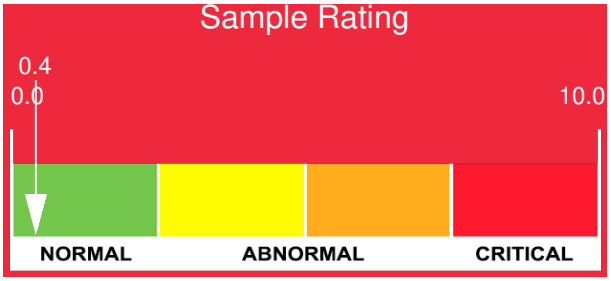
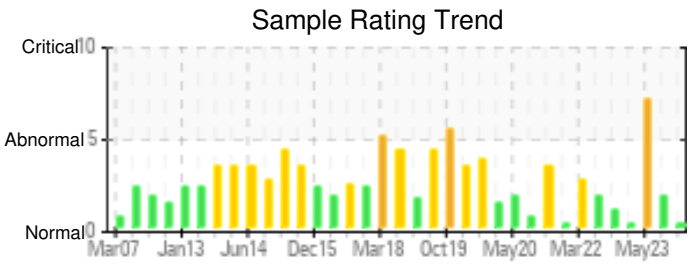
PETRO-CANADA LUBRICANTS





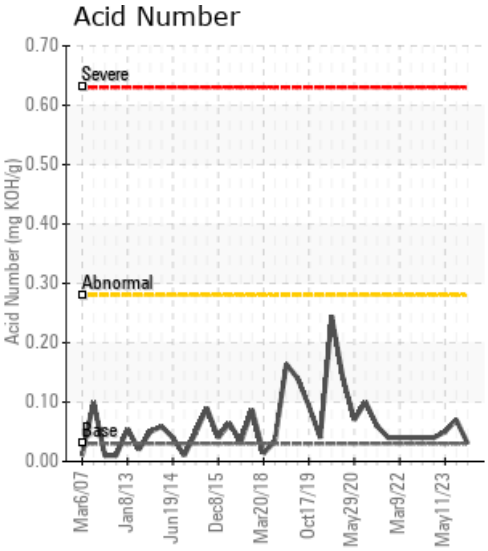
MAIN HOT OIL SYSTEM

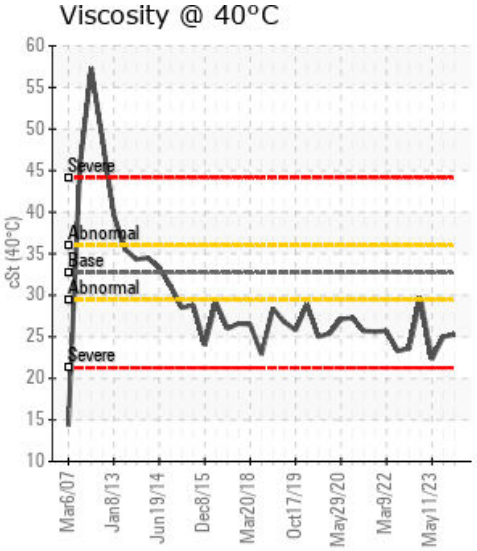
Customer: PTRHTF10068	System Information	Sample Information
Certainteed - Saint Gobain 1064 PLEASANT ST NORWOOD, MA 02062 US Attn: Robert Jaruse Tel: E-Mail: robert.jaruse@saint-gobain.com	System Volume: 5000 gal Bulk Operating Temp: 560F / 293C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: PERFORMANCE HEATING	Lab No: 02627758 Analyst: Greg Fernandez Sample Date: 03/27/24 Received Date: 04/09/24 Completed: 04/17/24 Greg Fernandez gregory.fernandez@hfsinclair.com

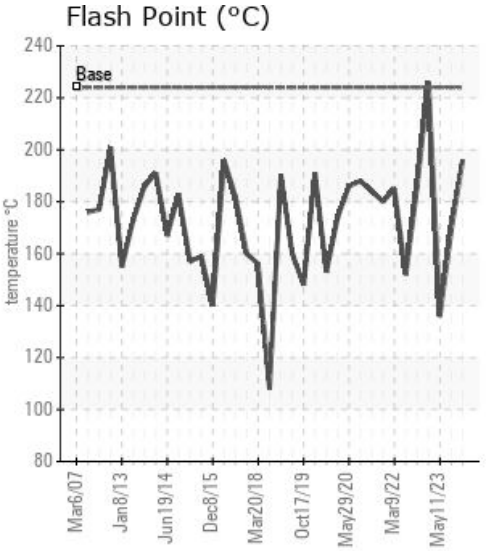
Recommendation: The fluid sample is in good overall condition and suitable for continued service. No indications of abnormal contamination or fluid degradation are present. Calflo AF appears to be performing well in this application.

Comments: Previous samples had indicated low viscosity, and this sample is also slightly low, but is higher than the previous 2 samples. This may be an indication of having topped off the system with fresh Calflo AF at a point since the previous sample(s). Recommendation is to resample at the next regular fluid sample interval.

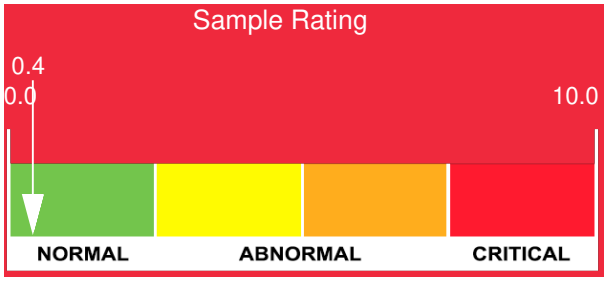
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/27/24	04/09/24	0.0y	heat exchanger	385 / 196	6	25.3	0.03	0.042	657 / 347	782 / 417	891 / 477	7.61
06/09/23	06/26/23	2.5y		336 / 169	15.6	25.0	0.07	0.043	663 / 351	791 / 421	897 / 481	7.06
05/11/23	05/24/23	2.5y		277 / 136	16.9	22.3	0.05	0.055	569 / 298	762 / 405	882 / 472	13.74
01/11/23	01/24/23	0.0y		439 / 226	13.2	29.7	0.04	0.046	681 / 361	796 / 424	901 / 483	4.92
09/01/22	09/09/22	0.0y	heat exchanger	367 / 186	8.2	23.6	0.04	0.072	650 / 343	788 / 420	901 / 483	8.39
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5

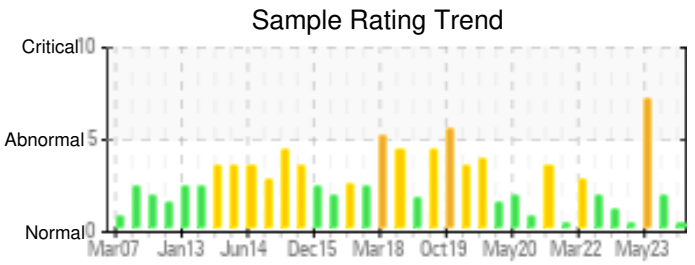






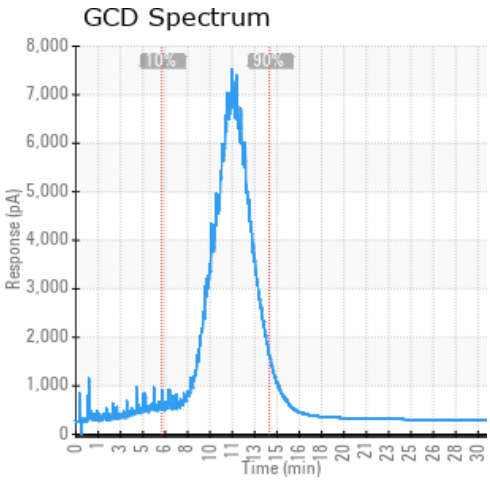
PETRO-CANADA LUBRICANTS

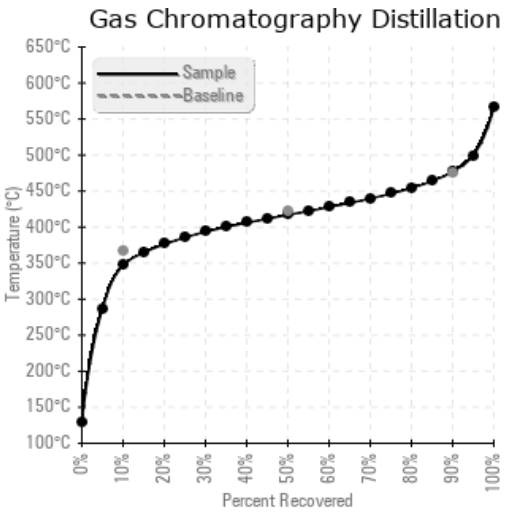


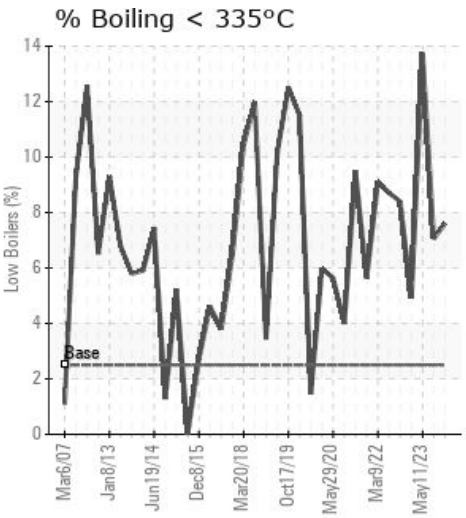


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
03/27/24	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
06/09/23	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	1
05/11/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0
01/11/23	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0
09/01/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	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

06/09/23	Although somewhat improved over the previous sample, Viscosity and Flash Point both are still low. The improved values could be an indication that the system was vented since the last sample and/or fresh fluid has been added to the system. Resample at next scheduled sample interval.No indication of abnormal wear metals present. No foreign contaminants detected. COC Flash Point is severely low. Visc @ 40°C is at low end of viscosity grade range.
05/11/23	Low reported values for Viscosity, Flash Point, and GCD 10% levels indicate that venting of the system should occur in an effort to help bring these values back in line. Venting should be taken as a first step, and hopefully will help return the system to typical/normal levels. The Calflo AF Heat Transfer Fluid was in good condition and performing well when the last sample was taken in January 2023. This sample (May 2023) shows signs of thermal cracking, indicating that something has affected the fluid and/or something is amiss with system operation or components. Some examples of this might be: Stop-and-Start cycle(s) of the system, a change of system components, such as a pump or heating element, or a change in fluid velocity or diversion of fluid via some other flow stream.No signs of component wear or contamination are present in the system. (GCD) 10% Distillation Point is severely low. COC Flash Point is severely low. Visc @ 40°C is severely low. (GCD) % < 335°C is abnormally high. (GCD) 90% Distillation Point is abnormally low.
01/11/23	Fluid sample shows the Calflo AF in suitable condition for continued service. Re-sample at next scheduled interval.No elevated wear metals reported. All fluid parameters, including Viscosity, AN, GCD determined Boiling Points, and Flash are well within typical range and indicative of a fluid in good condition.
09/01/22	In July, this system underwent a boil-off and subsequently at 100 gallons of make-up oil was added to the system. The current sample results show good results for Flash (an improved value from the prior sample report), Acid Number, and low boilers. Viscosity has trended lower over the past few samples and is still low, but not at an alarming level. Continued monitoring of this value is in order. In general, this sample shows improved product performance values over the prior sample and is suitable to continue until the next sample interval. Visc @ 40°C continues to trend lower and is now abnormally low. COC Flash Point is marginally low.