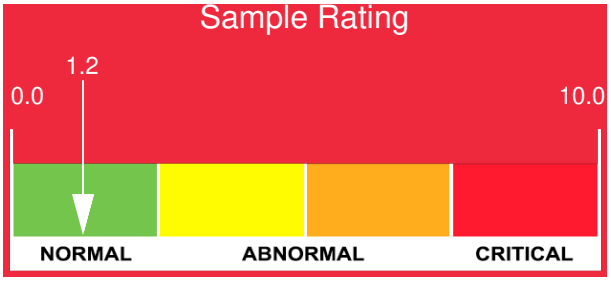
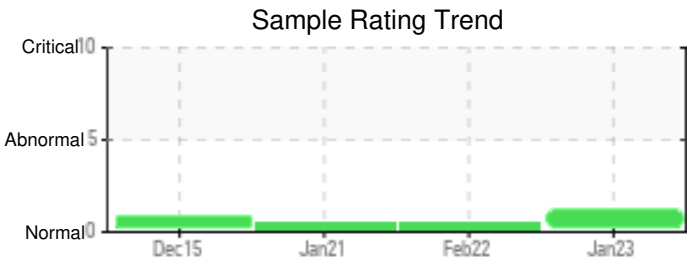




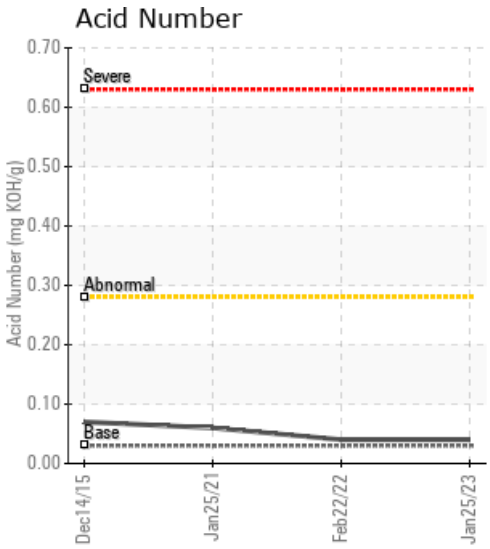
HEAT TRANSFER FLUID

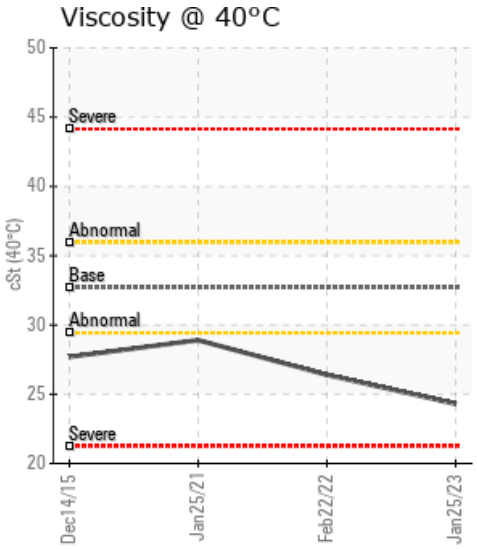
Customer: PTRHTF10167	System Information	Sample Information
Polartec Tennessee Manufacturing LL... 310 Industrial Dr. S. W Cleveland, TN 37311 USA Attn: Scott McMahan Tel: E-Mail: scott.mcmahan@milliken.com	System Volume: 2865 gal Bulk Operating Temp: 525F / 274C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: HEATEC	Lab No: 02537221 Analyst: Jake Finn Sample Date: 01/25/23 Received Date: 02/02/23 Completed: 02/06/23 Jake Finn jake.finn@HFSinclair.com

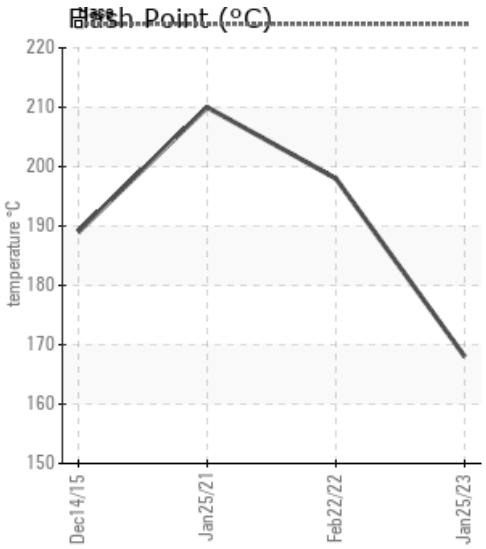
Recommendation: Overall the fluid is in decent condition, no signs of fluid contamination or wear of internal components. Flash point has dropped and viscosity is low as well. If possible, a proper venting of the system may release some of the low boilers that are contributing to this low viscosity and flash point. If venting is not possible or does not resolve the issue, a partial sweetening of the system fluid may also be considered (replace 10-20% of the fluid to replenish additive reserves). If the fluid has truly been in service for 24 years, then during the next planned shutdown, you may also consider replacing the fluid with Fresh Calflo AF if venting does not resolve the lower flash point. If venting is done or system fluid is sweetened, feel free to request analysis to confirm any changes, otherwise please submit for retesting in 12 months to continue monitoring fluid condition.

Comments: COC Flash Point is abnormally low. Visc @ 40°C is abnormally low. Very light visual debris noted by lab.

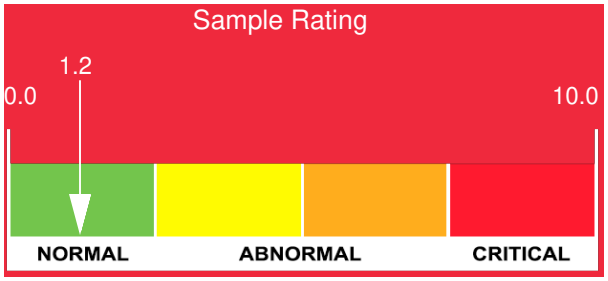
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/25/23	02/02/23	24.0y		334 / 168	13.7	24.3	0.04	0.196	671 / 355	787 / 419	895 / 479	5.90
02/22/22	03/02/22	23.0y	Drain Valve	388 / 198	12.2	26.4	0.04	0.033	672 / 355	785 / 419	891 / 477	5.84
01/25/21	02/01/21	22.0y	Drain valve	410 / 210	9.6	28.9	0.06	0.065	683 / 361	788 / 420	893 / 479	4.03
12/14/15	12/17/15	18.0y	PUMP INLET	372 / 189	8.0	27.7	0.07	0.037	687 / 364	783 / 417	882 / 472	1.77
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5

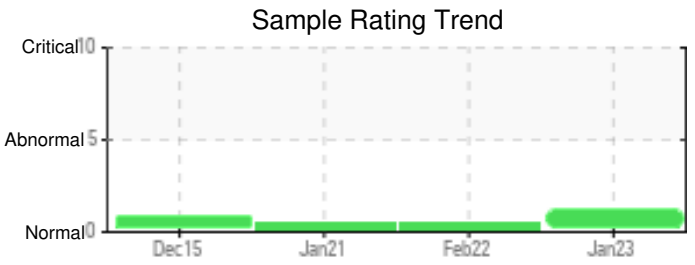






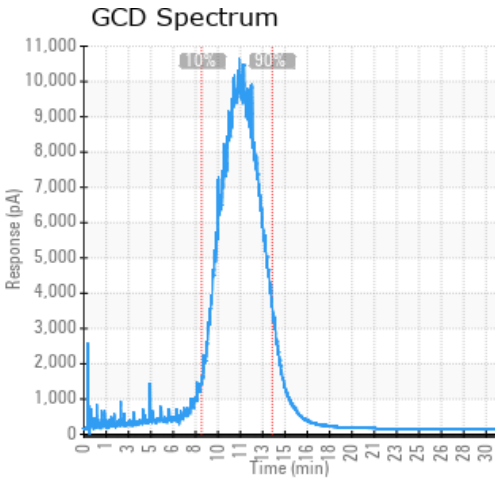
PETRO-CANADA LUBRICANTS

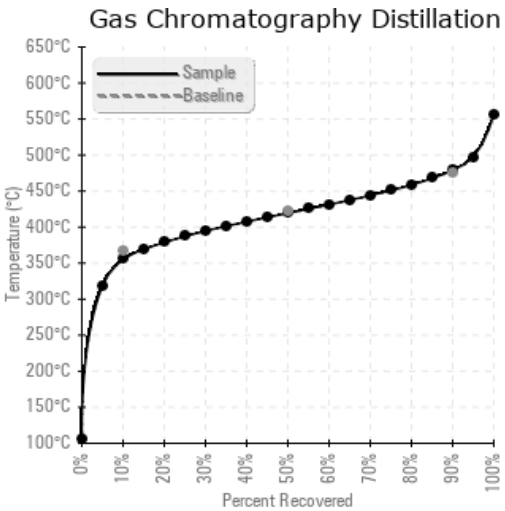


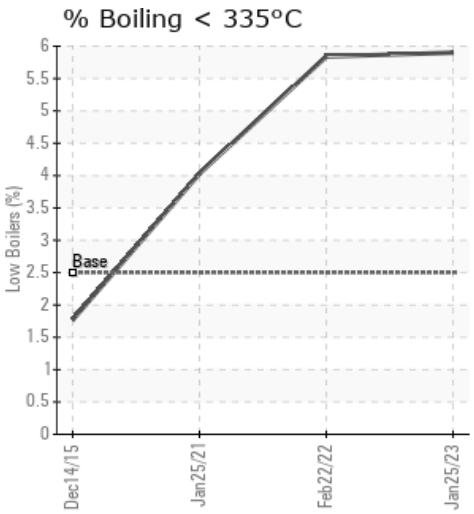


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
01/25/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0
02/22/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0
01/25/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	0
12/14/15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	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

02/22/22	Sample indicates no signs of wear, contamination or fluid degradation. This fluid is suitable for continued use, please resample and submit for testing in 12 months.Light amount of sand/dirt noted by lab.
01/25/21	Fluid appears to be in great condition with no signs of degradation or contamination. Please resubmit for annual testing in one year.N/A
12/14/15	Judging by the green flags, the oil condition is not so bad. Flash point is still strong enough for 525F operation, oxidation is minimal because of the nitrogen blanket. Overall the oil looks ok. However, if the oil life is truly 18 years as indicated, we would use the next shut down as an opportunity to replenish som eof the additive reserve in the fluid by sweetening the system, i.e. replace a certain percentage (10% or 20%) of used oil with fresh Calflo. COC Flash Point is marginally low.

