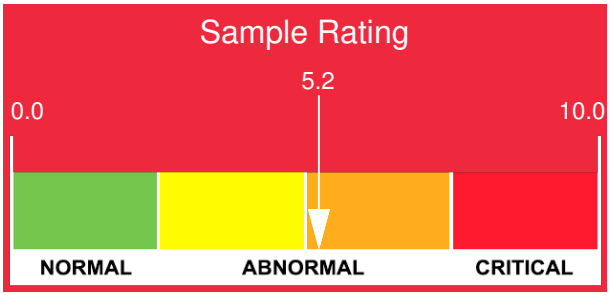
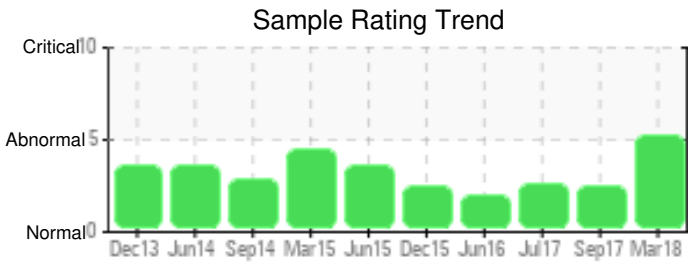
PETRO-CANADA LUBRICANTS





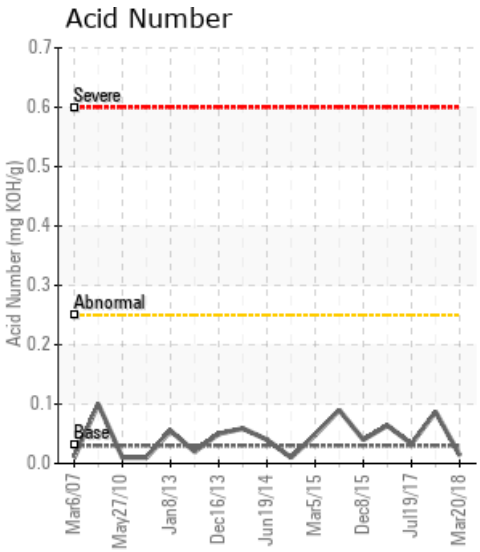
MAIN HOT OIL SYSTEM

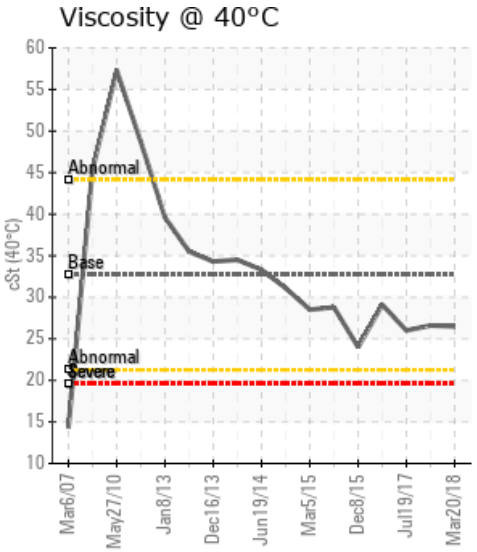
Customer: PTRHTF10068	System Information	Sample Information
Certainteed - Saint Gobain 1077 PLEASANT ST NORWOOD, MA 02062 USA Attn: David Fletcher Tel: (781)551-0656 E-Mail: david.r.fletcher@saint-gobain.com	System Volume: 5000 gal Bulk Operating Temp: 560F / 293C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: A.M.KINNEY	Lab No: 02208254 Analyst: Gaston Arseneault Sample Date: 03/20/18 Received Date: 04/04/18 Completed: 04/11/18 To discuss this report contact Gaston Arseneault at 973-986-6503

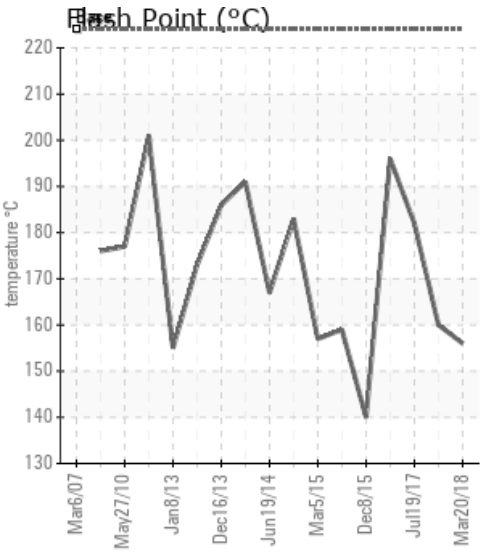
Recommendation: The viscosity of the oil remains low. Along the lines of what was suggested at the last sampling, we suggest to do more aggressive venting to get the low boilers out and restore the physical properties of the fluid, like the flash point.

Comments: (GCD) 10% Distillation Point is severely high. (GCD) 50% Distillation Point is severely high. (GCD) 90% Distillation Point is severely high. COC Flash Point is severely 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	%
03/20/18	04/04/18	6y		313 / 156	4.0	26.5	0.014	0.027	622 / 328	781 / 416	914 / 490	10.45
09/08/17	09/22/17	4y		320 / 160	9.5	26.6	0.087	0.081	667 / 353	797 / 425	918 / 492	6.49
07/19/17	08/08/17	3y	FB-69 WINDSEAL SYSTM	360 / 182	10.6	26.0	0.033	0.057	716 / 380	821 / 438	940 / 504	3.80
06/10/16	08/25/16	1y		385 / 196	16.9	29.1	0.064	0.051	683 / 362	803 / 428	930 / 499	4.61
12/08/15	12/17/15	2y	FB-69 WINDSEAL SYS	284 / 140	5.0	24.0	0.04	0.066	691 / 366	800 / 427	913 / 489	2.71
06/12/15	06/30/15	3y	FB-69 WINDSSAL SYS	318 / 159	3.8	28.8	0.09	0.054	707 / 375	806 / 430	925 / 496	0.00
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5







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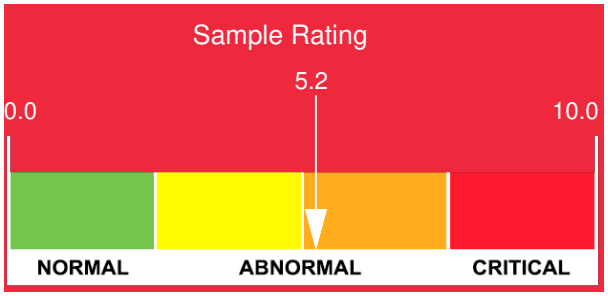
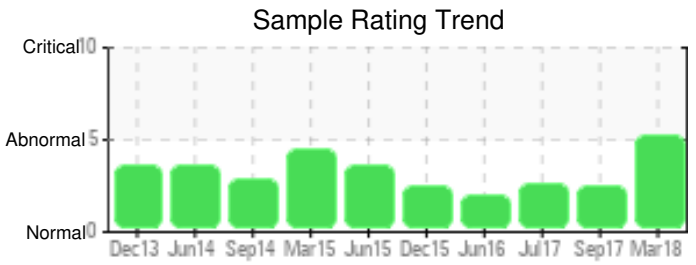
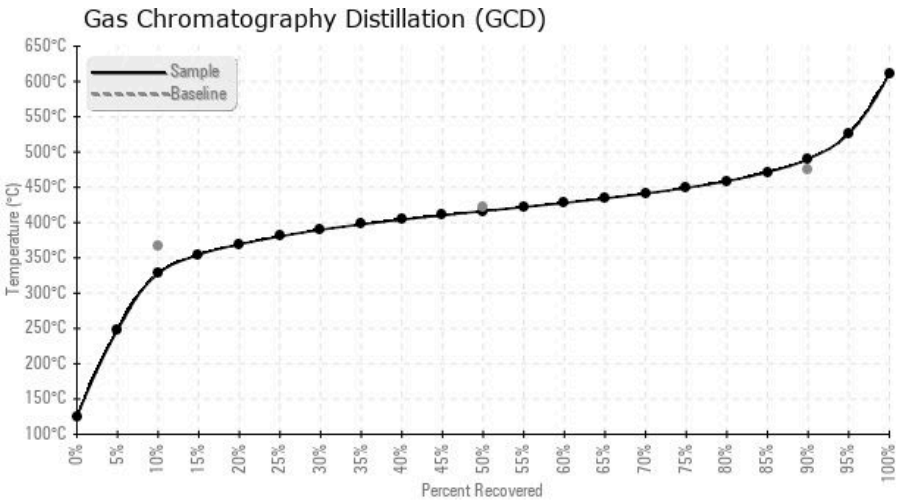
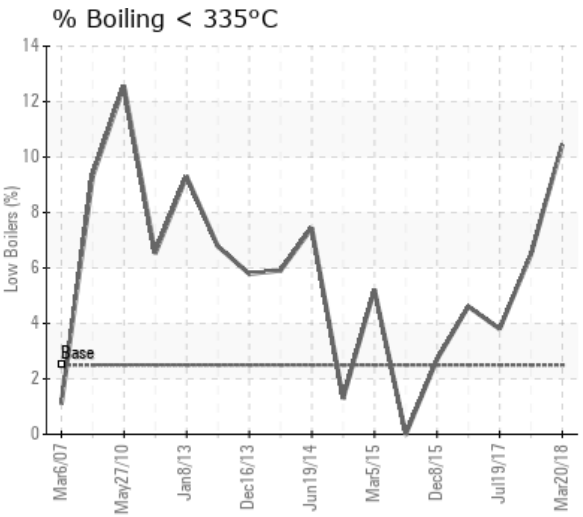




Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
03/20/18	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0
09/08/17	58	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	20	1
07/19/17	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	17	0
06/10/16	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	11	0
12/08/15	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	23	0
06/12/15	13	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	15	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

09/08/17	The GC results vary widely but the lab committed to using a dedicated GC for this program to increase the predictability and accuracy of GC results. Minus the lower flash point, the properties are consistent with the previous sample where low viscosity is confirmed. We suggest to perform venting of the light ends and replace the fluid lost by adding fresh oil until the expansion tank is 75% full when in operation. No vanadium present so no suspected presence of an asphalt leak. COC Flash Point is severely low. COC Flash Point tested twice (156°C and 160°C). (GCD) 90% Distillation Point is abnormally high.
07/19/17	We brought up some questions for the lab based on questionable GCD results lately. The flash point remains strong but it has decreased since the last sample. Considering the fluid starts at 32 cSt and it is now 26 cSt (19% lower), we suggest to vent the light ends out of the system and the expansion tank and top-up the losses with fresh Calflo to bring back the properties closer to fresh oil. (GCD) 90% Distillation Point is severely high.
06/10/16	There is a noticeable bump in viscosity getting closer to fresh oil and flash point improved significantly. Solids are very low and other elements are not even detected at the parts per million level. No action needed at this time besides re-sampling at the next scheduled interval. If for any reason the system performance does not reflect those good results pls contact us immediately. (GCD) 90% Distillation Point is severely high.
12/08/15	The drop in flash point, viscosity and increase in low boilers all match. However, the drop in flash point is a bit much compared to the very slight increase in low boilers. Nothing to worry about but that's the importance of monitoring the fluid every quarter or semi-annually to look past one questionable lab result and really see what's going on. COC Flash Point is severely low. (GCD) 90% Distillation Point is marginally high.
06/12/15	The flash point is lower but we suspect something wrong with the test, since the GCD shows less volatiel material. Regardless the flash point is still acceptable and safe considering your operating temperature. The oxidation level and contamination is minimal. No actions to take based on these results. (GCD) 90% Distillation Point is severely high. COC Flash Point is severely low.