

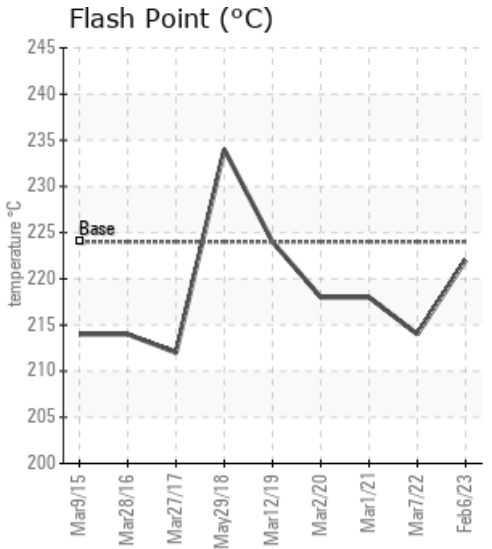
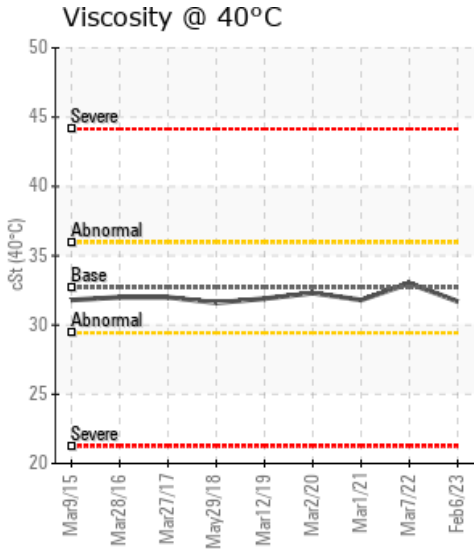
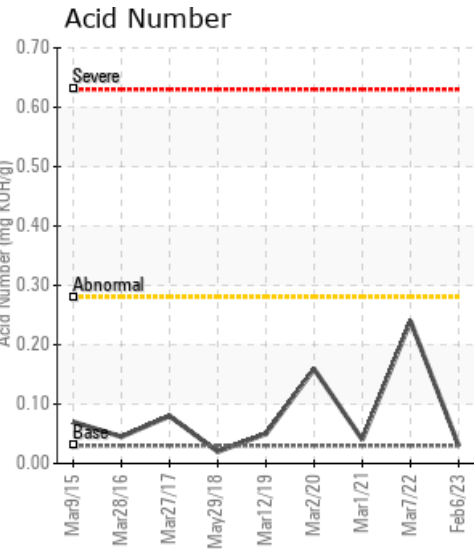
VOLCANIC BOTTOM

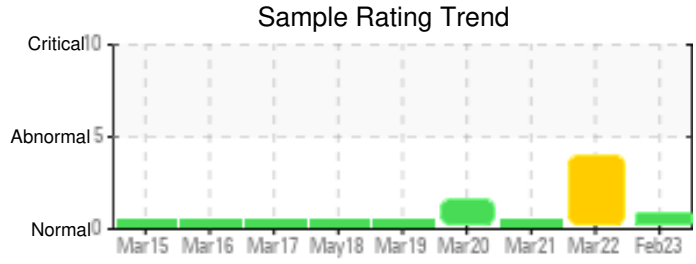
Customer: PTRHTF10039	System Information	Sample Information
Piedmont Chemical Industries 331 BURTON AVE. HIGH POINT, NC 27261 USA Attn: JUSTIN RUSSELL Tel: (336)885-5131 E-Mail: JRUSSELL@PIEDMONTCHEMICAL.COM	System Volume: 1000 gal Bulk Operating Temp: 536F / 280C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: VOLCANIC	Lab No: 02539376 Analyst: Manny Garcia Sample Date: 02/06/23 Received Date: 02/14/23 Completed: 02/28/23 Manny Garcia manuel.garcia@HFSinclair.com

Recommendation: 'Venting' the system can help mitigate the 90% distillation point. Please re-sample after venting has been done and submit sample for verification.

Comments: (GCD) 90% Distillation Point is marginally high.

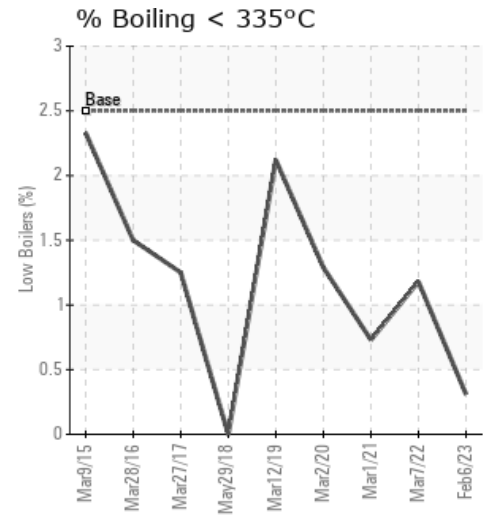
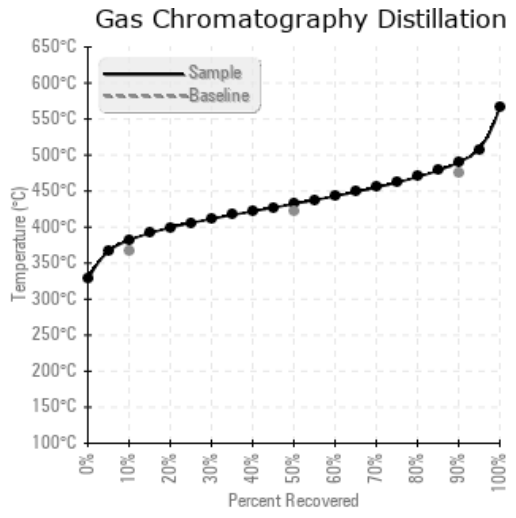
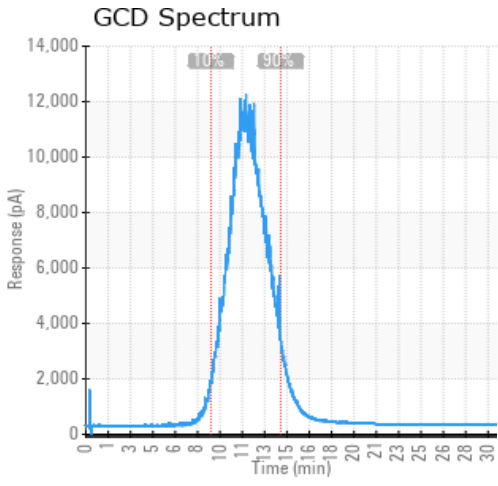
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
02/06/23	02/14/23	5.0y	RESERVOIR	432 / 222	0.00	31.7	0.03	0.267	719 / 382	810 / 432	914 / 490	0.31
03/07/22	03/17/22	24.0y		417 / 214	16.7	33.0	0.24	1.08	705 / 374	799 / 426	899 / 482	1.18
03/01/21	03/04/21	24.0y	bott. of reservoir	424 / 218	22.9	31.8	0.04	0.229	707 / 375	801 / 427	899 / 482	0.73
03/02/20	03/05/20	23.0y	BOTTOM OF RESERVOIR	424 / 218	3.9	32.3	0.159	0.475	704 / 373	814 / 434	915 / 491	1.29
03/12/19	03/20/19	22.0y		435 / 224	9.2	31.9	0.05	0.321	693 / 367	791 / 422	888 / 476	2.12
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	25	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	213	0
03/07/22	283	0	0	0	0	0	0	0	0	0	39	2	0	0	0	0	2	0	0	0	4	0	517	6
03/01/21	39	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	179	0
03/02/20	86	0	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	233	0
03/12/19	43	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	169	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	Product has contamination in the fluid. Fluid formulation parameters are suitable for continued use. Please address the contamination ingress, clean up the fluid by changing any system filters and/or using a kidney loop system safely to clean up the oil. Iron ppm levels are abnormal. Pentane In-solubles levels are severely high. Silicon ppm levels are abnormally high.
03/01/21	Fluid is suitable for continued use. Recommend another system sample in March 2022. Fluid has improved from the last sample analysis. Pentane Insolubles have improved & 90% Distillation point is back in line. Still some visible silt & debris, albeit very light so changing any system filters or kidney loop filtering the fluid during a down period & a safe manner would further assist in cleaning the 24 year old fluid -
03/02/20	Oil is suitable for continued use after fluid filtration & any system filters changed. Please re-submit sample in March 2021. Pentane Insolubles levels are abnormally high. (GCD) 90% Distillation Point is abnormally high. Recommend vent the system to mitigate the 90% Distillation Point & re-submit sample for verification. Very Lite white metals & debris found in the fluid. During a safe time, recommend filter the fluid to mitigate and clean the oil.
03/12/19	Fluid is suitable for continued use. Please re-sample in March 2020. Wear metals are low. Viscosity is perfect at 31.9 Cst @ 40oC. Excellent looking fluid sample

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