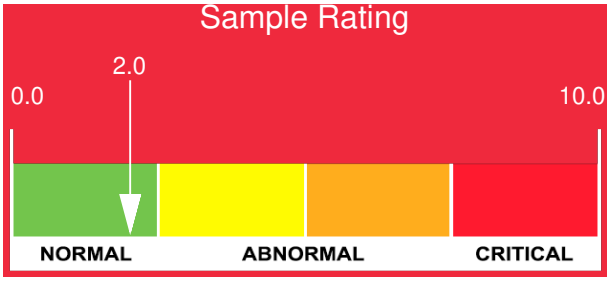
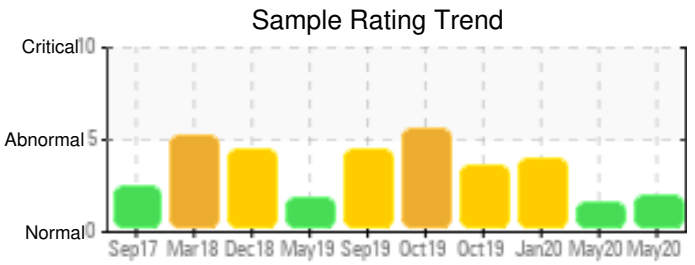




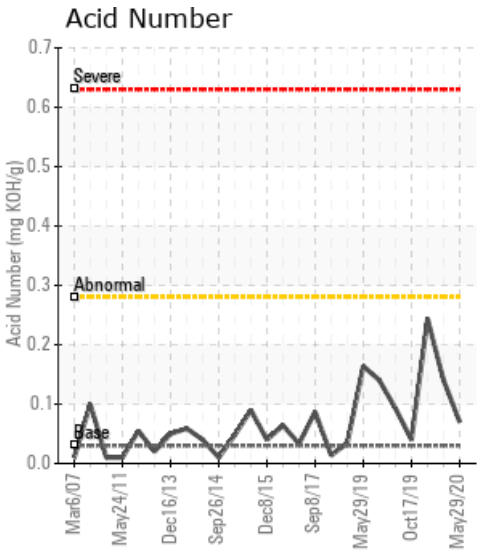
MAIN HOT OIL SYSTEM

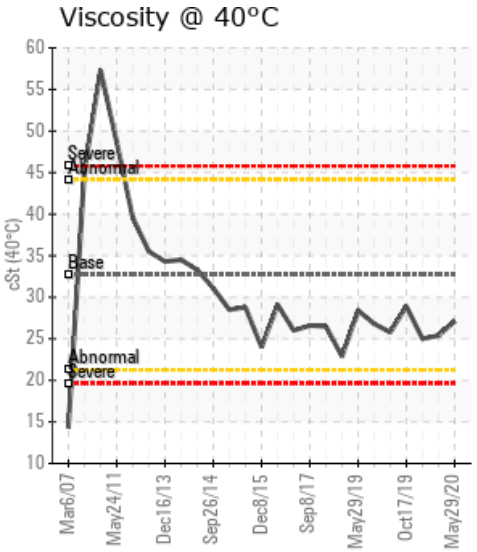
Customer: PTRHTF10068	System Information	Sample Information
Certainteed - Saint Gobain 1077 PLEASANT ST NORWOOD, MA 02062 USA Attn: David Fletcher Tel: (781)551-0656 E-Mail: david.r.fletcher@saint-gobain.com	System Volume: 5000 gal Bulk Operating Temp: 560F / 293C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: A.M.KINNEY	Lab No: 02358520 Analyst: Gaston Arseneault Sample Date: 05/29/20 Received Date: 06/09/20 Completed: 07/01/20 Gaston Arseneault gaston.arseneault@petrocanadalsp.com

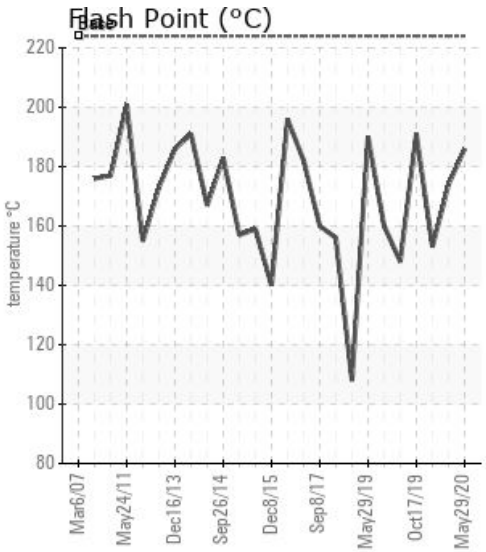
Recommendation: It appears the rented unit to strip off low boilers has helped bring the flash point and viscosity higher. This might help limp along for a while. let's keep monitoring every 6 months and re-evaluate the best way to maintain the fluid moving forward (sweetening or rent the unit). Many customers run with low oil levels in the expansion tank. If your expansion tank is <75% full when in operation, best practices suggest that it should be, so fresh oil could be added to keep with best practices but also to help maintain the oil properties.

Comments: (GCD) 90% Distillation Point is marginally high. COC Flash Point is marginally low.

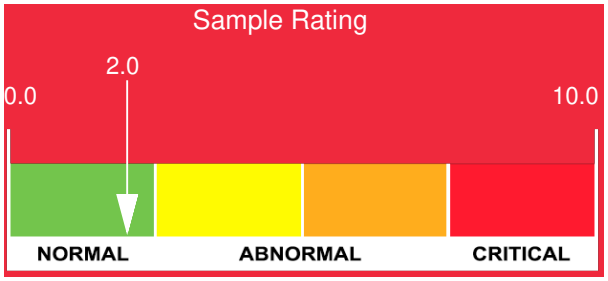
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
05/29/20	06/09/20	1y	HEAT EXCHANGER	367 / 186	28.6	27.1	0.07	0.014	671 / 355	792 / 422	907 / 486	5.63
05/04/20	05/13/20	0y	HEAT EXCHANGER	345 / 174	19.7	25.4	0.14	0.086	674 / 356	793 / 423	906 / 485	5.98
01/30/20	02/11/20	6y	DUPLEX FILTERS	307 / 153	15.3	25.0	0.244	0.034	692 / 366	785 / 418	884 / 474	1.46
10/17/19	10/24/19	6y		376 / 191	5.4	28.9	0.040	0.040	616 / 325	759 / 404	881 / 472	11.50
10/17/19	10/24/19	6y		298 / 148	8.0	25.8	0.093	0.078	592 / 311	761 / 405	877 / 470	12.51
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5

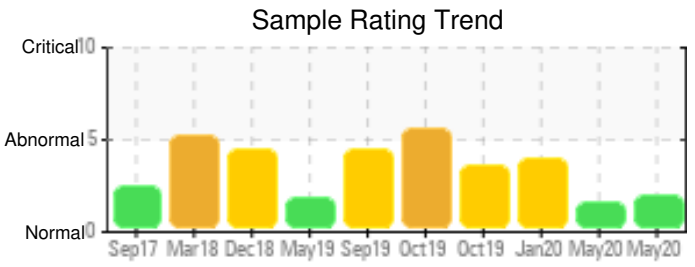






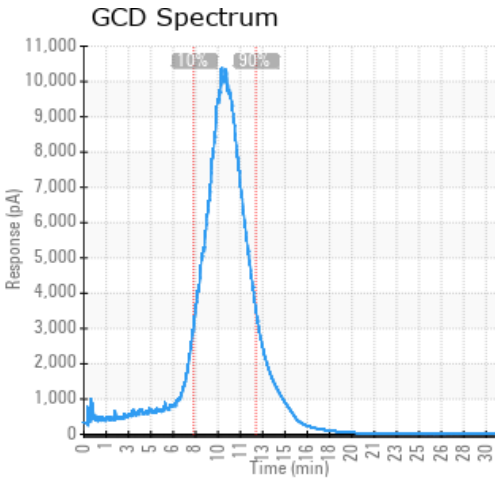
PETRO-CANADA LUBRICANTS

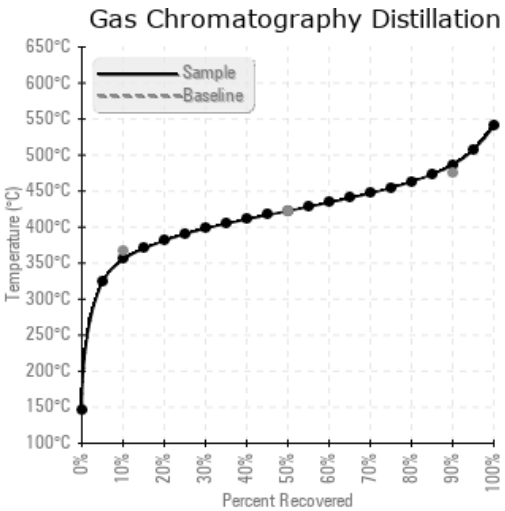


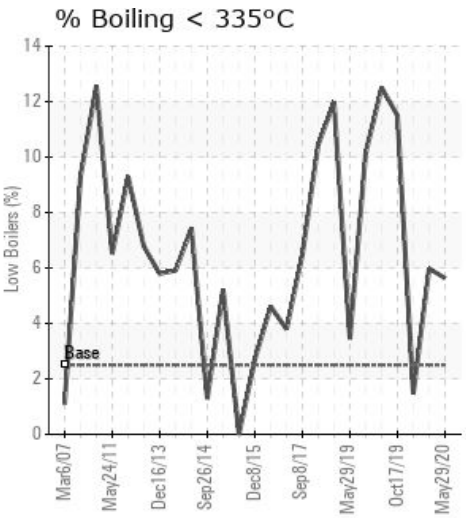


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
05/29/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
05/04/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
01/30/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0
10/17/19	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0
10/17/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0
Baseline Data			0	0						0			0	0					0				270	

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







Historical Comments

05/04/20	Results for the Main Hot Oil System have shown the continued decline of the condition of the fluid. COC Flash Point is low at 174 degrees. GCD 90% has risen to 485.4. Recommendations are consistent with the previous sample recommendation. Continue with the plan in place to remove low boilers and/or sweeten the system with fresh fluid. COC Flash Point is abnormally low. (GCD) 90% Distillation Point is marginally high.
01/30/20	The oil condition has deteriorated but the flow issues with the pump have been resolved. Thermal cracking has occurred, reducing the viscosity and the flash point. Blends of in-service oil are being prepared with fresh Calflo AF to find the proper sweetening ratio. COC Flash Point is severely low.
10/17/19	Although slightly different due to pulling samples in different locations, the last two samples - 10/17/2019 confirm the results of the sample on 9/20/2019. We would still recommend venting off the low boilers and/or add fresh fluid to the system to change the COC Flash Point and (GCD) %. (GCD) 10% Distillation Point is abnormally low. (GCD) % < 335°C is marginally high. COC Flash Point is marginally low.
10/17/19	Although slightly different due to pulling samples in different locations, the last two samples - 10/17/2019 confirm the results of the sample on 9/20/2019. We would still recommend venting off the low boilers and/or add fresh fluid to the system to change the COC Flash Point and (GCD) %. (GCD) 10% Distillation Point is severely low. COC Flash Point is severely low. (GCD) % < 335°C is abnormally high.