	877 / 469	0.00
Baseline Data				448 / 231		35.20	.1		712 / 378	810 / 432	910 / 488	1.75

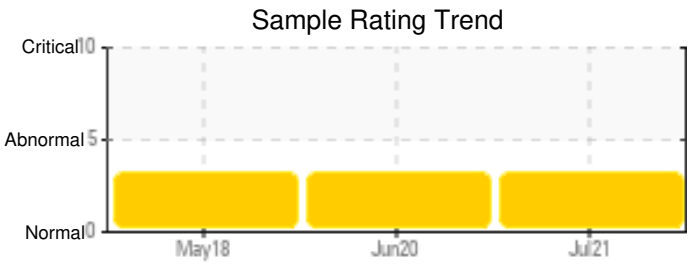






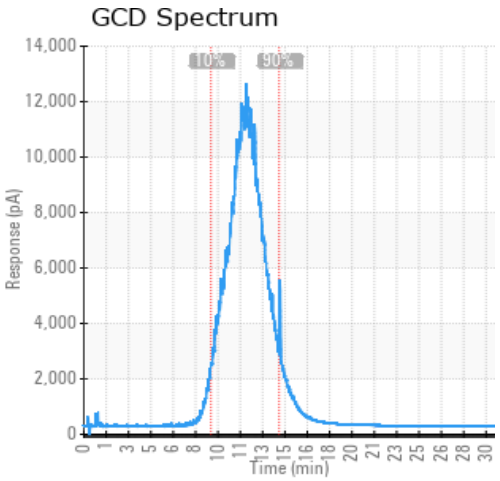
PETRO-CANADA LUBRICANTS

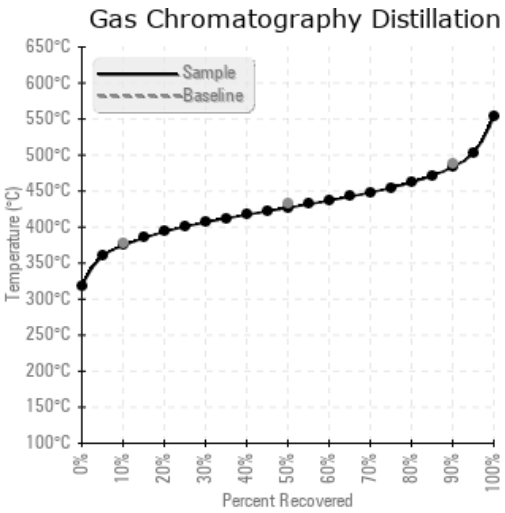


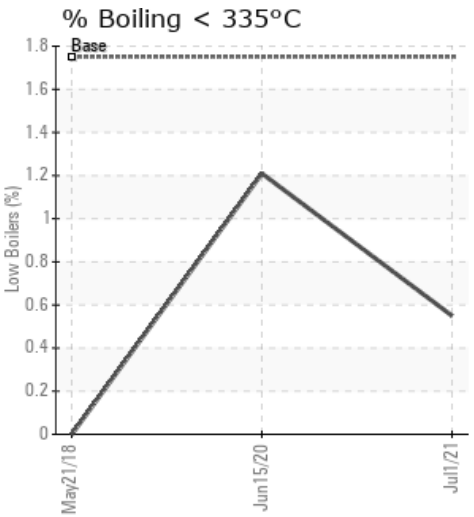


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
07/01/21	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	267	0
06/15/20	4	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	239	1
05/21/18	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	223	0
Baseline Data			0	0						0			0	0				0	0				280	

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







Historical Comments

06/15/20	Acid Number (AN) is severely high. However, AN has not changed significantly over the last two years. There is evidence of mild thermal degradation. Because of the acid number, stay cognizant of possible system erosion. To address the high AN, a system fluid change is warranted. Otherwise, thermal transfer rates should not have changed much over the last two years. If it has, then inspect the immersion heater, and look for carbon deposits.
05/21/18	Total Acid Number is high without any other properties supporting a symptom with the fluid. Look for possible system contamination and resample in 6 months. Acid Number (AN) is severely high.