

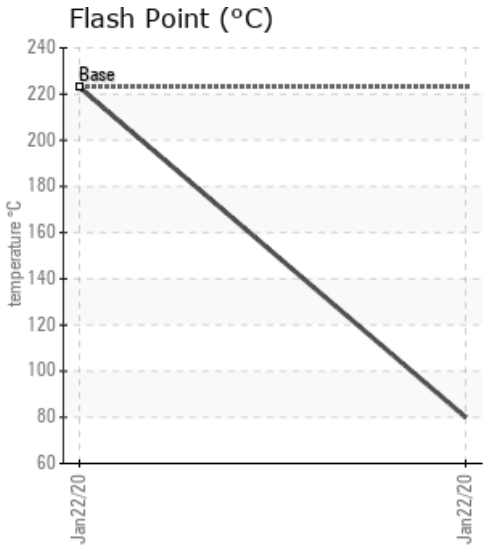
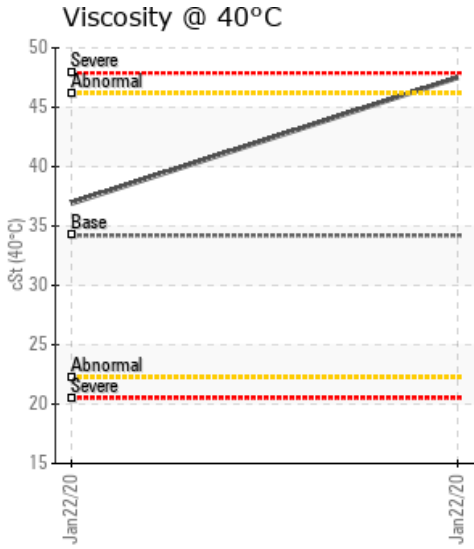
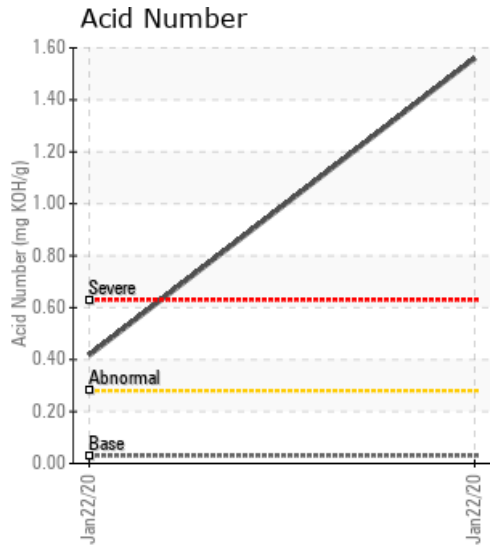
[LSD / 4-34-47-9W5] HEATTRANSFER

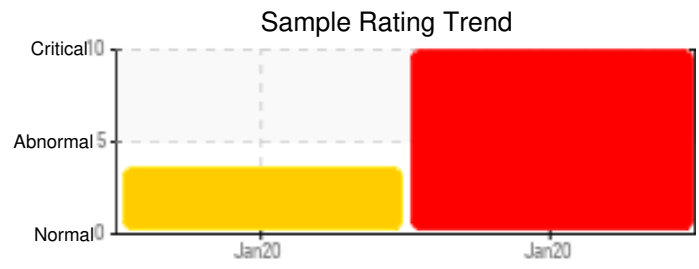
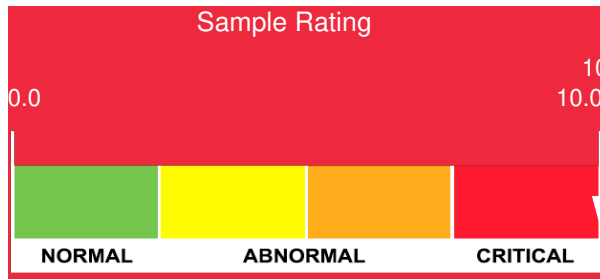
Customer: PTRHTF20235	System Information	Sample Information
OBSIDIAN ENERGY 200, 207 - 9TH AVENUE SW CALGARY, AB T2P 1K3 Canada Attn: Morley James Tel: (780)690-2015 E-Mail: morley.james@obsidianenergy.com	System Volume: 6500 ltr Bulk Operating Temp: 356F / 180C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02334962 Analyst: Terry Veenstra Sample Date: 01/22/20 Received Date: 01/30/20 Completed: 02/25/20 Terry Veenstra terry.veenstra@hollyfrontier.com

Recommendation: Water is severely high and Flash Point is severely low. Boron is sample indicates that system may have glycol contamination. System should be vented to eliminate lighter ends from fluid to try and restore the flash point. This venting should also help to eliminate the water from the system.

Comments: Water contamination levels are severely high. Water contamination levels are severely high.. ppm Water contamination levels are severely high. Pentane Insolubles levels are severely high. Acid Number (AN) is severely high. COC Flash Point is severely low. Boron ppm levels are severely high. (GCD) 90% Distillation Point is abnormally high. Visc @ 40°C is abnormally high.

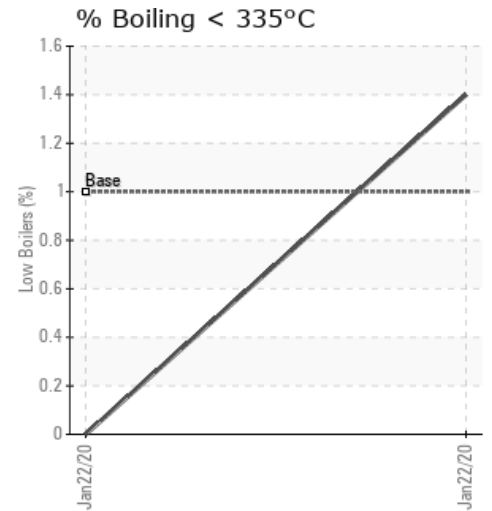
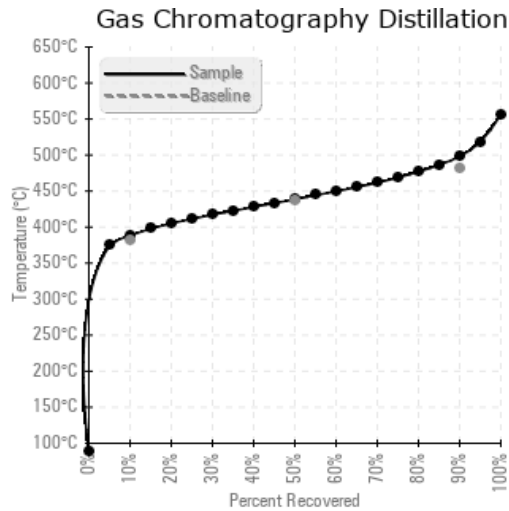
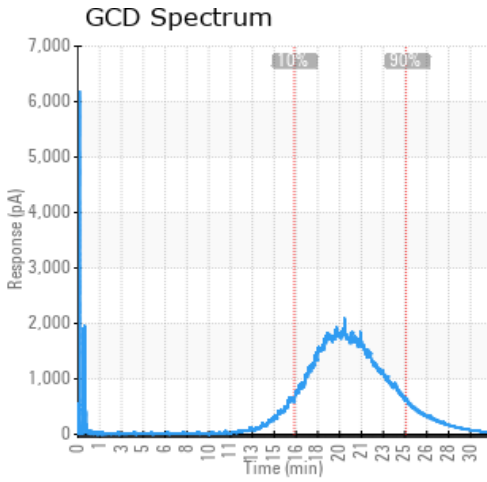
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/22/20	01/30/20	5.0y		176 / 80	1591.7	47.5	1.56	1.26	731 / 388	821 / 439	929 / 498	1.40
01/22/20	01/30/20	4.0y	BOTTOM DRAIN	433 / 223	554.5	36.9	0.416	0.360	750 / 399	811 / 433	898 / 481	0.00
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
01/22/20	77	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	102	0	0	0	2	1
01/22/20	32	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	3	3
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	
01/22/20	Water content is higher than normal, although it has greatly improved since last sample. Otherwise sample look good. Resample in 6 months Water contamination levels are marginally high. Water contamination levels are marginally high.. ppm Water contamination levels are marginally high. Acid Number (AN) is abnormally high. (GCD) 10% Distillation Point is marginally high.

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