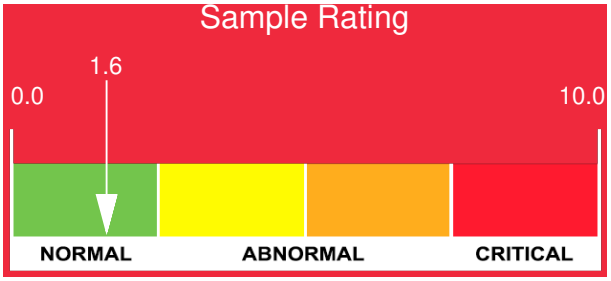
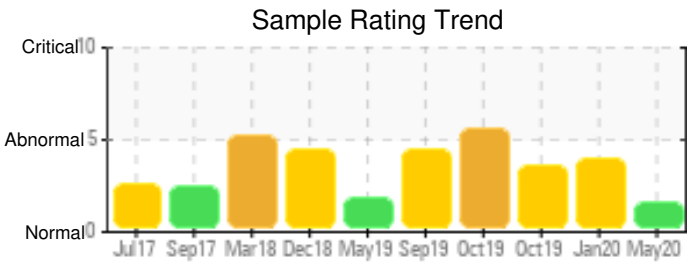
PETRO-CANADA LUBRICANTS





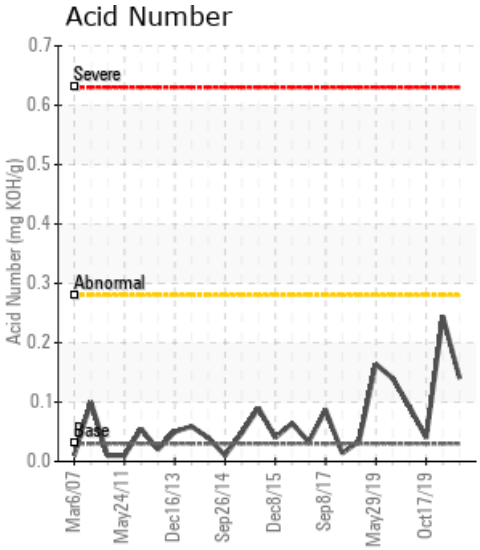
MAIN HOT OIL SYSTEM

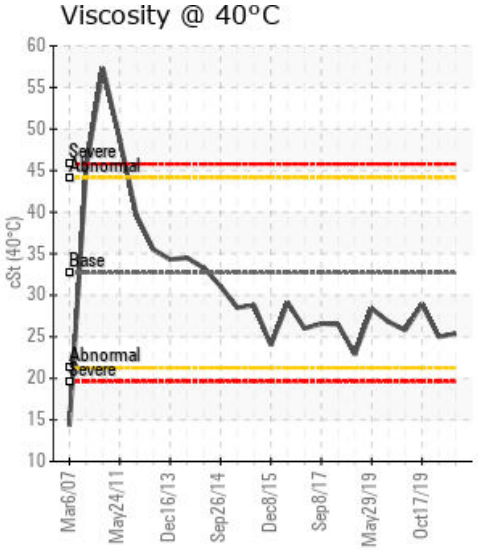
Customer: PTRHTF10068	System Information	Sample Information
Certainteed - Saint Gobain 1077 PLEASANT ST NORWOOD, MA 02062 USA Attn: David Fletcher Tel: (781)551-0656 E-Mail: david.r.fletcher@saint-gobain.com	System Volume: 5000 gal Bulk Operating Temp: 560F / 293C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: A.M.KINNEY	Lab No: 02353750 Analyst: Doug Vrooman Sample Date: 05/04/20 Received Date: 05/13/20 Completed: 05/21/20 Doug Vrooman douglas.vrooman@petrocanadalsp.com

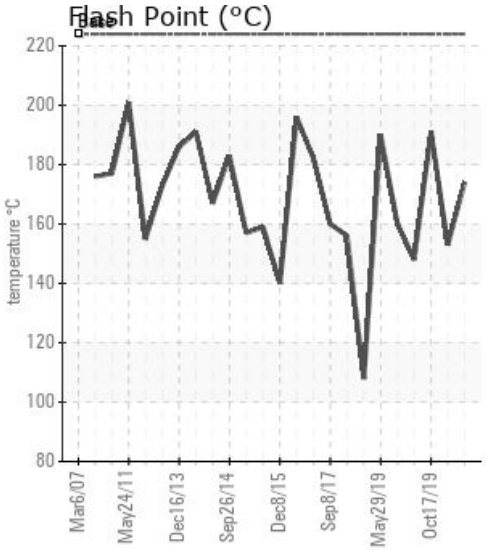
Recommendation: Results for the Main Hot Oil System have shown the continued decline of the condition of the fluid. COC Flash Point is low at 174 degrees. GCD 90% has risen to 485.4. Recommendations are consistent with the previous sample recommendation. Continue with the plan in place to remove low boilers and/or sweeten the system with fresh fluid.

Comments: COC Flash Point is abnormally low. (GCD) 90% Distillation Point is marginally 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	%
05/04/20	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
09/20/19	10/01/19	6y	FB-69 WINDSEAL	320 / 160	25.5	26.8	0.140	0.108	626 / 330	780 / 415	894 / 479	10.15
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5







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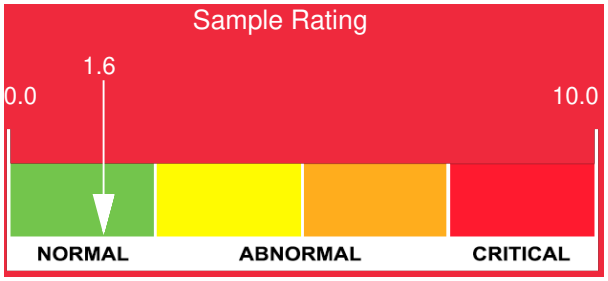
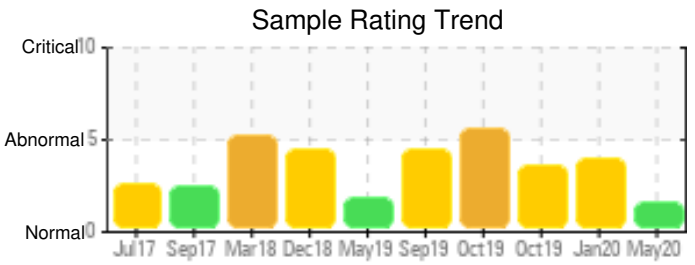
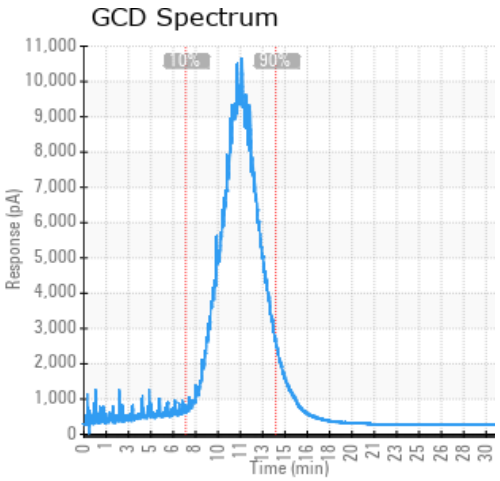
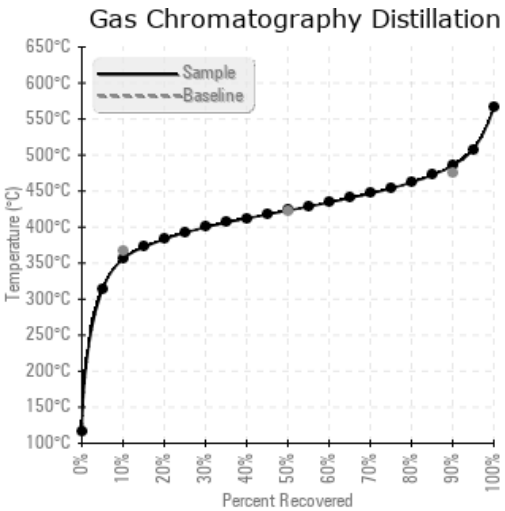


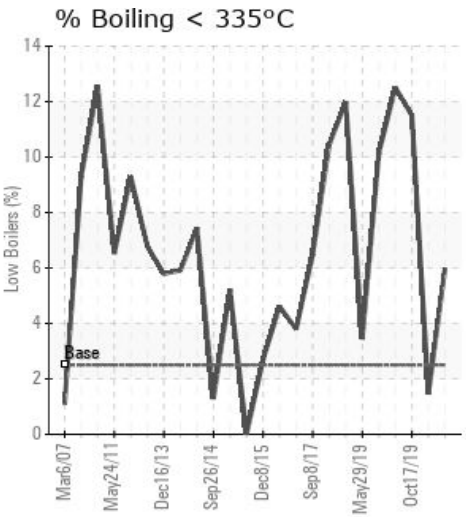


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
05/04/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
01/30/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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
09/20/19	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	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

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.
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09/20/19	A couple of items stand out on the sample result report.1.Viscosity has dropped a little to 26.8 cSt @ 40°C2.(GCD) % < 335° C is up to 10.153.COC Flash Point is down to 160No asphalt contamination is reported. We would recommend attempting another Venting (boil off) as soon as possible, then resample after a week or so. If you still or unable to vent, I would consider may be draining off 10 to 20% of the volume and sweeten with fresh HTF. It's not a cure, but will get you by if venting isn't happening. I think we should monitor every 3 to 4 months for a while. COC Flash Point is severely low. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low.