

D1ROCKDALE

Customer: PTRHTF30107
 D-CONSTRUCTION
 16805 QUARRY RD
 MORRIS, IL 60450 USA
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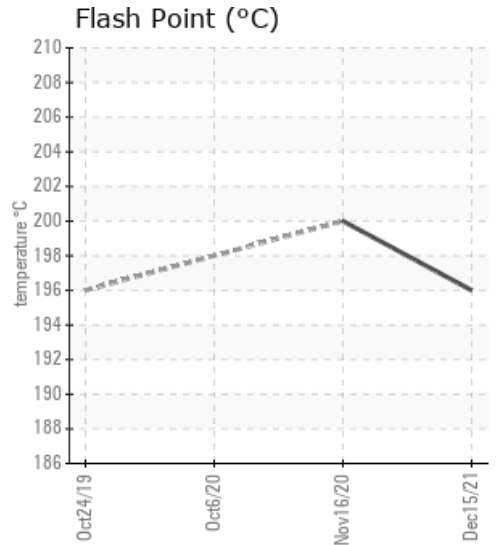
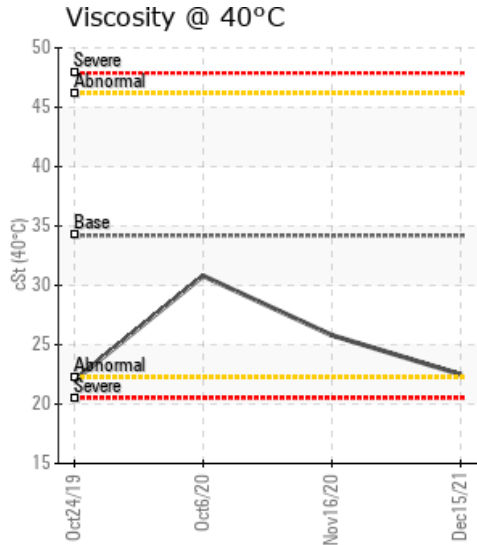
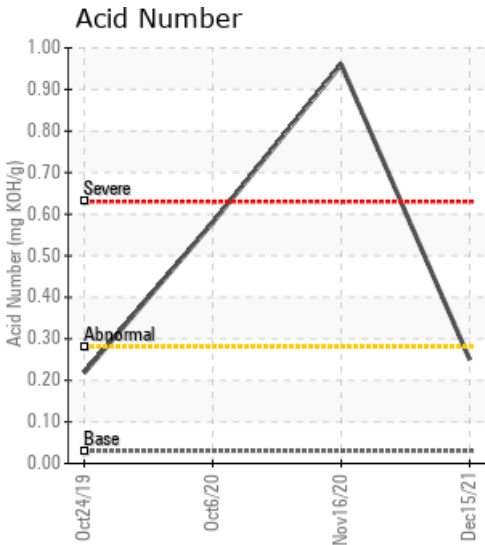
System Information
 System Volume: 600 gal
 Bulk Operating Temp: 340F / 171C
 Heating Source:
 Blanket:
 Fluid: PETRO CANADA PETRO-THERM
 Make: GILLMAN

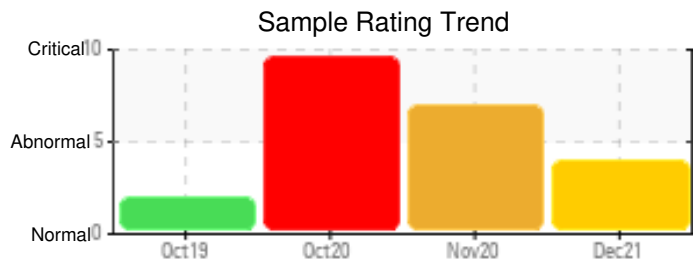
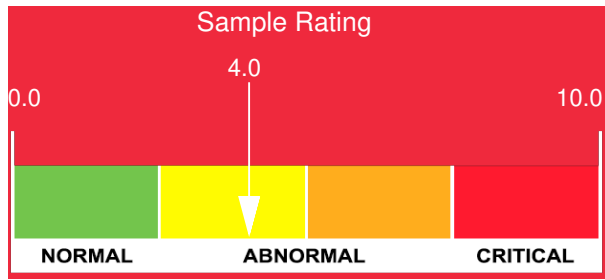
Sample Information
 Lab No: 02464405
 Analyst: Yvette Trzcinski
 Sample Date: 12/15/21
 Received Date: 12/30/21
 Completed: 01/19/22
 Yvette Trzcinski
 yvette.trzcinski@hollyfrontier.com

Recommendation: The sample is contaminated with large amounts of calcium and some sodium. The acid number is within specification but there are solids in the oil as can be seen by the increase in pentane solids and the flash point is lower - looks like there might be thermal cracking of the system. It is important to increase the temperature of the system slowly to keep from Thermally Cracking the oil. Resample in 3-6 months

Comments: Pentane Insolubles levels are abnormally high. Calcium ppm levels are severely high. Sodium ppm levels are abnormally high. (GCD) 90% Distillation Point is marginally low.

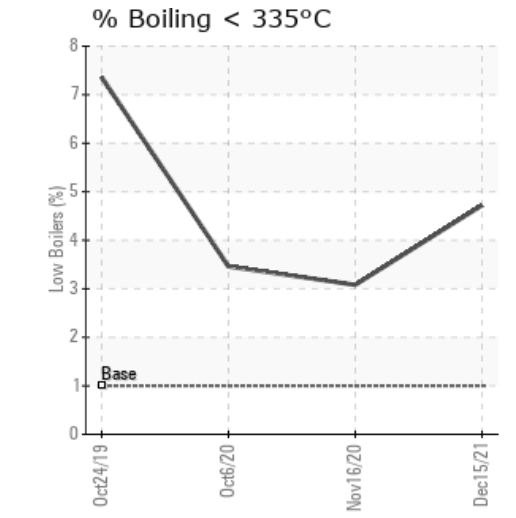
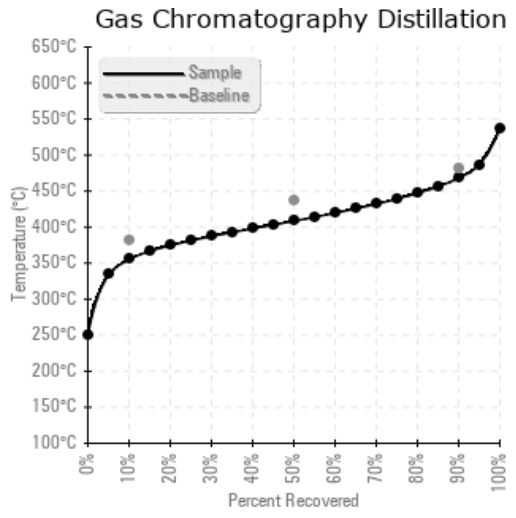
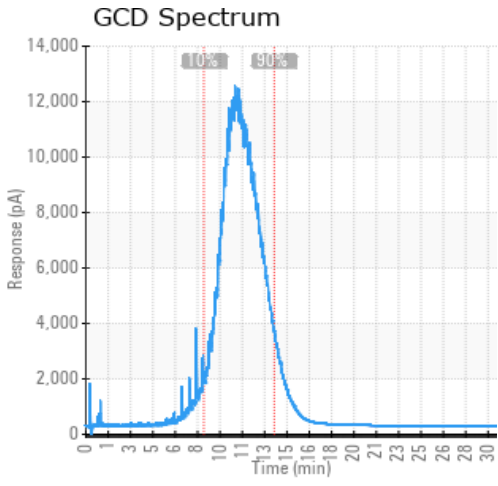
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
12/15/21	12/30/21	2.0y	Return line	385 / 196	136.7	22.5	0.25	0.430	671 / 355	767 / 408	874 / 468	4.72
11/16/20	11/18/20	0.0y		392 / 200	143.3	25.8	0.96	1.01	679 / 359	767 / 408	866 / 463	3.08
10/06/20	10/16/20	0.0y	RESERVOIR		15856.4	30.8	0.58	0.399	677 / 358	768 / 409	869 / 465	3.46
10/24/19	11/22/19	0.0y		385 / 196	30.8	22.0	0.218	0.241	645 / 341	735 / 390	835 / 446	7.36
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
12/15/21	5	0	0	0	0	0	0	0	0	0	0	30	0	0	0	0	1	0	0	4	1265	0	2	0
11/16/20	27	0	0	0	0	0	1	0	0	0	0	22	0	0	0	0	2	0	0	2	43	0	3	2
10/06/20	32	0	0	0	6	0	0	0	0	0	0	4	0	0	0	0	0	0	3	0	8	0	0	4
10/24/19	16	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	8	0	0	5
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	
11/16/20	Solids and acid number are high indicating there is large amounts of contamination in the system which have and will continue to cause fouling of the system and buildup affecting the overall efficiency and performance of the system, consider cleaning and flushing the system. Pentane Insolubles levels are severely high. Acid Number (AN) is severely high. Calcium ppm levels are severely high. Sodium ppm levels are abnormally high. (GCD) 90% Distillation Point is abnormally low.
10/06/20	This sample has over 10% water (15,000 ppm) and a high insoluble rate. Questioning where this sample was taken this amount of water would affect the performance of the system. Recommend re-sampling the system. Sample should be representative of the circulating fluid. Not taken from site gauges, or dead legs. Water contamination levels are severely high. Water contamination levels are severely high. Pentane Insolubles levels are abnormally high. Acid Number (AN) is abnormally high. Acid Number (AN) is abnormally high.. (GCD) 90% Distillation Point is abnormally low.
10/24/19	Customer stated sample is Pritherm NF-1 an ISO 22 heat transfer fluid the 90% distillation point is high which would mean the fluid is beginning to degrade or oxidize, but the acid number and viscosity appear within specification and the solids are low. Resample in 6 months (GCD) 90% Distillation Point is severely high.

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