

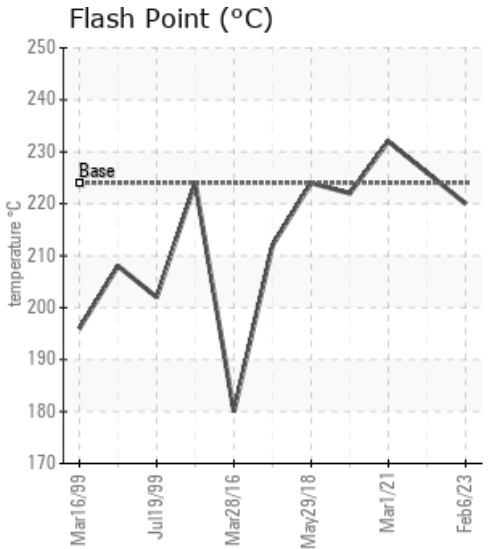
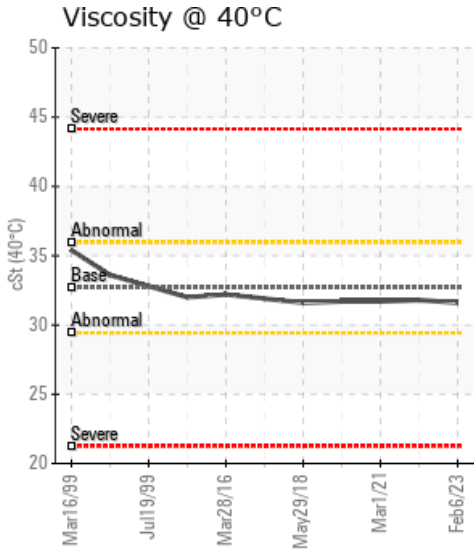
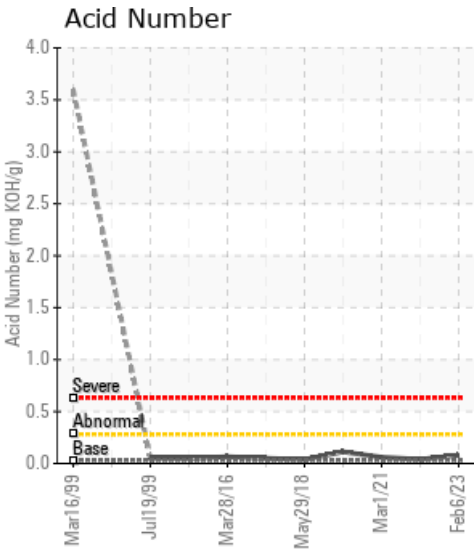
TOP OF RESIVOIR VOLCANIC HOT OIL HEATER

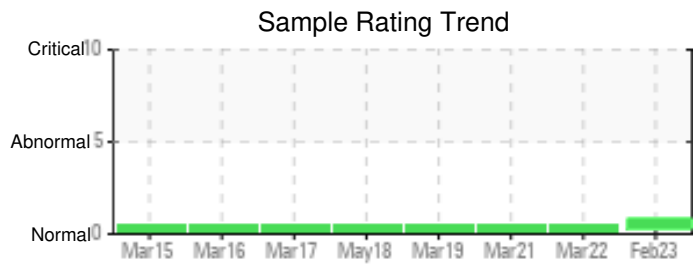
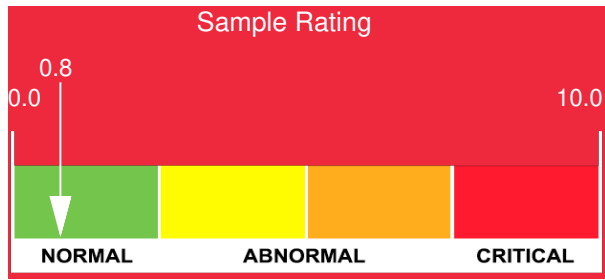
Customer: PTRHTF10039	System Information	Sample Information
Piedmont Chemical Industries 331 BURTON AVE. HIGH POINT, NC 27261 USA Attn: JUSTIN RUSSELL Tel: (336)885-5131 E-Mail: JRUSSELL@PIEDMONTCHEMI CAL.COM	System Volume: 1000 gal Bulk Operating Temp: 536F / 280C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: VOLCANIC	Lab No: 02539373 Analyst: Manny Garcia Sample Date: 02/06/23 Received Date: 02/14/23 Completed: 02/16/23 Manny Garcia manuel.garcia@HFSinclair.com

Recommendation: Mitigating the 90% distillation can be completed by 'venting' the system. Wear metals and oil condition look very good.

Comments: 90% Distillation Point is slightly elevated.

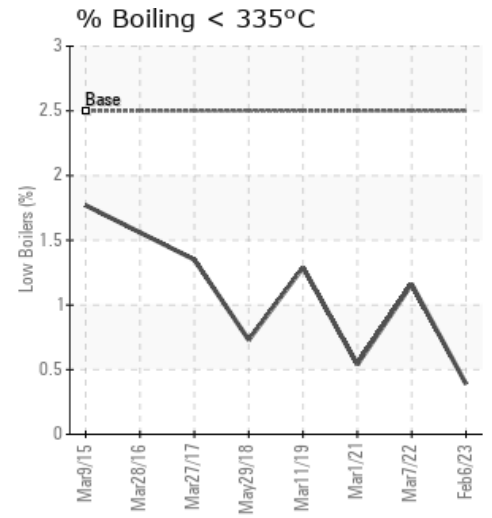
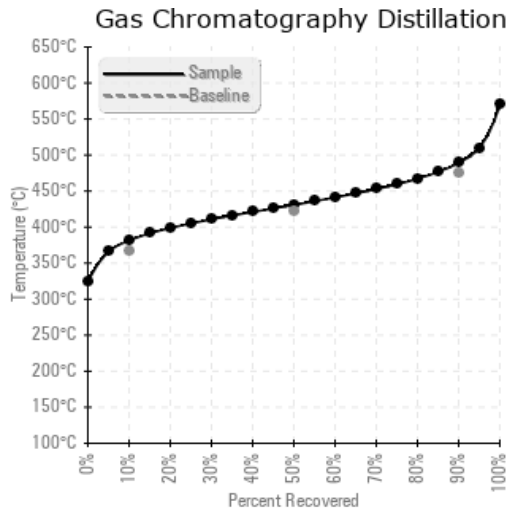
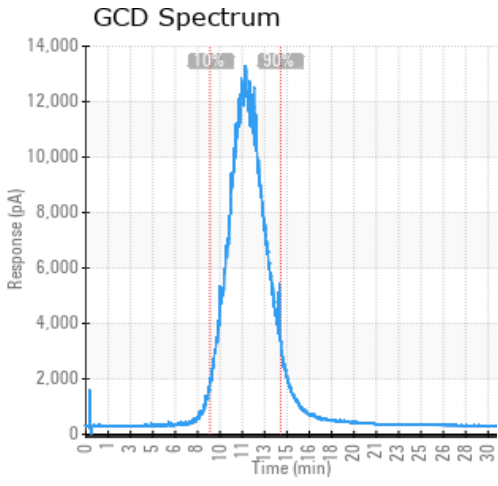
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
02/06/23	02/14/23	5.0y	TOP OF DECANTED DRUM	428 / 220	0.00	31.6	0.08	0.231	718 / 381	807 / 431	912 / 489	0.39
03/07/22	03/17/22	24.0y		439 / 226	7.2	31.8	0.04	0.085	705 / 374	801 / 427	900 / 482	1.16
03/01/21	03/04/21	24.0y	Top of reservoir	450 / 232	10.0	31.7	0.06	0.204	708 / 375	801 / 427	899 / 482	0.54
03/11/19	03/20/19	22.0y		432 / 222	3.5	31.7	0.112	0.106	697 / 370	793 / 423	890 / 477	1.29
05/29/18	06/05/18	21.0y		435 / 224	10.8	31.6	0.039	0.202	707 / 375	808 / 431	901 / 483	0.73
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	
02/06/23	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	189	0	
03/07/22	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	165	0
03/01/21	18	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	153	0
03/11/19	17	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	137	0
05/29/18	30	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	150	0
Baseline Data			0	0						0			0	0					0					270	

Elemental analysis results (above) in parts per million (ppm). [10,000 ppm = 1.0%]



Historical Comments

03/07/22	Satisfactory Fluid sample analysis - please schedule the next sample for March 2023. 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)
03/01/21	Fluid is suitable for continued use. Next oil sample should be scheduled for submission in March 2022. Very Light debris is evident in the sample and this may be mitigated by changing any system filters or installing a kidney loop filtration system during a safe, down day.
03/11/19	Fluid is suitable for continued use. Excellent parameters evident in lab report. Re-submit sample in March 2020
05/29/18	Oil is suitable for continued use, please submit the next sample in May 2019. Very light silt and very light debris noticed by the chemist. Changing any system filters or using a kidney loop filtration system to polish the oil contamination is recommended.

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