

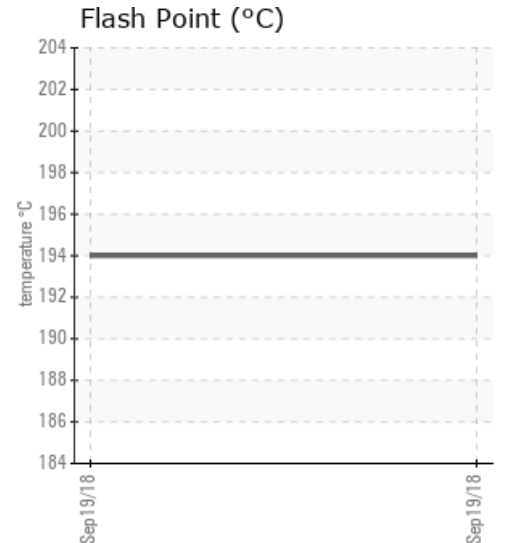
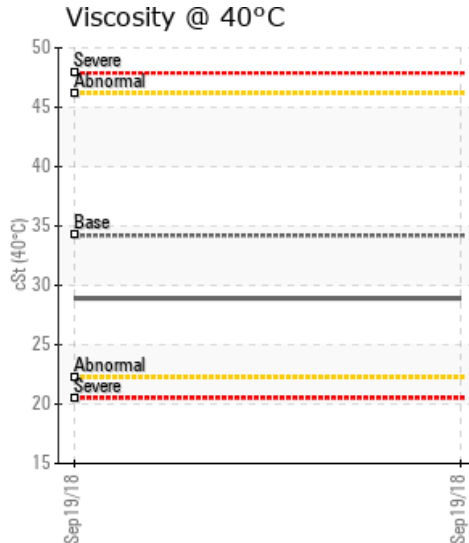
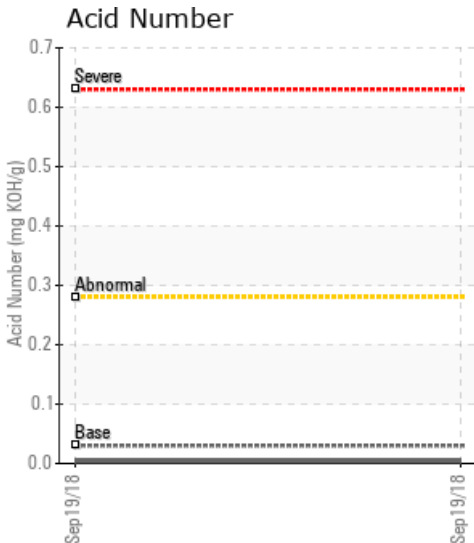
[3-22-78-12W6] PH I/II Process heat medium

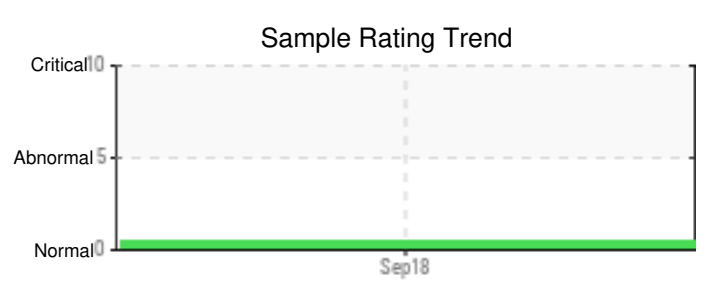
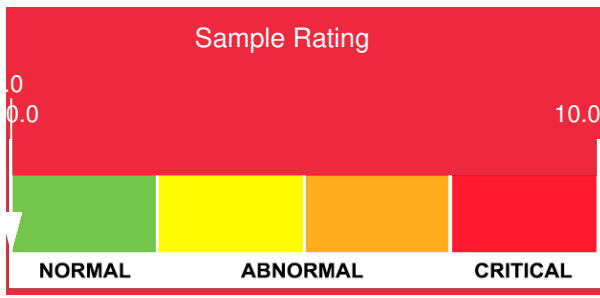
Customer: PTRHTF20203	System Information	Sample Information
BIRCHCLIFF ENERGY BOX 580 , 5605 - 49TH SPIRIT RIVER, AB T0H 3G0 Canada Attn: Derek Michetti Tel: (250)719-8571 E-Mail: dmichetti@birchcliffenergy.com	System Volume: 19733 ltr Bulk Operating Temp: 338F / 170C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: Petro-Tech	Lab No: 02241817 Analyst: Clinton Buhler Sample Date: 09/19/18 Received Date: 09/27/18 Completed: 10/18/18 To discuss this report contact Clinton Buhler at 780-516-9920

Recommendation: Sample results indicate that the fluid is suitable for continued service. % boil-off of 2.03% and slightly reduced flashpoint may be an indication of thermal degradation or possibly a mixture of fluids. As a good preventative maintenance practice, it is ideal to vent off any low boiling vapors from the system on a regular basis. Re-sample fluid in 6 months to establish a trend

Comments:

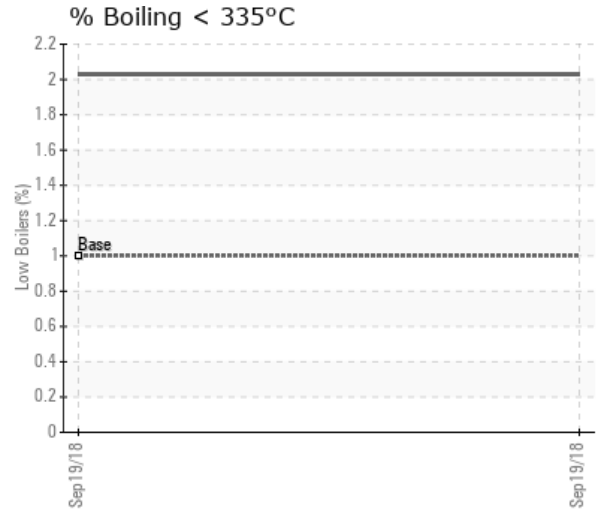
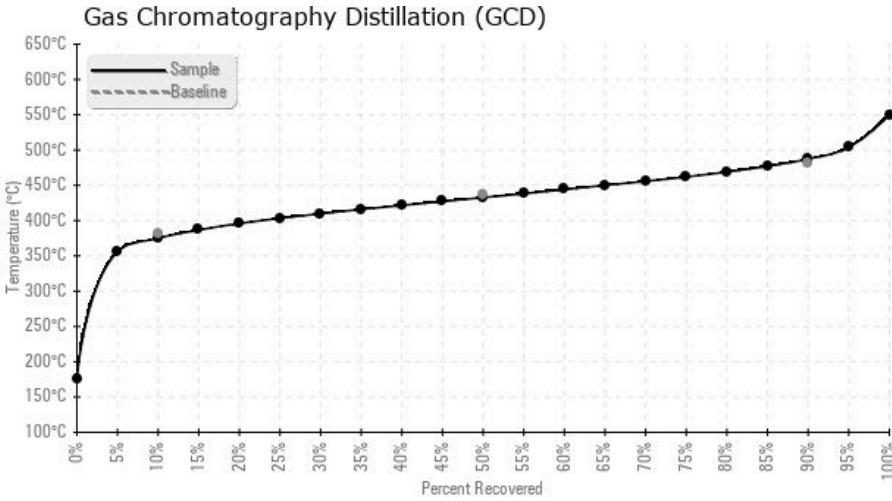
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
09/19/18	09/27/18	8y		381 / 194	11.9	28.9	0.004	0.027	707 / 375	811 / 433	909 / 487	2.03
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00





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
09/19/18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Baseline Data			0	0						0			0	0					0				0	

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



Historical Comments

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