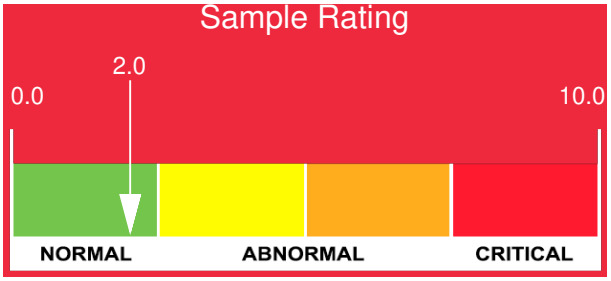
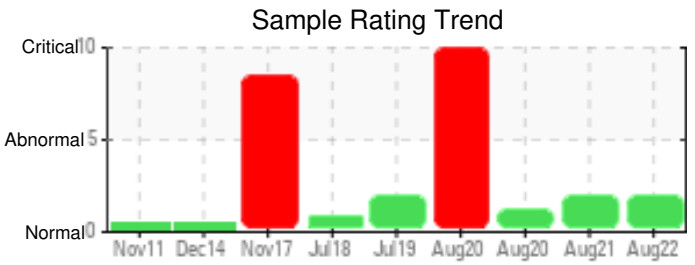




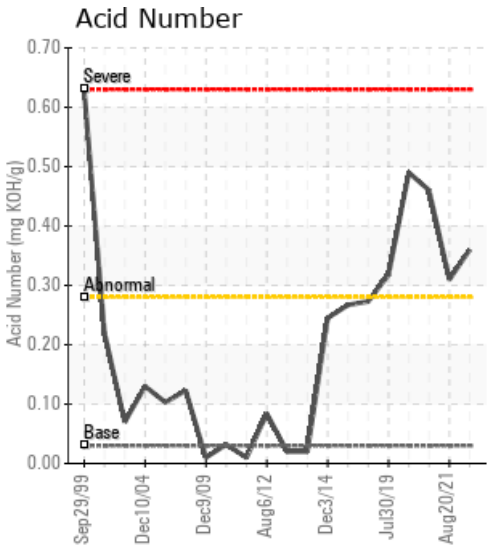
B7 BURNER

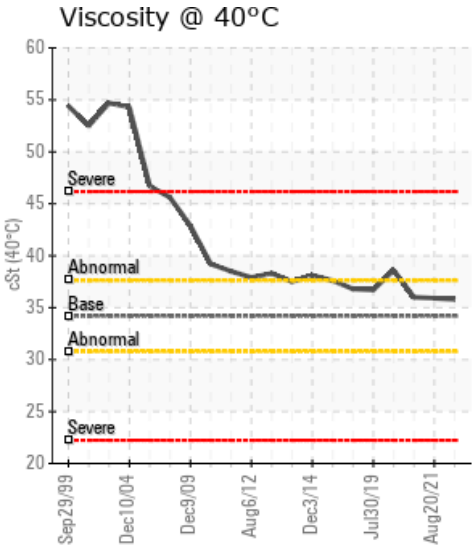
Customer: PTRHTF30052	System Information	Sample Information
I G MACHINES AND FIBER 87 ORENDA RD. BRAMPTON, ON L6W 1V7 Canada Attn: Alan Zhao Tel: (905)457-2880 E-Mail: alan.zhao@iko.com	System Volume: 8000 ltr Bulk Operating Temp: 460F / 238C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02507264 Analyst: Yen Garcia Sample Date: 08/23/22 Received Date: 08/25/22 Completed: 08/29/22 Yen Garcia yen.garcia@hollyfrontier.com

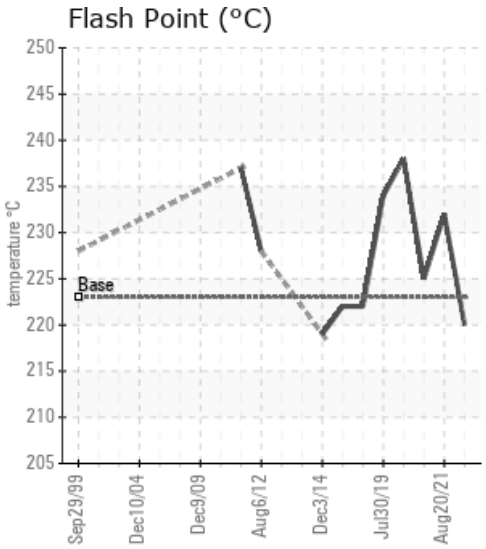
Recommendation: No action needed at this time.

Comments: Acid Number (AN) is abnormally high. (GCD) 90% Distillation Point is marginally high.

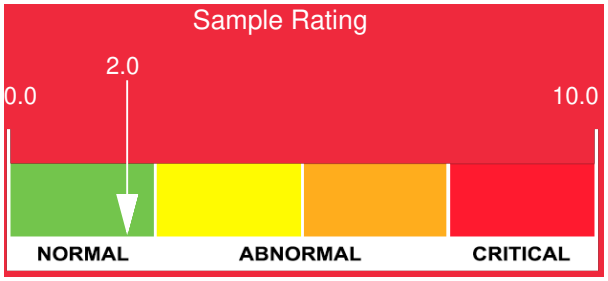
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
08/23/22	08/25/22	12.0m		428 / 220	8.6	35.8	0.36	0.092	726 / 386	815 / 435	918 / 492	1.24
08/20/21	08/24/21	0.0m		450 / 232	111.4	35.9	0.31	0.310	730 / 388	817 / 436	921 / 494	0.41
08/27/20	09/02/20	36.0m		437 / 225	30.1	36.0	0.46	0.245	726 / 386	811 / 433	901 / 483	0.65
08/11/20	08/14/20	2.0m	PIPING	460 / 238	3678.7	38.6	0.49	0.669	730 / 388	816 / 436	922 / 495	0.32
07/30/19	08/12/19	24.0m	PIPE	453 / 234	55.9	36.7	0.318	0.434	716 / 380	803 / 429	910 / 488	0.00
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00

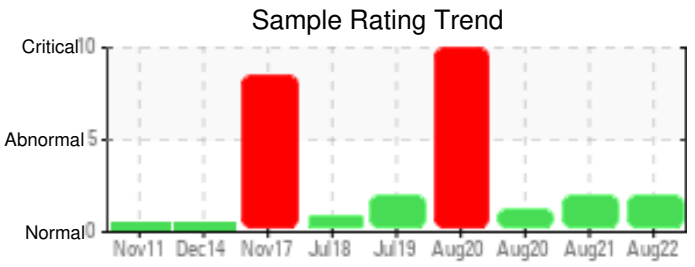






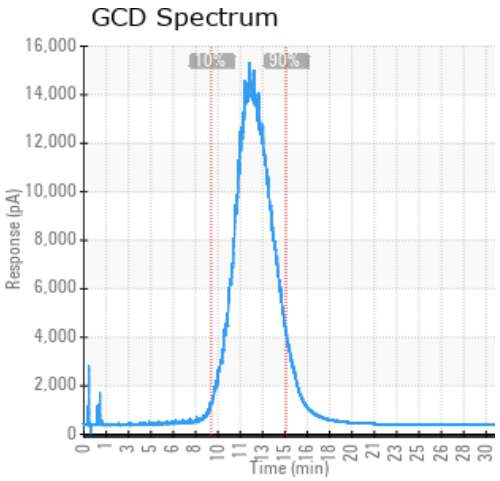
PETRO-CANADA LUBRICANTS

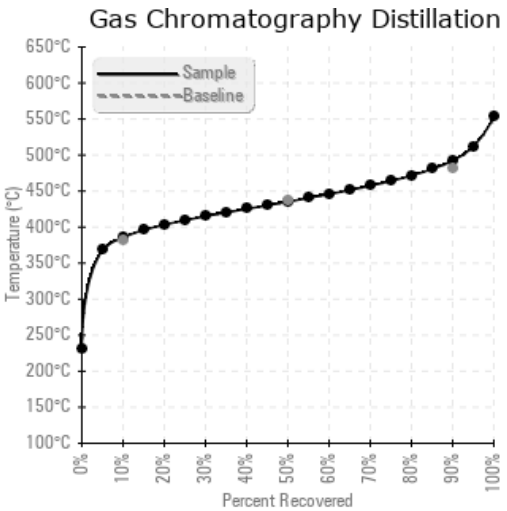


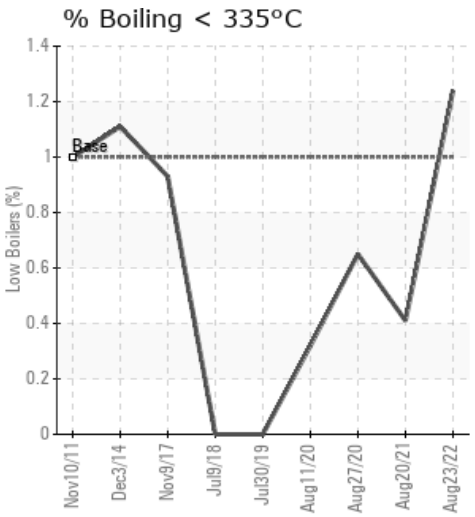


Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
08/23/22	6	0	0	0	0	2	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0
08/20/21	10	0	0	0	0	2	0	0	0	0	0	10	0	0	0	0	0	0	0	0	2	0	0	0
08/27/20	10	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	33	1
08/11/20	40	0	0	0	0	0	0	0	0	0	0	60	3	0	0	0	2	0	1	1	3	0	0	0
07/30/19	11	0	0	0	1	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	1	0	0	3
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

08/20/21	Analysis indicates the fluid results are typical for Petro-Therm in service. There is an indication of moisture in the system, with the water content measured at 111 ppm. Pentane insolubles content at 0.310 had increased from previous sample. Possible reasons for this may be sample line was not properly flushed before sample taken, ensure samples are taken from a line with turbulent flow and representative of the fluid in service. Fluid is suitable for continued service. Sample at next yearly frequency. Acid Number (AN) is abnormally high. (GCD) 90% Distillation Point is marginally high.
08/27/20	Fluid is fit for continued service but you need to watch the acid number since it is showing signs of oxidation (TAN rise from 0.318 to 0.46). As the acid number increases the fluid will become more corrosive and the tendency for more sludge deposits form. The GCD does show some low boilers in the fluid. Also, there appears to be some contamination in the heat transfer fluid system due to 33 ppm of phosphorus and the lower level of sulphur compared to new fluid. Suggest to sweeten the fluid by addition of some new Petrotherm to the system. Acid Number (AN) is abnormally high.
08/11/20	Current sample shows a significant amount of water (0.37%). This high water could be a safety concern (i.e. hot oil gargling and splashing out of the expansion tank). This water will contribute to fluid oxidation (as shown with the increase in acid number and increase in viscosity) as well as the formation of acids (corrosion). The increase in viscosity will reduce the fluid's ability to transfer heat. The Pentane Insolubles have increased from 0.434 to 0.669, which would suggest contamination, corrosion and oil degradation. The fluid does exhibit wear (Fe - 40 ppm) and also shows contamination of Na - 60 ppm, K - 3 ppm with small amounts of Mn, Mg and Ca. These could be from where the water ingression (coolant chemicals)came from or any possible addition of another product (soap?). Please ensure that the sample line is flushed thoroughly, to remove any insolubles (or possibly water) that may have accumulated over time, before the sample is taken. You might want to look at resampling sooner. Water contamination levels are severely high. Pentane Insolubles levels are severely high. Sodium ppm levels are severely high. Acid Number (AN) is abnormally high. (GCD) 90% Distillation Point is marginally high.
07/30/19	The acid number is increasing and the pentane insolubles are still high. Thus the fluid appears to have acidic components in the fluid indicative of oxidation, which can create more deposits. To reduce acid number, you could try 'sweetening' the system (partial oil replacement). Suggest checking filters and changing if possible. Filtration systems will help to keep these levels lower. The sodium level still indicates the residual presence of the soap from previous issues. Pentane Insolubles levels are abnormally high. Acid Number (AN) is abnormally high.