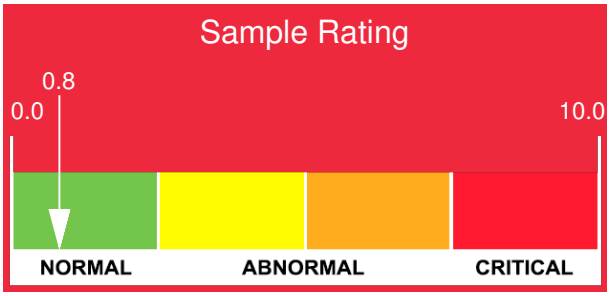
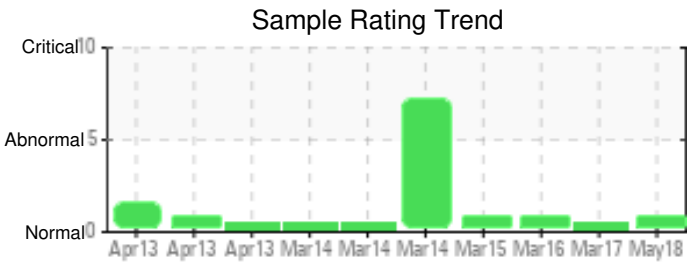
PETRO-CANADA





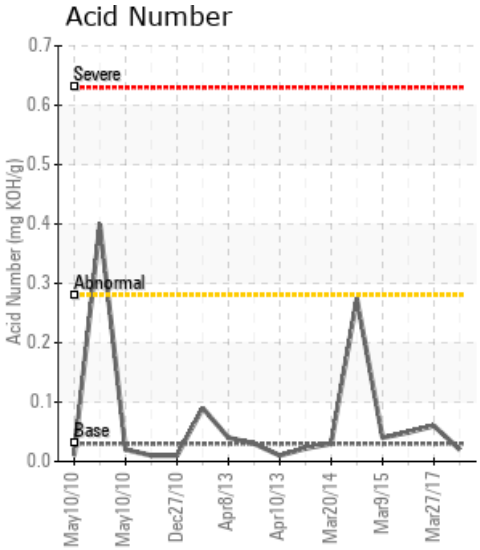
VOLCANIC HOT OIL HEATER MIDDLE

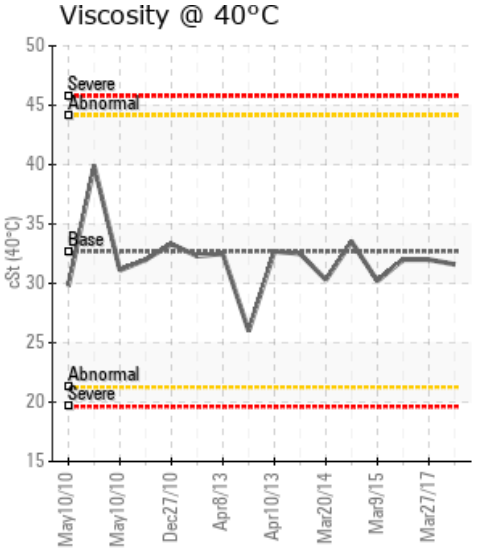
Customer: PTRHTF10039	System Information	Sample Information
Piedmont Chemical Industries 331 BURTON AVE. HIGH POINT, NC 27261 USA Attn: GEORGE WETTE Tel: (336)885-5131 E-Mail:	System Volume: 1000 gal Bulk Operating Temp: 536F / 280C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: VOLCANIC	Lab No: 02220412 Analyst: Manny Garcia Sample Date: 05/29/18 Received Date: 06/05/18 Completed: 06/08/18 To discuss this report contact Manny Garcia at 954-384-7259

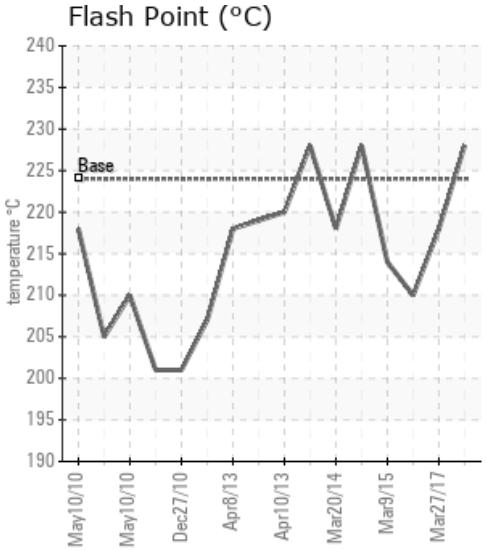
Recommendation: 'Venting' the system will assist in getting the distillation points back in check. Filtering the fluid or changing system filters will clean up any contamination. Please re-submit annual sample in May 2019.

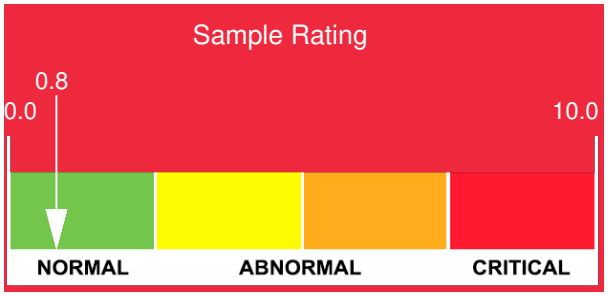
Comments: (GCD) 90% Distillation Point is abnormally low. Very light silt noticed by the chemist.

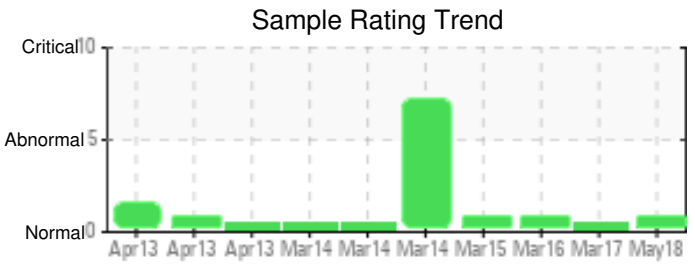
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
05/29/18	06/05/18	21y		442 / 228	6.9	31.6	0.02	0.217	699 / 371	768 / 409	856 / 458	0.00
03/27/17	03/30/17	19y	MIDDLE RESERVOIR	424 / 218	10.0	32.0	0.06	0.170	699 / 371	798 / 426	897 / 480	1.22
03/28/16	04/01/16	18y	MIDDLE OF RESERVOIR	410 / 210	0.00	32.0	0.049	0.103	698 / 370	802 / 428	908 / 486	1.53
03/09/15	03/16/15	18y	MIDDLE OF RESERVOIR	417 / 214	10.5	30.2	0.04	0.395	700 / 371	799 / 426	895 / 480	1.27
03/21/14	03/28/14	16y	BOTTOM - 8:00AM	442 / 228	362.4	33.5	0.274	1.20	696 / 369	796 / 425	890 / 477	1.57
03/20/14	03/28/14	16y	MIDDLE - 8:15AM	424 / 218	156.0	30.3	0.03	0.256	697 / 370	798 / 426	894 / 479	1.58
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5





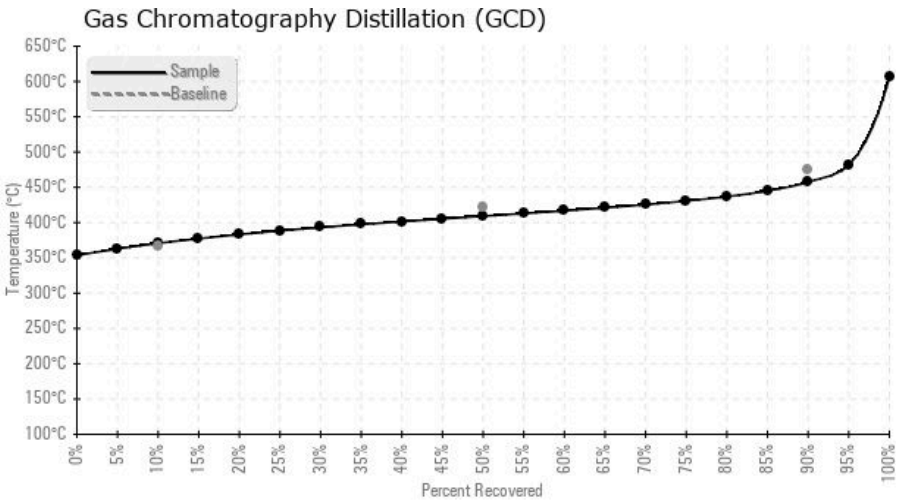


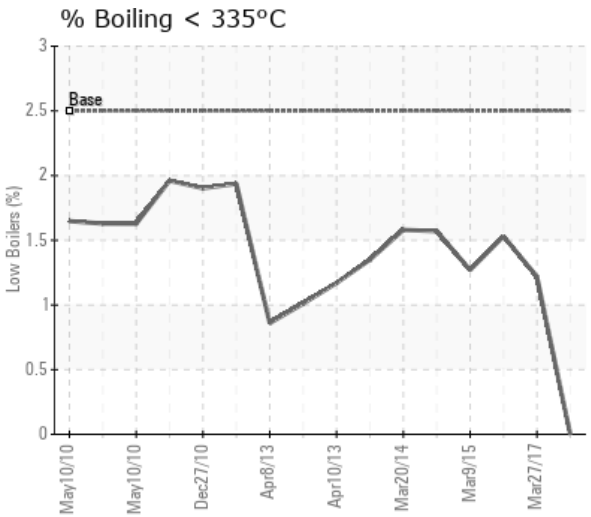




Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
05/29/18	36	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	164	0
03/27/17	44	0	0	0	0	0	0	0	0	0	5	1	0	0	0	0	0	0	0	0	0	0	159	0
03/28/16	38	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	149	0
03/09/15	53	0	0	0	0	0	0	1	0	0	6	2	0	0	0	0	1	0	1	0	1	0	153	1
03/21/14	399	1	1	1	0	0	0	3	0	0	25	3	0	0	0	0	4	0	1	0	3	0	433	2
03/20/14	36	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	1	0	0	0	136	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

03/27/17	System and fluid look very good. Please re-submit sample of fluid in March 2018.Wear metals are low; Contaminant levels are low; Water is low; Acid Number is low; Viscosity is good; pentane insoluble are low; very light white metal as visible in sample
03/28/16	This system's oil is suitable for continued use; Please re-submit sample as scheduled during next interval.Wear metals low; contaminant levels low; additive levels satisfactory; Water is nil; viscosity is good; flash point is good; Distillation curves are in check; 90% distillation slightly elevated - Venting system may correct this - Monitor; Pentane solids are low; Very Light Silt visually seen in sample.
03/09/15	Wear metals are low; Contaminant level is low; Water is very lowl; Total Acid Number is low; Viscosity grade is normal; Flash Point is Normal; Distilation numbers are Normal; Pentane solids have been decreased considerably from the last sample and in a normal to high range/Change system filters is appropriate or filter oil during next planned outage for proper solid cleanliness levels; Please sample system and submit oil analysis durng next scheduled interval.
03/21/14	As seen in past bottom samples, the sample contains a higher than normal amount of water (0.036%). Along with it, as expected, a higher than normal concentration of insoluble solids, such as iron particles and hydrolyzed additives (transformed and rendered ineffective by the water) that settled out.Iron ppm levels are abnormal. Pentane Insolubles levels are severely high. Silicon ppm levels are abnormally high. Water contamination levels are marginally high. ppm Water contamination levels are marginally high.
03/20/14	As expected, the condition of this sample looks better than the bottom sample. All parameters tested fit within the normal category. The overall condition of this fluid is good according to this sample.