

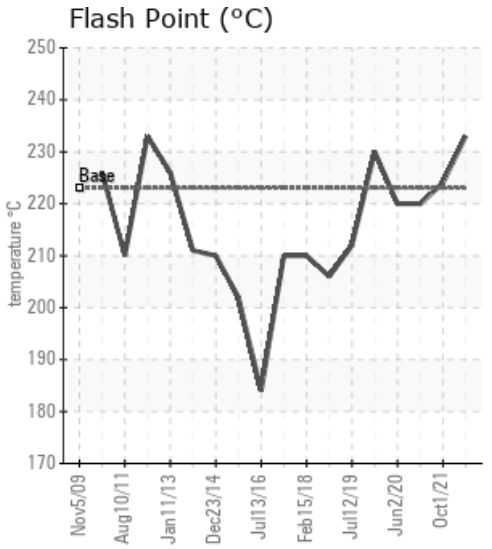
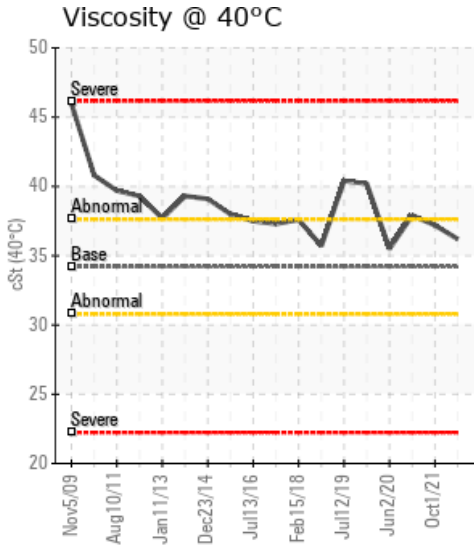
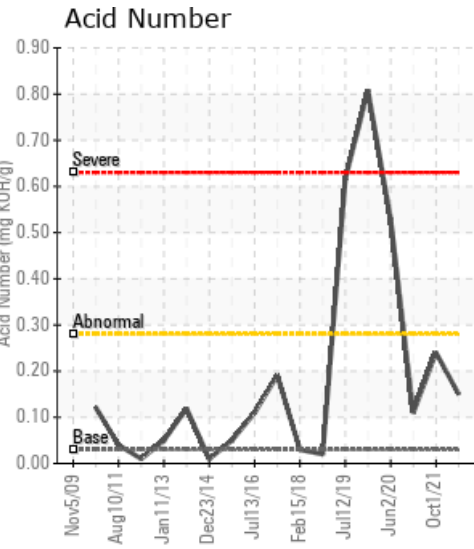
## API BOILER

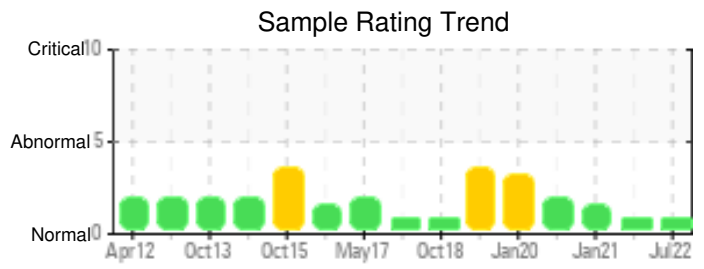
Customer: PTRHTF30020	System Information	Sample Information
IKO INDUSTRIES HAWKESBURY 1451 SPENCE ROAD HI-PARTS-HAWK YARD HAWKESBURY, ON K6A 3T4 Canada Attn: Adam Aubry Tel: E-Mail: adam.aubry@iko.com	System Volume: 25000 ltr Bulk Operating Temp: 518F / 270C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: INDUSTRIAL	Lab No: 02501223 Analyst: Behshad Sabah Sample Date: 07/14/22 Received Date: 07/21/22 Completed: 07/27/22 Behshad Sabah behshad.sabah@hollyfrontier.com

Recommendation: No wear, no contamination are present in sample. Viscosity and AN (acid number) are correct. COC flash point is good. GCD 10% is good and GCD 90% is to report with severity 2 (yellow flag). Pentanes insolubles are good. The oil condition is good, very small indication of high boiler which is minimal. Please keep monitoring the oil.

Comments: small change in the AN and viscosity. viscosity increase will reduce the heat transfer coefficient by 3%. in general oil is in good and acceptable condition. (GCD) 90% Distillation Point is marginally high.

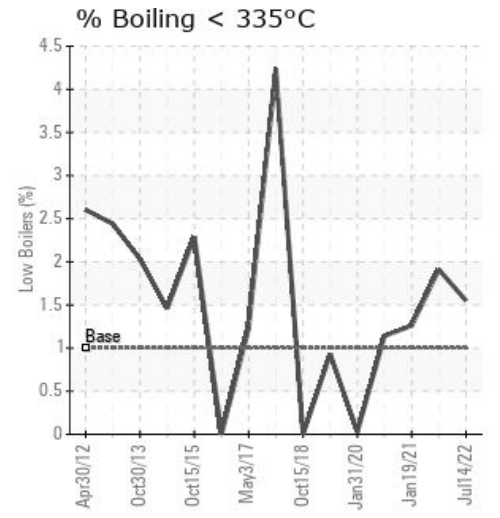
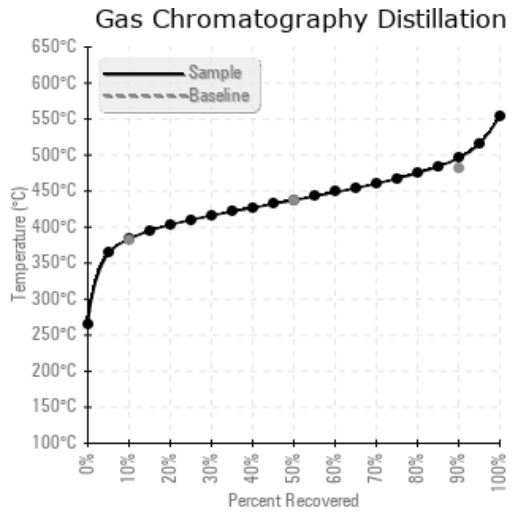
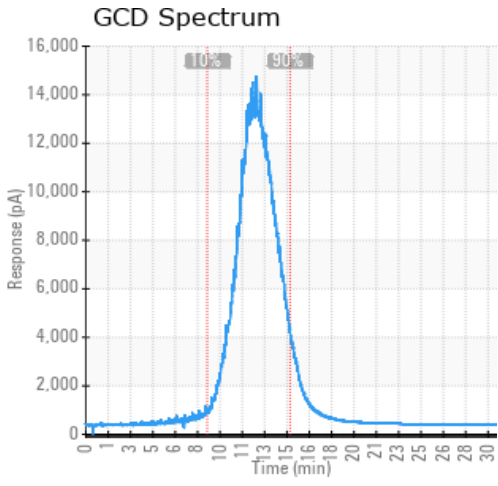
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
07/14/22	07/21/22	12.0y		451 / 233	23.1	36.2	0.15	0.262	722 / 383	819 / 437	925 / 496	1.55
10/01/21	10/20/21	11.0y		435 / 224	277.9	37.2	0.24	0.137	722 / 383	821 / 439	928 / 498	1.91
01/19/21	01/22/21	11.0y		428 / 220	5.3	37.9	0.11	0.454	724 / 384	822 / 439	930 / 499	1.26
06/02/20	06/11/20	10.0y	HOT OIL BOILER	428 / 220	37.9	35.5	0.53	0.244	724 / 385	820 / 438	918 / 492	1.14
01/31/20	02/05/20	10.0y	API HOT OIL HEATER	446 / 230	6.2	40.2	0.808	0.359	690 / 366	784 / 418	893 / 478	0.03
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
07/14/22	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/01/21	6	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	1	0	1	0	0	0
01/19/21	4	0	0	0	0	4	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	6
06/02/20	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01/31/20	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	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	
10/01/21	Elemental Analysis is OK, FE = 6 ppm, max = 99. Water is ok, 278 ppm, max = 350 ppm. The Acid Number is ok at 0.24 and maximum is 0.29. The Viscosity @ 40C is ok. A result to 37.2 cSt and a fresh oil is 35.8 cSt. increase by 3.9%. The COC flash point is ok. A result to 224 C and a fresh oil is 225 C. The insolubles or solids (%W) is good. A result to 0.137 and the maximum is 0.29. GCD % 10% is ok and GCD 90% is a severity yellow, we will check for the next analysis, to do in one year. The graphic GCD is a good shape and we have not a large volume of low boiler and high boiler. Continue operation (GCD) 90% Distillation Point is abnormally high.
01/19/21	Solids (Pentane Insolubles) are high. High boilers (GCD @90%) are high. GCD <335C have increase. We could see some deposits in elbow, small lines etc. The heat transfer fluid is OK, for continuous use. Pentane Insolubles levels are abnormally high. (GCD) 90% Distillation Point is abnormally high.
06/02/20	Oil is OK for continuous use. GCD @ 90% is slightly higher then normal. Acid number is higher then normal. Sulphur is higher then normal. verify that when you top-up the system, you are using dedicated equipment to minimise cross contamination of products. Acid Number (AN) is abnormally high. (GCD) 90% Distillation Point is marginally high.
01/31/20	attention, augmentation de l'acidité de l'huile Le Acid Number (AN) est au dela de 0.800. L'augmentation du AN pourrait provenir d'une infiltration d'eau au système. Toutes les autres constantes sont ok. Le profile GCD s'élargit mais est toujours ok. Le Acid Number est élevé et indique que l'huile serait à changer. Acid Number (AN) is severely high.

Petro-Canada makes no representation or warranty of any kind, either express or implied, as to the accuracy or completeness of the analysis and assumes no responsibility and shall have no liability whatsoever with respect to such analysis, or a party's use of it. Petro-Canada is a division of HollyFrontier Corporation.