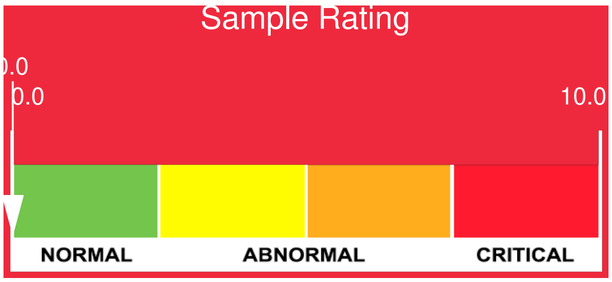
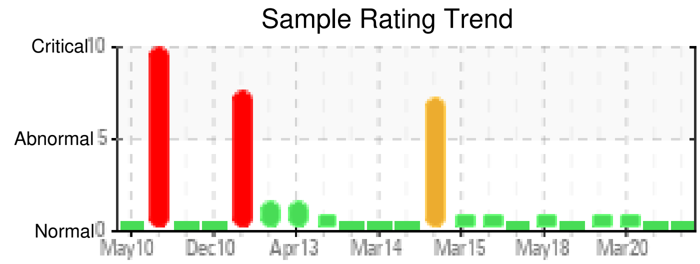




VOLCANIC HOT OIL HEATER MIDDLE

Customer: PTRHTF10039

Piedmont Chemical Industries
331 BURTON AVE.
HIGH POINT, NC 27261 USA
Attn: BOB BURGES
Tel: (336)885-5131
E-Mail: bburges@piedmontchemical.com

System Information

System Volume: 1000 gal
Bulk Operating Temp: 536F / 280C
Heating Source:
Blanket:
Fluid: PETRO CANADA CALFLO AF
Make: VOLCANIC

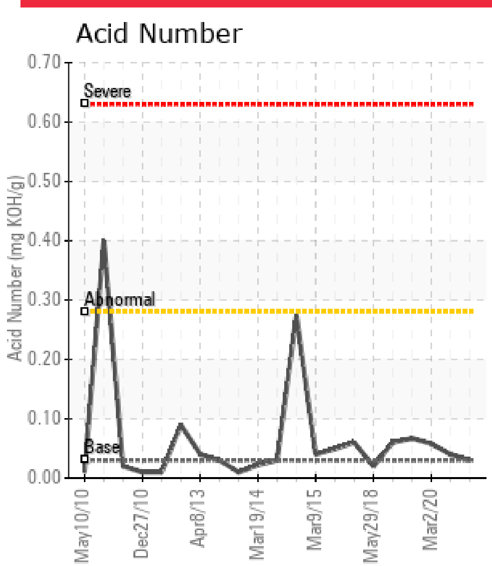
Sample Information

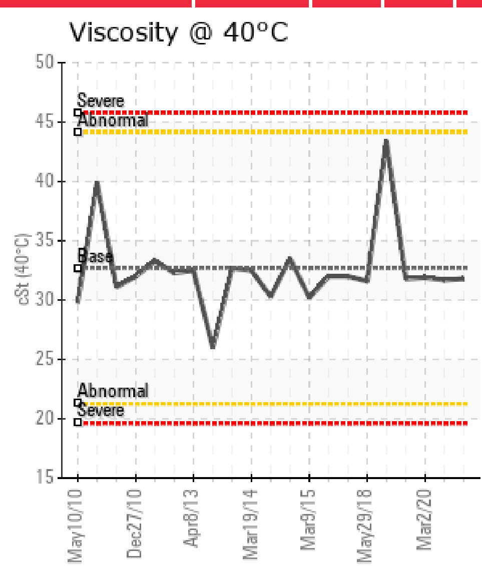
Lab No: 02477906
Analyst: Manny Garcia
Sample Date: 03/07/22
Received Date: 03/17/22
Completed: 03/21/22
Manny Garcia
manuel.garcia@hollyfrontier.com

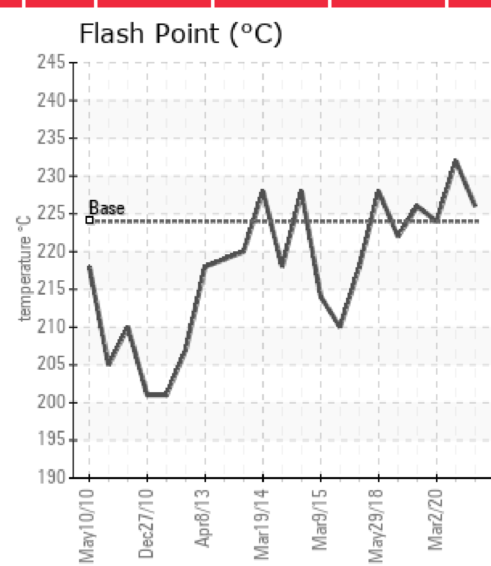
Recommendation: Satisfactory fluid sample results. Fluid is suitable for continued use. Please schedule next oil sample for March of 2023

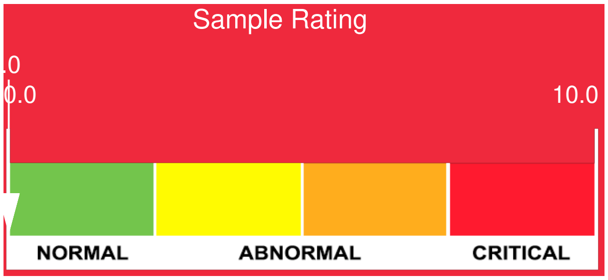
Comments: Viscosity of the oil is perfect, contamination low and the distillation points in check. Very light debris noticed in the sample of fluid and changing system filters (if any) is recommended and potentially cleaning the fluid with an on-line oil filtration system (kidney loop).

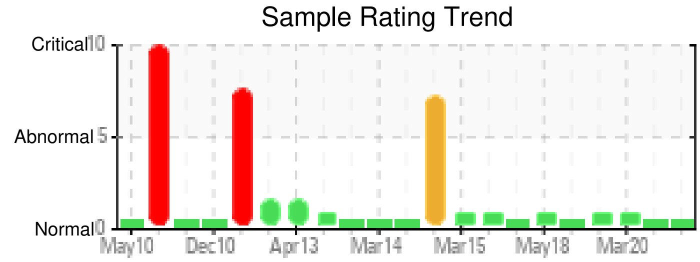
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/07/22	03/17/22	24.0y		439 / 226	8.3	31.8	0.03	0.096	704 / 373	800 / 427	899 / 482	1.59
03/01/21	03/04/21	24.0y	reservoir tank	450 / 232	10.3	31.7	0.04	0.209	708 / 375	801 / 427	899 / 482	0.51
03/02/20	03/05/20	23.0y	MIDDLE RESERVOIR	435 / 224	0.00	31.9	0.058	0.141	704 / 373	812 / 434	914 / 490	1.23
03/02/20	03/05/20	23.0y	TOP OF RESERVOIR	439 / 226	3.0	31.8	0.067	0.263	704 / 373	813 / 434	915 / 491	1.24
03/11/19	03/20/19	22.0y		432 / 222	11.3	43.4	0.06	0.308	696 / 369	792 / 422	889 / 476	1.41
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5





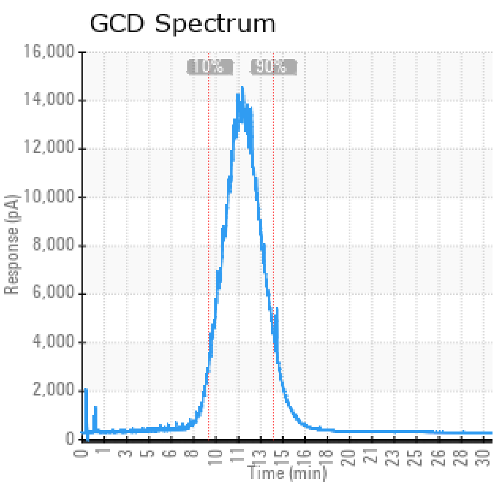


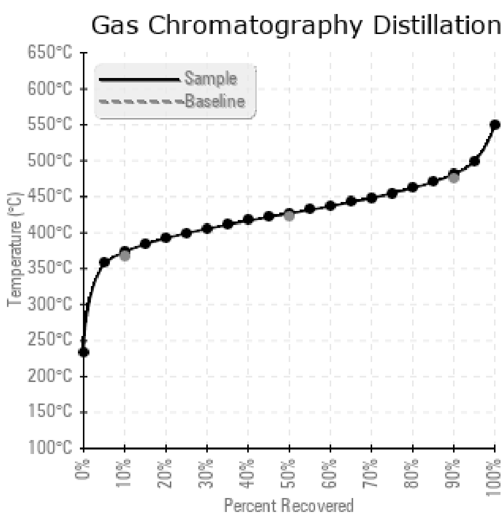


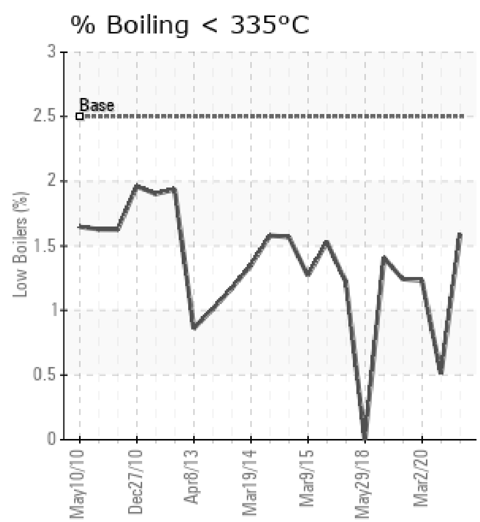


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
03/07/22	10	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	152	0
03/01/21	20	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	154	0
03/02/20	21	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	158	0
03/02/20	20	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	165	0
03/11/19	40	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	165	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

03/01/21	Fluid is suitable for continued use. Filtration of the fluid during a safe down day will mitigate any debris seen in the oil sample. Recommend change any system filters if any. Please schedule to re-submit a fluid sample in March 2022.(GCD) 90% Distillation Point has improved over last year's value. Very Light Debris found in the sample
03/02/20	Oil is suitable for continued use. Please re-submit sample in March 2021(GCD) 90% Distillation Point is abnormally high. 'Venting' the system is highly recommended to bring this value back in check. Very Light White metal and Silt has been detected in the fluid. Fluid system filtration is recommended and change-out of any filters at this time to maintain cleanliness.
03/02/20	Oil is suitable for continued use. 'Venting' the system and filtration of the oil will assist in extending the use of the fluid and maintaining and efficient heat transfer system(GCD) 90% Distillation Point is abnormally high & 'venting' of the system is recommended to mitigate this issue. Very light Silt & Debris found in the fluid - filtration during a 'safe' time is highly recommended. Any system filters should be changed at this time.
03/11/19	Fluid is Suitable for continued use. Re-sample system in March of 2020.Wear metals are in check. The viscosity grade is up one grade for no apparent reason. There is no evidence of cross contamination with any other oils and an increase from 31.6 CsT to 43.4 CsT is not dangerous, but worth noting. We will monitor this moving forward. Visible debris noticed in sample. During a shutdown and during a safe outage, using a 2-stage kidney loop system to clean the visible debris will assist in maintaining fluid cleanliness