

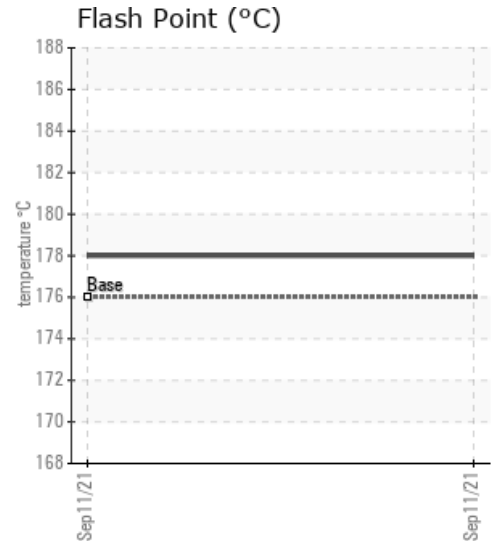
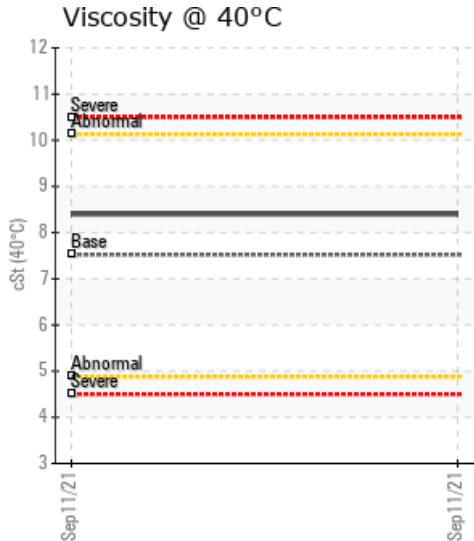
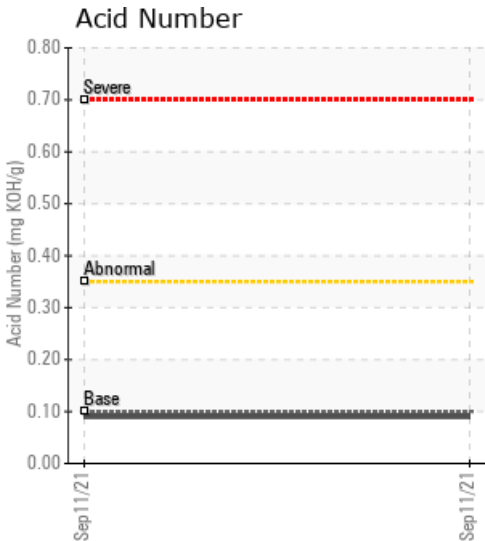
## HEATING MEDIUM SYSTEM

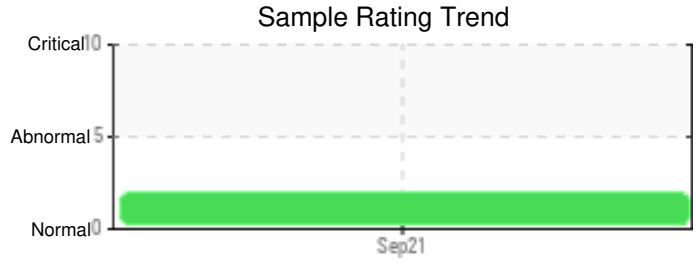
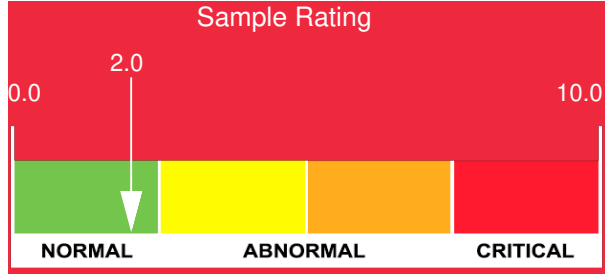
Customer: PTRHTF20260	System Information	Sample Information
TC ENERGY NW SEC 5, TWP 92, RNG 12, W4M FORT MCMURRAY, AB T9H 4B6 Canada Attn: Ross Phillip Tel: (780)713-1543 E-Mail: ross_phillips@tcenergy.com	System Volume: 17000 ltr Bulk Operating Temp: 392F / 200C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO LT Make: DELTAK	Lab No: 02445559 Analyst: Clinton Buhler Sample Date: 09/11/21 Received Date: 09/22/21 Completed: 10/15/21 Clinton Buhler Clinton.Buhler@hollyfrontier.com

Recommendation: Sample results indicate that the fluid is in suitable condition for continued service. 90% GCD temperature is elevated, but all other parameters indicate a healthy fluid. Please re-sample in 6 months

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

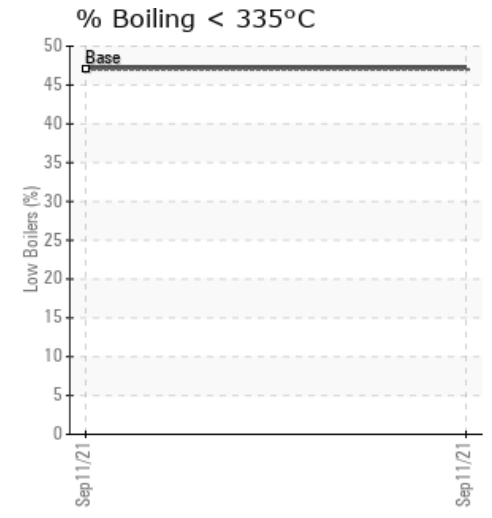
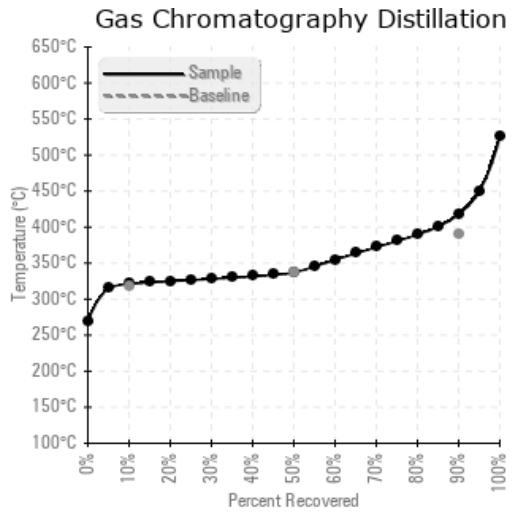
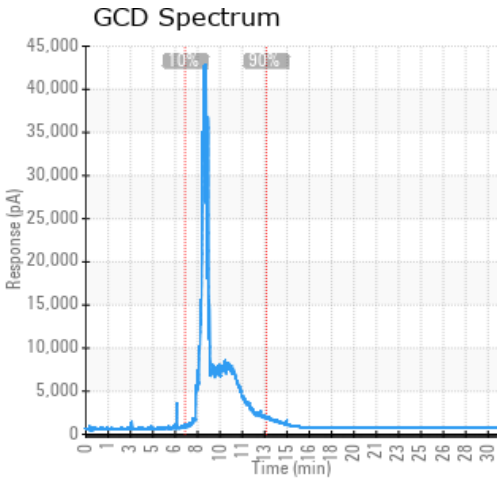
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
09/11/21	09/22/21	18.0y	PUMP DISCHARGE	352 / 178	11.7	8.4	0.09	0.046	610 / 321	638 / 337	784 / 418	47.27
Baseline Data				349 / 176		7.52	0.1		604 / 318	640 / 338	734 / 390	47.0





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
09/11/21	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	53	0
Baseline Data			0	0						0			0	0				0	0				270	

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



### Historical Comments


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