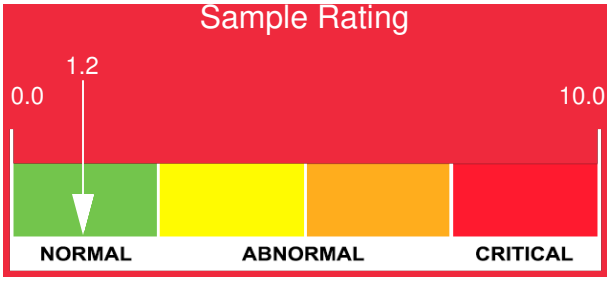
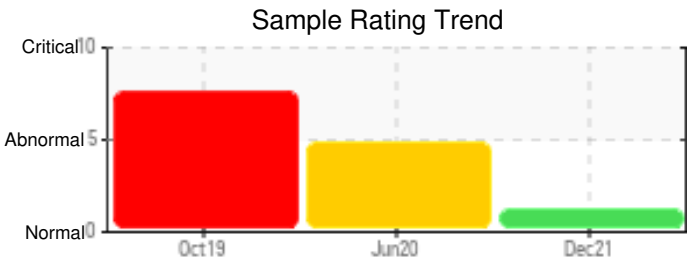




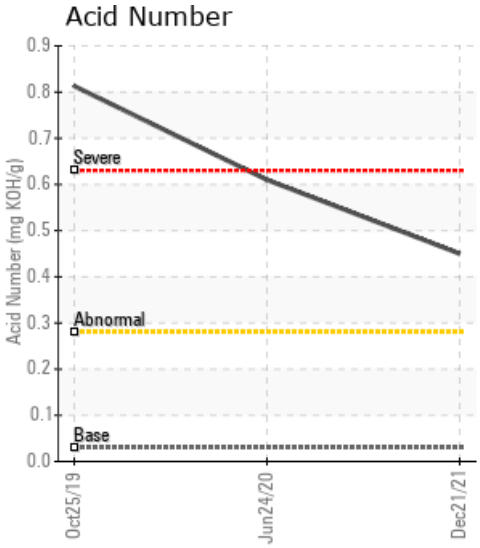
DCONSTRUCTIONDEAST

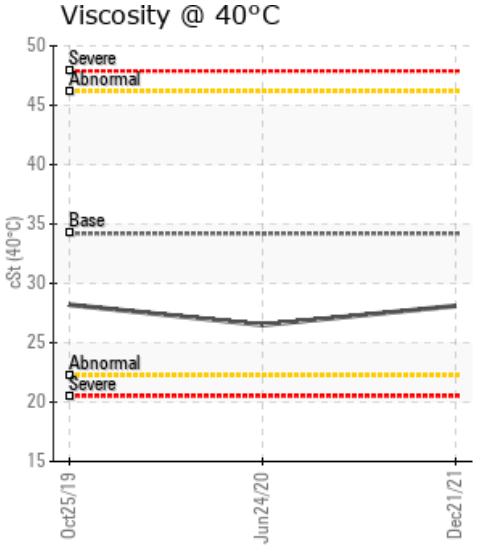
Customer: PTRHTF30107	System Information	Sample Information
D-CONSTRUCTION 16805 QUARRY RD MORRIS, IL 60450 USA Attn: Chris Lenzie Tel: (815)405-6831 E-Mail: clenzie@sandenoinc.com	System Volume: 1100 gal Bulk Operating Temp: 500F / 260C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: BURKE	Lab No: 02464403 Analyst: Yvette Trzcinski Sample Date: 12/21/21 Received Date: 12/30/21 Completed: 01/19/22 Yvette Trzcinski yvette.trzcinski@hollyfrontier.com

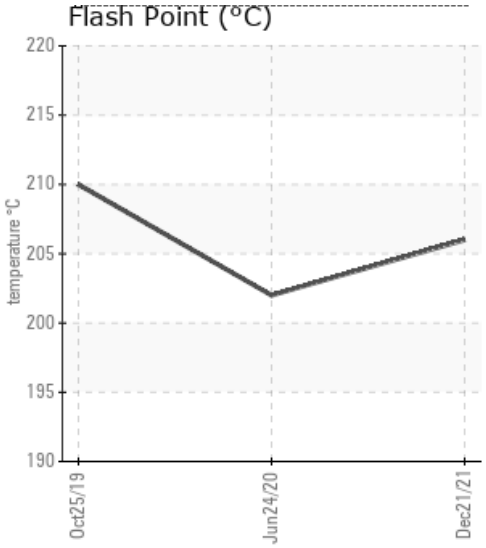
Recommendation: The fluid parameters are all in specification except for the high acid number I suggest resampling in 6 months to monitor the acid number if it continues to increase look to sweeten the system with new heat transfer fluid.

Comments: Acid Number (AN) is abnormally high.

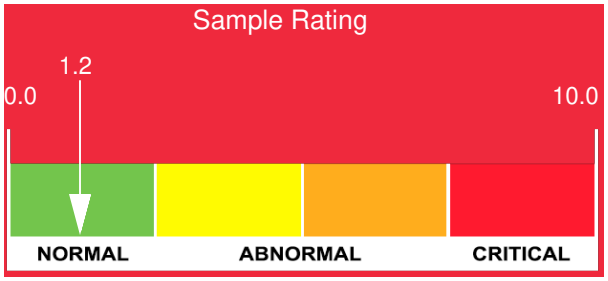
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
12/21/21	12/30/21	3.0y	return,before pump	403 / 206	24.9	28.1	0.45	0.145	677 / 358	806 / 430	917 / 492	6.09
06/24/20	06/25/20	0.0y	EXPANSION	396 / 202	44.9	26.5	0.61	0.440	662 / 350	800 / 426	913 / 490	7.44
10/25/19	11/22/19	5.0y		410 / 210	20.5	28.2	0.813	0.517	641 / 339	748 / 398	880 / 471	8.26
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00

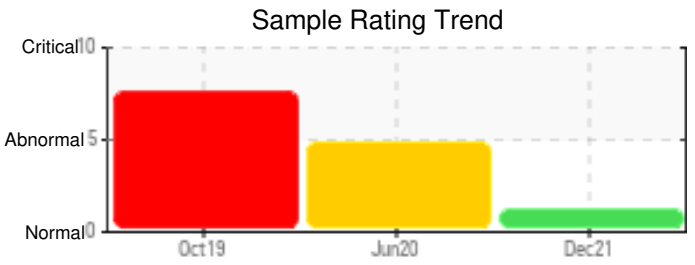






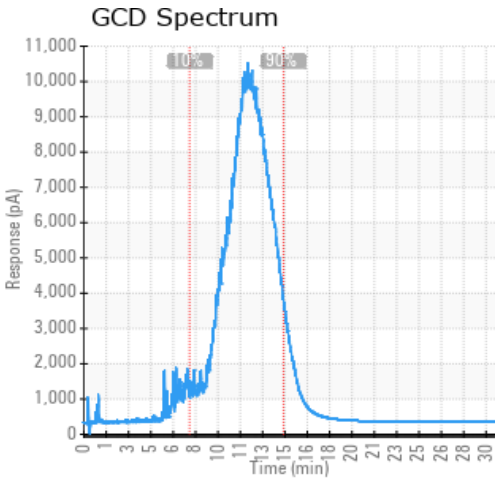
PETRO-CANADA LUBRICANTS

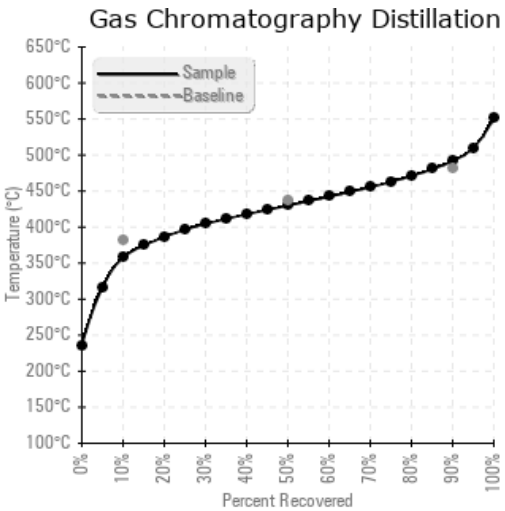


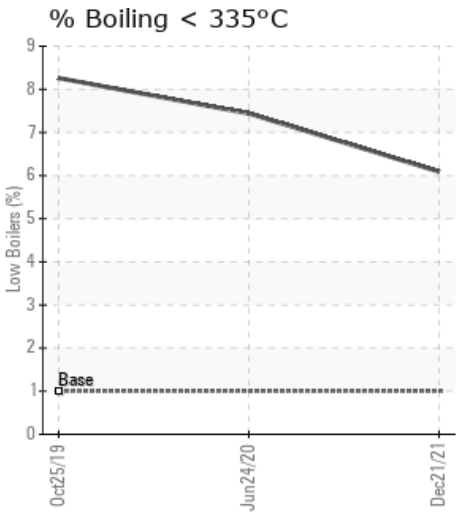


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
12/21/21	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
06/24/20	144	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	6	3	1	16
10/25/19	169	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	1	0	0	0	12	6	4	42
Baseline Data			0	0						0			0	0					0				0	

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







Historical Comments

06/24/20	acceptable for continued service - sample in 1-2 months to monitor total acid number and low boilers - operating temperature of the system is 325 F Pentane Insolubles levels are abnormally high. Acid Number (AN) is abnormally high. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low.
10/25/19	Fluid shows signs of degradation - acid number is high the pentane insoluble are high and there are low boilers in the system that can cause pump cavitation if not removed. There also seems to be contamination of the heat transfer system with either hydraulic or engine oil due to the zinc contamination. Recommend venting the system to remove low boilers for this fluid now and consider scheduling a system changeout - drain, clean and recharge of the system Pentane Insolubles levels are abnormally high. Zinc ppm levels are severely high. Acid Number (AN) is abnormally high. (GCD) 90% Distillation Point is abnormally low. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low. (GCD) 50% Distillation Point is marginally low.