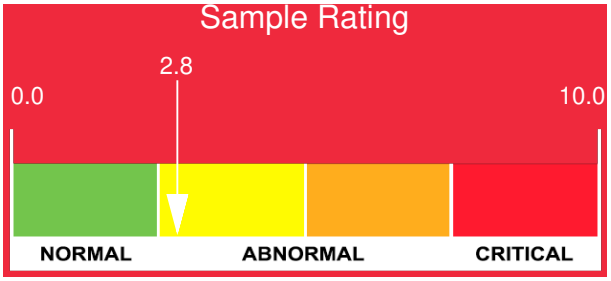
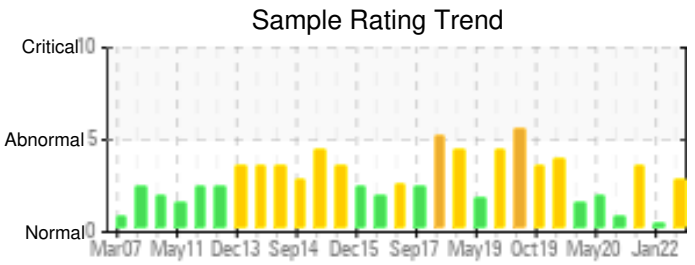




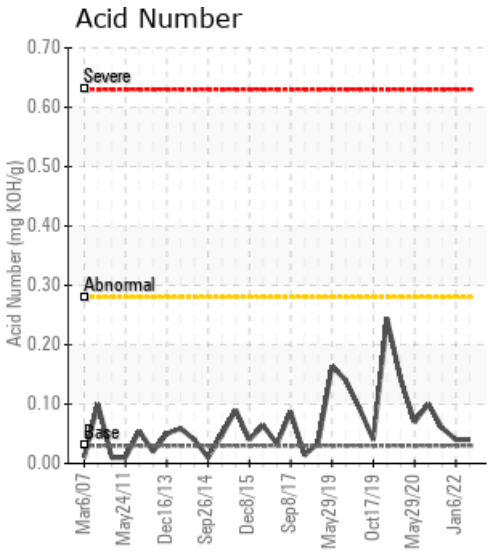
MAIN HOT OIL SYSTEM

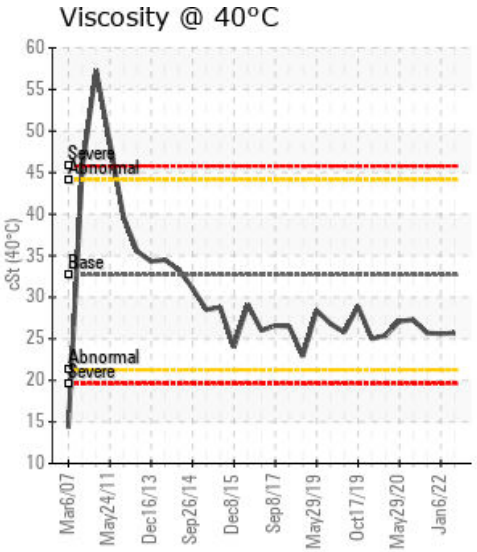
Customer: PTRHTF10068	System Information	Sample Information
Certainteed - Saint Gobain 1077 PLEASANT ST NORWOOD, MA 02062 USA Attn: David Fletcher Tel: (781)551-0656 E-Mail: david.r.fletcher@saint-gobain.com	System Volume: 5000 gal Bulk Operating Temp: 560F / 293C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: A.M.KINNEY	Lab No: 02479576 Analyst: Joe Goecke Sample Date: 03/09/22 Received Date: 03/25/22 Completed: 03/29/22 Joe Goecke Joe.goecke@hollyfrontier.com

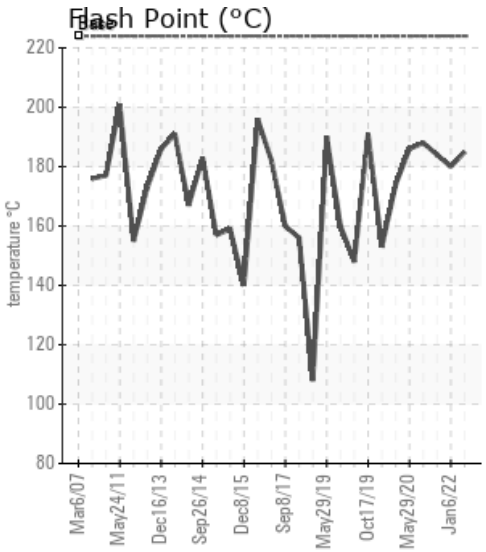
Recommendation: This sample continues to show some songs of cracking oil and development of low boilers. Typically these systems should be vented when the level approached 9% as this has. The system can continue to be used but should plan for some maintenance in the near future. The flash ponint and viscosity are trending lower but steady.

Comments: (GCD) % < 335°C is marginally high. COC Flash Point is marginally low.

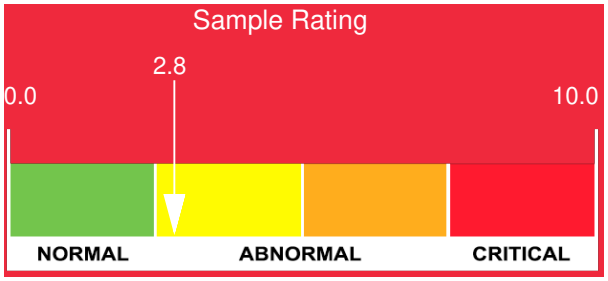
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/09/22	03/25/22	3.0y	heat exchanger	365 / 185	13.6	25.7	0.04	0.037	640 / 338	766 / 408	905 / 485	9.11
01/06/22	01/18/22	0.0y	heat exchange	356 / 180	29.5	25.6	0.04	0.047	673 / 356	792 / 422	897 / 481	5.64
08/31/21	09/10/21	0.0y		363 / 184	17.9	25.7	0.06	0.040	635 / 335	764 / 407	894 / 479	9.50
01/27/21	02/02/21	0.0y	Heat exchange	370 / 188	17.2	27.3	0.10	0.081	685 / 363	796 / 424	901 / 483	4.00
05/29/20	06/09/20	1.0y	HEAT EXCHANGER	367 / 186	28.6	27.1	0.07	0.014	671 / 355	792 / 422	907 / 486	5.63
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5

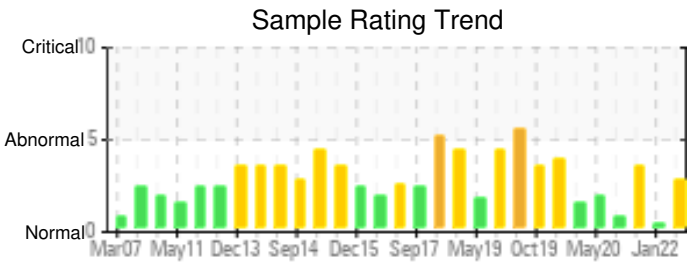






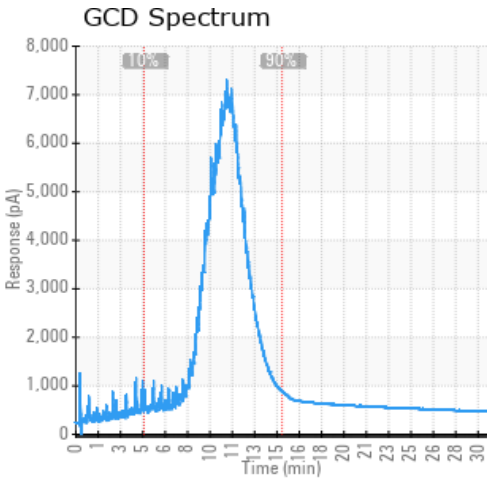
PETRO-CANADA LUBRICANTS

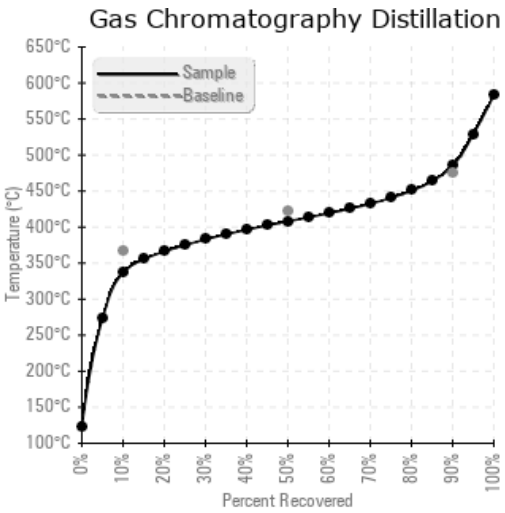


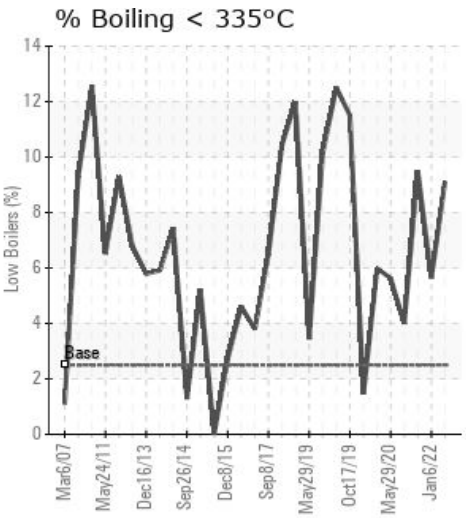


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
03/09/22	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	0
01/06/22	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	0
08/31/21	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
01/27/21	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	84	0
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
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

01/06/22	Flash point and viscosity are both slightly lower then normal, and low boilers starting to creep higher. continue to use as normal and resample in 6-8 months. COC Flash Point is marginally low.
08/31/21	low boilers are approaching 10%. This is over double the last sample and starting to affect the viscosity. Consider venting the system if have not done and resample at next scheduled date. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low. COC Flash Point is marginally low.
01/27/21	The Main Hot Oil System sample results show a slight increase in Flash Point - 186 to 188, however, Acid number had a slight increase also from .07 to .10. GCD at 10% remains good at 363.0 as well the GCD 90% at 482.5. No Vanadium was detected. Continue to monitor by sampling at a routine basis. COC Flash Point is marginally low.
05/29/20	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. (GCD) 90% Distillation Point is marginally high. COC Flash Point is marginally low.