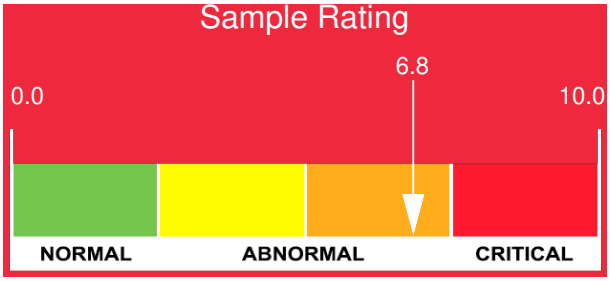
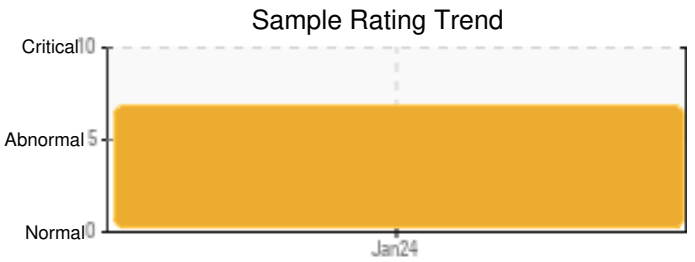




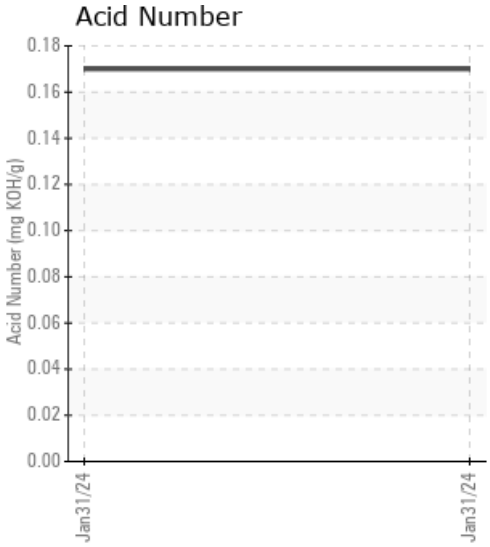
PLANT 1

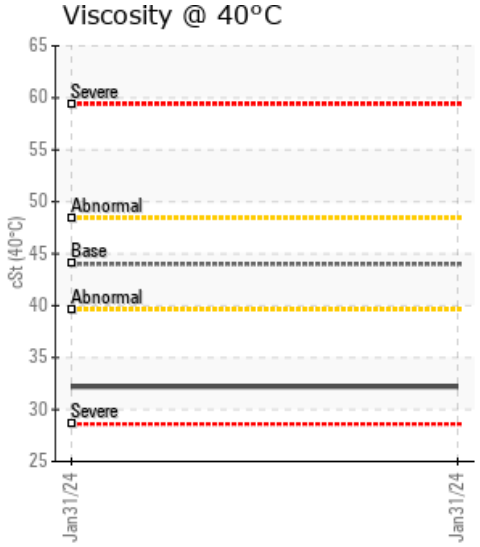
Customer: PTRHTF60056	System Information	Sample Information
Glenn O Hawbaker Inc. 118 Bedrock Lane Plant 1 Bellefonte, PA 16823 US Attn: Steve Swartz Tel: (814)359-5096 E-Mail: srs@goh-inc.com	System Volume: 500 gal Bulk Operating Temp: 380F / 193C Heating Source: Blanket: Fluid: MULTITHERM IG-4 Make: AMERICAN HEATER	Lab No: 02614328 Analyst: Greg Fernandez Sample Date: 01/31/24 Received Date: 02/08/24 Completed: 02/16/24 Greg Fernandez gregory.fernandez@hfsinclair.com

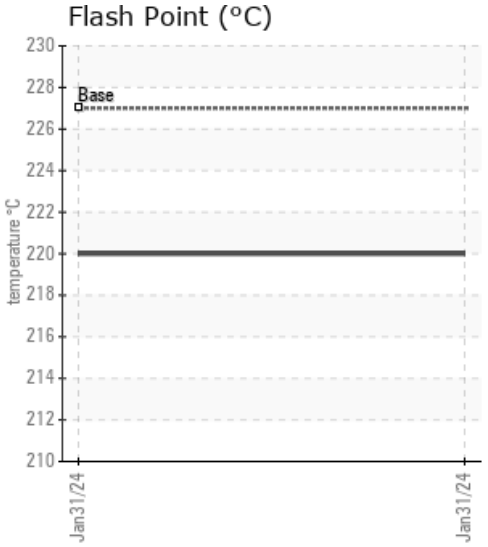
Recommendation: Resample the system after startup and after at least a week of operation. Observe the flagged items for new values, with particular attention on the next reported Acid Number.

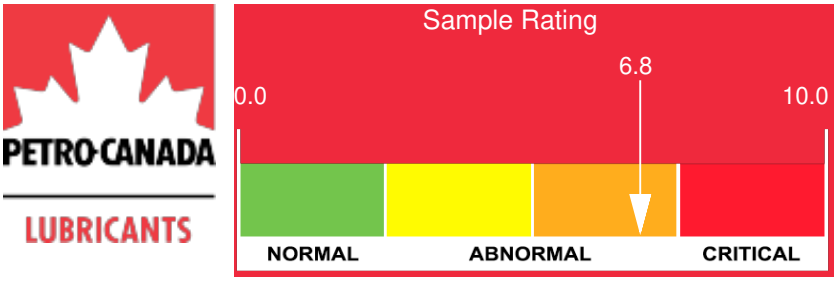
Comments: Water contamination levels are severely high. Calcium ppm levels are severely high. Acid Number (AN) is abnormally high. Viscosity @ 40°C is abnormally low. (GCD) 90% Distillation Point is marginally low. The sample exhibits characteristics of a fluid in a shutdown condition. The moisture contamination could be from ingressed water and/or accumulated condensation during the shutdown period, which could also account for the low Viscosity. That water would be expected to evaporate off upon restart. The higher Acid Number is a larger concern and would need to be monitored on the next sample. AN is less likely to return to normal levels after startup since it is a cumulative and irreversible process, hence the need to flag it as a watch point.

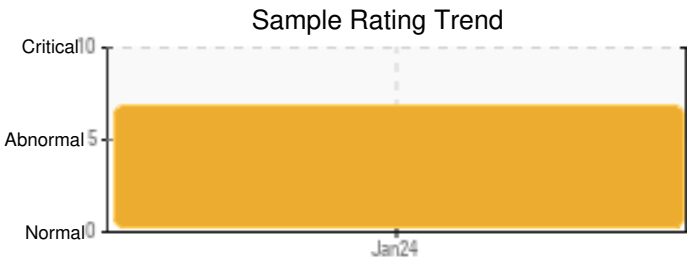
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
01/31/24	02/08/24	7.0y		428 / 220	1093	32.2	0.17	0.081	703 / 373	812 / 433	915 / 490	1.79
Baseline Data				441 / 227		44.0			725 / 385	820 / 438	936 / 502	5.7





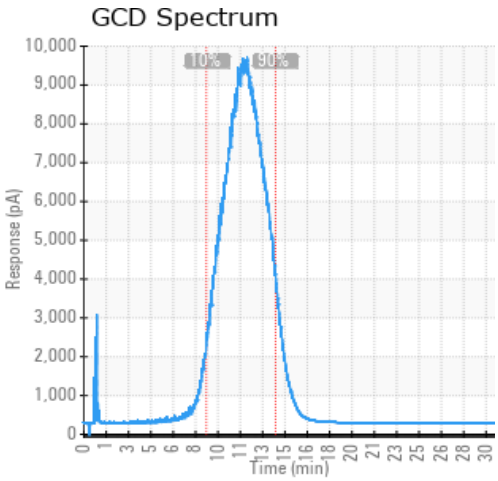


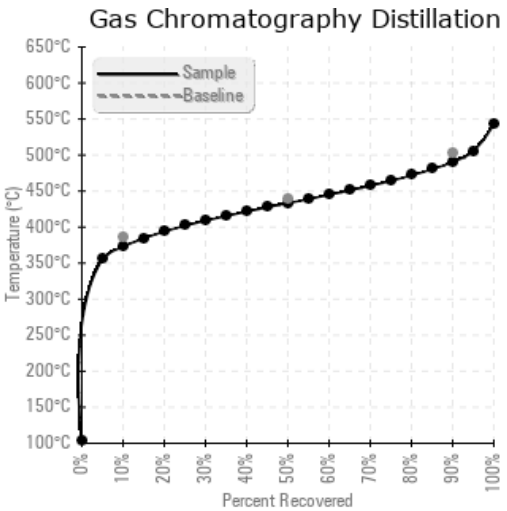


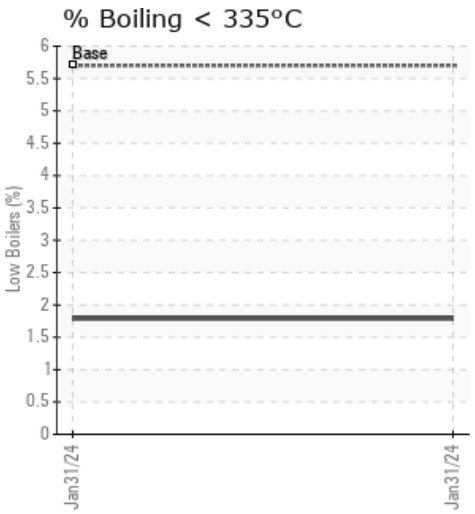


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
01/31/24	15	0	0	1	0	0	0	0	0	0	2	12	3	0	0	0	0	0	0	2	44	0	2	2
Baseline Data			0	0						0			0	0					0				0	

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







Historical Comments
